THE UNIVERSITY OF HULL

Birds and People in Towns and Cities:
An Exploration of Human-Bird Relations in Urban Areas

being a Thesis submitted for the Degree of

in the University of Hull

by

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March 2010

Abstract

Urban nature conservation and sustainability discourses regularly state a desire to bring more 'nature' and wildlife into towns and cities - for the perceived good of both people and wildlife. Yet many wildlife species that already live in urban areas are often seen as undesirable by people, and are caught up in the parallel discourses and practices of pest control. This partial disparity between the types of wildlife successfully inhabiting urban areas and the types that, put simplistically, different people want or don't want in urban areas is further complicated by the heterogeneity of humans, nonhumans, ideas, practices and space-times that co-constitute the character of, and the uneven geographies of, different human-wildlife relations in urban areas. This heterogeneity, and these uneven relations, creates practical and ethical issues, not only for those directly involved in policy and management, but also for the constitution and potential implementation of a diverse body of social science theory that is concerned with developing an expanded political collective and fostering better relations between humans and nonhumans.

In light of these issues, this thesis has examined and compared the specific constitution of particular, different, and uneven human-wildlife relations in urban areas in the cases of different bird species, with a particular focus on the built environment. It has subsequently considered the problems and opportunities that arise in seeking better relations. Using an approach derived from relational thinking, the contingent knowledges/ideas, practices, and human and nonhuman agencies involved in these relations have been assessed, revealing how diverse human-bird relations, and certain urban-space times, are produced. In spite of the problems that the heterogeneity and complexity of these relations presents for living with wildlife in urban areas, this thesis concludes that creatively experimenting with the form and practice of diverse urban landscapes offers opportunities for better relations.

Acknowledgements

I would like to thank a number of people for the help and support they have given me during the process of producing this thesis.

I would like to thank my supervisors, Dr Sally Eden and Dr Lewis Holloway, and also Dr Chris Bear and Dr Russell Hitchings who have been part of my supervisory team at Hull at different times in the last few years. I thank you all for your time, constructive criticisms and encouragement. I am grateful to Lewis for pushing me to think more critically, and would like to thank Sally in particular for her patience and understanding, for the time and effort she has put into assisting me, and for her ability to make me leave every supervisory meeting feeling inspired again.

I would like to give special thanks to my parents for the continual love and support they give me, without which this would not have been possible.

Finally, I would like to give extra special thanks to my girlfriend, Georgie, for the enormous amount of love and support she has given me, and also to Ami and (in memory of) Suzie, our special little feline companions.

Contents

List of Tables, Plates and Abbreviations

Tables

Plates

Abbreviations

BTO   British Trust for Ornithology

EA   Environment Agency

RSPB   Royal Society for the Protection of Birds

Chapter 1: Introduction

1.1 Background

Wildlife in urban areas has, in recent years, become subject to increased attention both from nature conservationists and from academics working in human geography and related fields. Urban nature conservationists have sought to promote the importance of urban areas for wildlife, and promote the importance and value of this wildlife in itself and for people, as well as undertake practical measures to protect it and make urban areas more amenable to it (see online copies of the now defunct magazine *Urbio* - English Nature, 2006). Geographers and others have engaged in debates about how humans interact with wildlife and the effects humans have on nonhuman life (and vice versa) (see Lulka, 2004; Whatmore and Thorne, 1998, 2000). Such debates have increasingly focussed on wildlife/animals in urban areas, linking in with other work that has highlighted the importance of, and the changing role of, 'nature' and animals in the (re)production and performance of cities (see Wolch, 2002, 1998; Hovorka, 2008; Braun, 2005; Wolch and Emel, 1998; Philo and Wilbert, 2000; Braun and Castree, 1998). A number of urban nature conservationists and social scientists share a similar concern with understanding how people and wildlife co-exist in towns and cities, and in considering whether they can live together in better ways (e.g. Marren, 2002; Bryant, 2002; Hinchliffe *et al*, 2005; Hinchliffe and Whatmore, 2006; Latour, 2004a, 1993). Seeking better relations between humans and nonhumans is thus a common interest, albeit pursued in differing ways.

Such debates and activities have been very important in raising awareness of and in attempting to improve human-wildlife relations in urban areas. However, I contend that these debates and activities have often been limited in two key ways. Firstly, attention has often been paid to particular kinds of wildlife that are regarded as important by nature conservation interests, such as those perceived as rare or otherwise special and charismatic. The social sciences have also given a comparatively large amount of attention to 'domesticated' animals and/or those that are important to humans, especially commercially. Whilst concerns with these different kinds of animals are important, a continual focus on them risks ignoring the practical and ethical dimensions of relations with other kinds of wildlife, including wildlife that is more common and familiar and/or that in some instances

is regarded as 'pest' wildlife in urban areas. Secondly, attention has often been focussed on what can broadly be described as 'green spaces', be they urban nature reserves, parks, 'green corridors' or even (more recently at least) areas of 'wasteground'. Though much of the wildlife interest of urban areas can be found in such spaces, and there is indeed value in giving them attention, wildlife can also be found in other urban spaces, including spaces that are more closely shared by people and wildlife, such as buildings and built up areas. Although urban nature conservation is increasingly engaging with these 'other' spaces as the use of urban space by different kinds of wildlife changes, this engagement again tends to focus on particular kinds of wildlife and is as yet limited in its scope. A more general lack of engagement with such spaces by social scientists (aside from some recent work considered below) again risks ignoring the practical and ethical dimensions of relations that occur within (and which co-produce) them, particularly relations with the 'other', less considered types of wildlife.

In light of these points, I additionally contend that within urban areas people to an extent privilege some kinds of wildlife (and some kinds of spaces, in different ways) over others, and that uneven relations exist between different people, different kinds of wildlife, and different urban places. To illustrate this further – consider that urban nature conservation and urban sustainability discourses often state a desire to bring more 'nature' into towns and cities, and to make urban areas 'greener' and more wildlife friendly for the perceived good of both people and wildlife (e.g. Nicholson-Lord, 2003). Yet many wildlife species that already live in urban areas are often seen as undesirable by people, and are caught up in the parallel discourses and practices of pest control and wildlife management. The point has been made elsewhere that people generally like wildlife, but only as long as it doesn't get in their way or too closely share space with them (English Nature, 2006b; Marren, 2002, p234-253). There is thus a partial disparity between the types of wildlife successfully inhabiting urban areas and the types that (put simplistically) different people want or don't want in urban areas.

This situation is further complicated by the range of different places (or rather space-times) within urban areas that co-constitute the character of different human-wildlife relations – some of the 'green' spaces referred to above often being seen as spaces 'for' wildlife, whereas other spaces such as buildings are potentially more contested. Heterogeneity of

wildlife, people, places/spaces, times and relations in urban areas creates practical and ethical issues, not only for those directly involved in policy and management, but also for the pursuit of the aforementioned social science agenda that seeks better relations between humans and non-humans.

In seeking to contribute to this agenda and attempt to improve relations between people and wildlife in urban areas, I see it as vital that more consideration is given to the constitution of these uneven relations (and to their practical and ethical implications), and that doing so should in part involve attending more fully to some of the wildlife, spaces and relations of urban areas that have thus far received little attention from the majority of nature conservationists and social scientists. It should be noted that the increased interest shown by *some* urban nature conservationists in more 'built up' areas of towns and cities, including buildings themselves and also brownfield sites (sites of previous development that are derelict or have been cleared), has inspired *some* geographers and social scientists to also begin to take an interest in human-wildlife relations in these more built up places (such as Lorimer, 2008; Hinchliffe, 2007; Hinchliffe and Whatmore, 2006; Hinchliffe *et al*, 2005; Harrison and Davies, 2002).

I wish to follow the lead of such work, but also take things further by considering not just wildlife that is a focus for nature conservation (which the above work tends to focus on) but also wildlife that is involved in other (and sometimes more contested) relations with people. I also here wish to increase the focus on buildings and built up areas as urban places where different human-wildlife relations are varyingly successful or contested, both because such places are actually the sites of different relations that merit attention, and as a theoretical means of challenging spatially expressed nature/society and human/animal dualisms. Considering human-wildlife relations in more closely shared spaces, and amongst a more diverse and sometimes difficult gathering of humans and nonhumans, provides in my opinion a more thorough testing ground for social science theory that is concerned with finding better relations, as well as allowing for ethical and practical insights to be produced regarding the specific relations considered. Such a study is thus of value academically and practically, and in considering the possibilities for people and different kinds of wildlife to live together in urban areas it contributes to theoretical debates and to discussions regarding the management of towns and cities.

3

1.2 Research questions

In pursuit of the research agenda set out above, this thesis examines some of the relationships between humans and birds in urban areas in Britain, with particular reference to peregrine falcons, black redstarts and herring gulls / lesser black-backed gulls. I consider and compare the different ways in which humans, these birds and different urban places interact in order to examine how and why different and uneven human-nonhuman relationships in urban areas occur. I will focus on the following research questions:

1. How are different human-bird relations in urban areas constituted, in terms of the different birds, people, things, knowledges, practices, agencies and subjectivities involved, and the roles that they play in how these different relations are comprised and enacted?

2. What are the key practical and ethical issues that arise from the constitution of these relations, and in light of these issues what are the possibilities for living with birds/wildlife in urban areas, and for more generally living with difference and finding "more equitable social relations between humans and nonhumans" (Lulka, 2004, p439)?

1.3 Structure of the thesis

The following three chapters review the relevant literature that supports this thesis. Chapter 2 provides a broad conceptual background by outlining the history of thought regarding nature and animals, particularly in terms of the development of modern(ist) science and how it understands and has sought to engage with nature. Chapter 3 reviews in greater detail the more recent legacy of policy and practice relating to the conservation and control of animals, and traces the development of both wildlife conservation and pest control/wildlife management in light of the increasing influence of ecological thinking, and also in the particular context of urban areas. Chapter 4 then considers theoretical approaches that have developed within certain areas of the social sciences, especially science and technology studies (STS) and human geography, which rethink the relationships between science, nature, politics, humans and animals through challenging nature/society and human/nonhuman dualisms. It introduces and reviews academic debates regarding relationality and hybridity, nature/animals and cities, the 'places' and placings of

animals, the agency and subjectivity of animals, and the concern with producing better relations between people and animals. This review will then lead into a consideration and formulation of my own research interests.

Having laid out the context for this thesis, in Chapter 5 I outline and evaluate my methodology for the design and conduct of the primary research into human-bird relations in urban areas. I explain and justify my choice of case studies and my use of particular research methods, review the research I carried out, and consider a number of practical and ethical issues involved in the research. Chapters 6 and 7 then present the empirical material from this study. For convenience, this discussion of my empirical material has been divided roughly into sections dealing with knowledges and ideas (chapter 6) and sections dealing with management practices (chapter 7). Although artificial, in that knowledges and practices are continually interwoven, such a division is a useful means of organising and dealing with a complex and diverse body of data, and makes it easier for particular areas of interest to be focused on.

Chapter 8 concludes this thesis by summarising the main findings and using them to consider how we might 'live better' with birds and, by extension, with other animals in future, especially through a more creative, experimental approach to shaping and managing animal lifespaces and urban space-times more widely, and through a greater acceptance and tolerance of others and of our lack of complete control over them.

Chapter 2: Nature and Animals in Science and Modernity – A Contextual Background

2.1 Introduction

Although much of the relevant legislation, research and practical work affecting animals/wildlife in urban areas (and more widely) is post-World War Two (and will be dealt with in later chapters), many of the ideas regarding nature and animals that have been influential on recent policy and practice (and remain so today) can be traced much further back in history, tied up as they are with the associated development of scientific methods and philosophies. Oelschlaeger (1991, p97) states that "Modernism, that combination of the power of science and technology with political and economic ideologies modelled on the machine metaphor, rules the world", and Castree and Macmillan (2001, p208) state that the nature/society dualism in Western culture, a key feature of modernism, is so ingrained "as to seem unquestionable". Science has traditionally defined the widely accepted 'technocentric' conceptions of animals and nature along modernist, dualist lines – although these have been tempered to some degree by the influence of the ecological or 'ecocentric' perspective in the development of nature conservation and ecology (Pepper, 1996). In light of these points it is therefore necessary to review the origins and development of such ideas and approaches because of their inherited and continued relevance within people's contemporary ideological and practical engagements with animals, nature, urban areas, and the relations between them.

2.2 The Modern concept of nature

The idea of 'nature' as a distinct concept, and one that is ontologically separate from the concept of society, is seen as being a product of the Scientific Revolution and subsequent Enlightenment thinking. Indeed, the idea of nature as an object, and the notion that it can only be understood with the objective methods of classical science, can be seen as a co-development of concept and method during the 17th and 18th centuries – therefore nature and science have to be examined together in order to be understood. Before this is engaged with, it will be useful to briefly review what conceptions of 'nature' existed before the distinct, modern concept emerged, in order to better apprehend the modern concept and to

understand which aspects of it were new and which aspects were continuations of earlier thought.

According to many commentators (though not all – see Plumwood, 1993), the Mediaeval and Renaissance periods were dominated by theological cosmologies that did not contain a completely separate idea of nature 'in itself', or an idea that there was such a thing as 'nature' that was separate from or the opposite of society and humans. A monist, geocentric, holistic, organic worldview prevailed that was inclusive of all things, understood in terms that were a fusion of "Aristotle's comprehensive system of nature with Christian theology and ethics" (Capra, 1982). The universe was ordered via such concepts as the chain of being, where all things from divine power down through angels, man, animals, plants and elements were arranged in a linear yet interdependent hierarchy – each link in the chain, regardless of its hierarchical position, was assumed to be as important as any other as its removal would render the order of the chain and its divine purpose incoherent (Pepper, 1996, p130-135). Thus if a concept of nature can be identified here, it is in the widest universal sense of all things and the natural order of those things, with, as Pepper puts it, humans and society existing as a microcosm within the macrocosm of nature.

Despite this monist and interdependent world view, there were still ways in which humans saw themselves as superior or fundamentally different to, if not 'nature' as a separate concept, then other things within nature, particularly animals. Thomas (1984) notes, for example, the ambiguity inherent in the chain of being that both emphasises the interdependence and closeness of humans and animals yet also places humans well above animals in its hierarchy (p124), how the idea of human uniqueness developed from the Judeo-Christian teaching that God made man in his own image, thereby placing man "halfway between the beasts and the angels" (p31), and how the theological worldview of the Medieval and Renaissance periods viewed the natural world and all the non-human species within it as having been created to serve the needs and wishes of humans (p17-18). The emergence of the modern, dualist concept of nature is seen as representing and being part of a wider 'paradigm shift' away from Mediaeval and Renaissance cosmologies towards the era of classical science and the 'Newtonian paradigm' (Pepper, 1996). However, despite the importance of this fundamental shift, the modern concept of nature

did not emerge as a fully formed and completely new idea during the Scientific Revolution. During the Medieval and Renaissance periods, as noted above, there were some senses in which nature (or 'natural' things) was perceived as somehow different from and inferior to humans and human society, in contrast to the belief that all things were interconnected and part of a holistic, divine plan. This sense of separation from and superiority over the natural world within Christian thinking was, for commentators such as White (1967) and Worster (1994, p28-29), an important precursor to scientific ideas of nature and the development of science itself. Worster notes that an emotional separation from the natural world within Christianity, and the belief that nonhuman lifeforms were without a soul or spirit (and therefore inferior), may have influenced the development of the rational, objective methodologies of science and the view of nature as a "mechanical contrivance", and Plumwood (1993, p74-75, p105) comments on the importance of Christian thought as the foundation for the subsequent development of the human/nature dualism (and traces this dualism back as far as Plato).

However important such theological influences and continuations may have been though, the Scientific Revolution of the late 16th and 17th centuries and the Enlightenment of the 18th century *did* produce a *new* way of observing and understanding the natural world, and defined nature and society as separate concepts. Hankins (1985, p2) describes how this revolution initially took place within mathematics and astronomy, initiated by the astronomical work of Nicolaus Copernicus which challenged the accepted geocentric and dogmatic worldview of the Mediaeval and Renaissance and thus opened up the world to new scientific enquiry. For Capra (1982) it is Galileo Galilei who is the first 'modern' scientist, as it is he who combined an empirical and experimental approach to science with the use of mathematical language to describe and understand nature. It is because of this use of mathematics, in Capra's view, that Galileo directed and restricted the attention of science towards "the quantifiable properties of matter" – influencing the "obsession" as Capra puts it with quantification and measurement that has lasted until the present day - and away from other properties that are "merely subjective mental projections" (1982, no page numbers). Already here matter, and the scientific understanding of it, was being separated off from things seen as subjective and non-scientific, and the idea that nature or matter can be known "as it really is" is central to modernist science (Castree and Macmillan, 2001, p209), and one much critiqued by recent commentators who suggest that all understandings

of the natural world (and indeed the concept of nature itself) are culturally constructed (a notion that will be returned to in chapter 4).

Pepper (1996, p140-146) outlines how the worldview and methods of classical science were developed further and fully established by Rene Descartes, Francis Bacon and Isaac Newton. Descartes' main contribution to the modernist worldview was the development of Cartesian dualism (seen as in contradiction of the monist, unified worldview of the pre-moderns). By reasoning that the only thing he could not doubt was the existence of his own (human) mind, ('*Cogito, ergo sum*' – 'I think, therefore I exist'), he separated mind and matter, and by extension separated subject and object, and humans/society and nature. Seen as fundamentally different from humans (as intellectual beings), nature (including human bodies and other animals in their entirety) was now a distinct, abstracted concept. Macnaghten and Urry (1998, p10) see this separation as involving a transformation of the state of nature "from spirit to machine", with nature becoming synonymous with physical matter, governed by mechanistic laws and knowable through scientific enquiry that reduced it to its component parts. Hankins (1985, p114) illustrates how extreme Descartes' mechanistic view of nature was: as all natural objects "were caused by inert particles of matter in motion", there was no essential difference for Descartes "between one's watch and one's pet dog". Hankins notes that most mechanical philosophers had less extreme views – the dog being seen as the work of God rather than that of man - though they still subscribed to this mechanistic view of nature. Animals were regarded as unthinking machines that felt neither pain nor pleasure, and the impact of this Cartesian dualist thinking on animals has often been bleak, especially in the "gruesome results" of experiments on animals in laboratories (Worster, 1994, p40), though it has also had a perhaps more general impact that persists until today in popular conceptions of non-human creatures as 'dumb animals' (to be treated however one wishes) and in the denial, within academia and elsewhere, of registering or even conceiving of non-human agency and the associated traditional placing of animals as the powerless "other" in human-animal relations (Philo & Wilbert, 2000, p1-34).

The dualist separation of nature and society allowed for increasingly domineering attitudes to be taken towards the natural world. Francis Bacon shared Descartes' view regarding the fundamental separation of humans and nature, yet Bacon used this concept to redefine "the

nature and purpose of the scientific quest" (Capra, 1982, no page numbers). In Bacon's view science gave humans power over nature, and so science should be used to press nature into service in order to improve the material lot of humans, as well as improving humanity's understanding of nature. Although the idea of humanity's dominion over nature is at least as old as Medieval readings of the Bible (Thomas, 1984, p17-20), it was the newfound power of science that sought to take this dominion to a new level and changed the focus of science itself away from the knowledge of God (the Medieval purpose) towards the ideal of human progress. Pepper suggests that Bacon allied science with this notion of progress in order to gain the necessary support for the "new start" for science (using objective, inductive methods) that he advocated. The view of nature as essentially a resource for humans was developed further by later enlightenment thinkers such as Adam Smith (Pepper, 1996, p172).

Though the focus of science changed from knowledge of God to service of humanity, both required a detailed knowledge of the natural world and systems of ordering nature to be able to understand and do work with it – these classifications and conceptions of nature and animals will now be considered.

2.3 Classifications and descriptions of animals

Throughout history animals have been described, classified and ordered in a myriad number of ways. Some of these classifications have emerged from attempts to catalogue and understand the natural world in a systematic, scientific manner; other classifications are of a more vernacular type and reflect cultural norms and prejudices and also the practical uses of particular species. The boundary between these two types is not always clear, and many early-modern classificatory systems reflected a large degree of cultural bias (Thomas, 1984, p57). Although some earlier orderings of, and some vernacular conceptions of, animals and nature may appear irrelevant and unscientific, they are both the product of and help create a particular age and/or worldview (sometimes persisting until today). Thomas (p52) reminds us that any manner of classification and ordering effectively alters the perception of the natural world for those who subscribe to it or even for those who live in an age where it is dominant. As more 'scientific' and 'objective' systems of classification have developed, people's perceptions of animals (and nature in general) have also changed.

Thomas' point ties in with the important insight of theorists that classifications and ways of seeing the world 'do work' and are performative (Bowker and Star, 2000). It will therefore be useful to briefly review some of these varied historical classifications, as both scientific approaches to classifying and describing animals (such as the science of taxonomy, and the concept of the 'species') and also more vernacular and 'non-scientific' classifications of animals are still of relevance today and remain influential on contemporary human-animal relations.

In discussing vernacular or 'non-scientific' ways of classifying and perceiving animals, it would be wrong to imply that this is something peculiar to the particular historical time coverage of this chapter – animals have of course been attributed different qualities and ordered according to various cultural and mythological systems for thousands of years (a process which continues in various ways today). For the purposes of this review (as well as for reasons of space) it will be sufficient here to consider a few brief examples from within the chapter's historical timescale in order to illustrate such vernacular classifications, and their relevance to contemporary human-animal relations.

Thomas (1984, p52-67) discusses a number of ways in which animals were ordered in pre-modern and early modern times. These have included considering the closeness of a particular animal's relationship to humans and therefore its trustworthiness, and also the considerations of whether an animal is edible or inedible, whether it is wild or tame, and whether it is useful or useless. Many of these conceptions of animals reflected utilitarian concerns, and some early naturalists considered the degree of utility for each species in their orderings of nature (this utility reflecting the natural, anthropocentric world order in Christian thought). Rather less utilitarian (though perhaps no less anthropocentric) were categorisations based on the perceived physical attractiveness of different animals - Thomas notes that creatures such as frogs, cormorants and spiders were considered repellent by various early modern commentators, whereas the little owl and the red charr were considered attractive. Although this explicit ordering of animals by aesthetic qualities later became unfashionable, it remains (more implicitly) influential today – consider the use of 'charismatic megafauna' in promoting conservation causes (Whatmore & Thorne, 2000, p197). The perceived moral character of animals was another means of categorisation in the early modern period, and reflected contemporary cultural and social structures and

prejudices. Animals such as eagles and falcons were "noble", whereas creatures such as ferrets and cats were of a lower, "base" kind (Thomas, 1984, p58). As with aesthetic qualities, some early naturalists included these moral qualities in their work as well, and although this similarly later became unfashionable, it persists in different imaginations of animals today (see Wolch, Brownlow & Lassiter, 2000).

Philo (1998, p51-71) discusses how such vernacular classifications are far from static, and how the associated level of acceptability for specific types of animal varies over time and in different spaces. He gives the example of how livestock, that had previously been an accepted part of the city scene, came to be viewed as unacceptable and belonging in the country rather than the city. Objections to the animals included not only a dislike of their sight and smell, but also the perceived degenerate moral character of the animals (and the effect this had on the moral character of people who mixed with them). The exclusion of livestock from the city thus represented an attempt to 'purify' the city in terms of both a public health and a moral agenda. This example illustrates the importance that temporal and spatial factors can have within vernacular orderings, and how new or emerging orders can alter the physical and cultural landscape. It also highlights how urban/rural and nature/society dualisms are reinforced with the exclusion of (certain) animals from city spaces.

The ideas found within vernacular classifications and "popular lore" (Thomas, 1984, p73) were (as already mentioned) important in the work of many early naturalists. Many of these orderings of animals were essentially anthropocentric, but as notions of objectivity and detachment within science developed, the focus shifted to developing scientific classifications of the natural world based on its "intrinsic qualities" (p52). This is not to say the 'detached' observation of nature was new - the practise of observing and describing animals in a deliberate, focused way had been taking place in varying ways for centuries before the Scientific Revolution and the Enlightenment. Fisher (1966, p43-55) for example, in his discussion of the naming of bird species over the past 1500 years, describes which birds are named (in an increasing list over time) in the Anglo-Saxon poem *The Seafarer*, in the work of AElfric the Grammarian circa 998AD, in the writings of Geoffrey Chaucer such as the *Parlement of Foules* (1382), and in the *Avium Praecipuarum* (1544) by William Turner – the "first printed bird book" by the "father of British ornithology" who increased

the list of named and described birds through detailed field studies and something approaching 'modern' scientific method. However, Thomas (1984, p52) points out that it was only from William Turner onwards (to John Ray, who died in 1705) that there was an "unbroken succession of active field naturalists" who listed and described the natural world that they observed directly and gave rise to 'natural history' as an identifiable subject and endeavour (prior to this, "official book learning", according to Thomas, had little to do with "direct experience" of the natural world).

The 17th and 18th centuries saw an array of taxonomic and classificatory systems being developed by natural historians, and the adoption of more modern methods and a more formalised and systematic approach to classifying living things, although Bowler (1984, p48) points out that the "naturalists of the late seventeenth century still hoped that their scientific work could be reconciled with Christianity". Systems derived from Aristotelian logic became predominant and used distinct terms such as Definition and Genus (Claridge *et al*, 1997, p3). The concept of 'species' itself - of immense importance today to the ideas and practices of scientists and conservationists amongst others – also derives from Aristotle, although the Aristotelian definition of species differs in varying degrees from the 22 separate working definitions of species that have subsequently been developed by researchers (Mayden, 1997, p389). A 'species' was, and is, generally taken to be a type or kind of animal, though it has proven impossible to pin the species concept down with a clear definition – this being known as the "species problem" (Schilthuizen, 2001, p10). Van Regenmortel (1997, p19) notes that historically all such Aristotelian classes are "immutable and timeless", including the class of 'species'. Each particular species of animal or plant was considered to have been created as such by God and to be essentially unchangeable, and that the complexity of life and the way in which the form and function of a species fits its needs and its surroundings was seen as evidence of an "intelligent Designer" (Bowler, 1984, p49). Species were mapped onto fixed hierarchies that were often variants on the 'chain of being' concept.

The modern binomial (now trinomial) system of classifying organisms was founded by the Swedish naturalist Carolus Linnaeus, who developed it from 1753 onwards and by 1758 had begun to apply it to animals. As more species were encountered by Westerners through exploration of the world, it had become more difficult to fit the variety and complexity of

nature into older classifications and hierarchies such as the linear chain of being. A less rigid system of dealing with large amounts of species and the relationships between them was needed (Bowler, p59-60). The binomial system is seen as revolutionary and in some ways 'modern' as it is open ended, allowing new species to be slotted in where appropriate. Bowler (p52) points out that although in the present day we may see Linnaeus's development as an acknowledgement of the open-endedness of nature (and a precursor to evolutionary thought), this is not necessarily how Linnaeus would have perceived it. Bramwell (1989, p46) sees Linnaeus's conception of nature in pre-existing theological terms as a fixed (though with internal movement) and hierarchical system within which each (Aristotelian) species had its place, as designed by God. There was however room in Linnaeus' system, according to Claridge *et al* (1997, p4), for a certain amount of species variation through hybridisation. For Worster (1994, p31-32) the Linnaean system was still an important step towards evolutionary theory, because if for no other reason it made 'anomalies' visible by attempting to order nature in a particular way.

The perhaps more immediate importance of Linnaeus's taxonomic system, as given in Worster's account, is that it was the first *universal* and widely usable system to be developed, allowing it to spread throughout Europe and be used by both "advanced scholars in universities and… young ladies in their gardens" (1994, p32). The scientific classification of nature was thus moved on from an era of "taxonomic chaos" (ibid, p32), where a different system was seemingly used by each scientist. Although Linnaeus on the one hand had a reverential love of the natural world, the intended use of his taxonomic system was perhaps more Baconian in spirit. Oelschlaeger (1991, p105) clearly states that Linnaeus was both Cartesian, in his attempt to organise nature into a distinct set of classifications, and also Baconian in that he envisaged that the knowledge gained would enable humans to use and control nature for the good of humans. Linnaeus is thus today called the champion of "imperial ecology" – although in the 18th century the term 'ecology' had yet to come into usage, and Worster (1994, p37) explains Linnaeus's use of the term "oeconomy" as meaning a sort of "household management" within nature and a way of understanding relationships within the natural world.

Not all naturalists represented this imperial approach. Gilbert White, the British parson-naturalist of Selbourne, exemplifies for many the "arcadian" approach that promoted a

simple, humble life in harmony with the natural world, and that was infused with a pagan spirit and sense of awe before nature (Worster, p2-25). The view that people could return to a harmonious existence with nature was shared with White by contemporaries such as the pastoral poets William Cowper and Thomas Gray, and was influenced by readings of Virgil and other Roman and Greek literature. The practice of natural history was not then for White a means of dominating nature, but a way of reawakening and strengthening the deep bond and "harmony between man and nature" (Oelschlaeger, 1991, p104). This "arcadian ecology" slightly predated Linnaeus and the imperial approach, though constituted a contrary position to the modernist view of nature that imperial ecology followed. The arcadian view and the opposition to modernism continued in the Romantic Movement, as will be seen shortly.

The scientific classification of nature progressed along Linnaean lines into the 19th century, although his ideas increasingly came into question. Naturalists both before and after Linnaeus began to view animal species as something other than fixed and stable units within a divine scheme (Bowler, 1984, p46-84). Increasing numbers of naturalists noticed consistent differences within groups of organisms (such as dandelions) that Linnaeus had considered to be one species (Schilthuizen, 2001, p28-29). More famously, Charles Darwin recorded the small and consistent variations amongst similar species of finch on the Galapagos Islands (ibid, p2-4). This, and work by other researchers, influenced the development of theories of natural selection and evolution, which proposed that species, or populations within species, could change over time because of both external environmental influences and the capacity for variation within organisms (Browne, 2001, p100-106). These ideas challenged the notion of immutable species and types within taxonomy and classification (Allen, 1975, pxix-xx), and thereafter animals and plants began to be classified by many in terms of where they fitted into a genealogical picture of the natural world (Bowler, 1984, p165-166, p181-182), although the link between evolutionary history and taxonomy has been critiqued by some as "unscientific" (p330). The wider effects of Darwinian thinking were the destruction of the "uneasy truce" that had existed between science and theology, the development of the idea that the natural world could operate according to natural processes without the need for divine influence, and the full implication of humans within this world and its processes (Oelschlaeger, 1991, p106-107). The relationships between organisms and environment found within Darwinian thought

would be explored further within the science of ecology, which would later come to frame to a large extent how nature and animals have been perceived and engaged with in nature conservation, wildlife management, and other areas.

2.4. Development of ecology, ecological thought and conservation

Given the focus on this thesis on birds in urban areas, I want to concentrate on the most relevant aspects of modernist natural science, that is, the development of ecological thought and practice (and - in chapter 3 - its application in urban areas). This contains a number of confusing and contradictory strands, and includes both a move away from the dualism and mechanistic approach of classical science to a holistic view of nature, and yet also the emergence of specific scientific methods and quite mechanistic ideas about nature and the acceptance of ecologists as authority figures and experts. This perhaps can be seen in the context of the wide knowledge base that ecology emerged from and the varied backgrounds and political and philosophical stances of its practitioners.

Brennan (1988, p31) proposes that there are at least two types of ecology, one being the strictly 'scientific' biological studies of interactions amongst organisms and of interactions between organisms and their environment, the other being the use of an 'ecological' approach to philosophical, political, moral and wider academic problems. These separate types he calls "scientific" ecology and "metaphysical" ecology, though he acknowledges crossover and ambiguity between them. The development of 'ecology', and critiques of it, has involved interplay and tension between these two areas. For example, the scientific practice of ecology has in more recent times constituted the knowledge base and authority of institutional conservation agencies (Adams, 2003, p90-94), whereas a more general 'ecological' sensibility defines the outlook of many conservation campaigners and non-governmental pressure groups (Pepper, 1996, p10-46).

Ecology as a science did not emerge and develop as a separate discipline until the late 19th and early 20th centuries. Some of its concepts have a longer pedigree however, and the development of what would become known as an ecological or (in some forms) ecocentric perspective can be traced from the "Arcadian" spirit of naturalists such as Gilbert White and through its more influential manifestation in the Romantic movement to the

preservationists of the late 19th/early 20th centuries and the environmentalists of the 20th century (Worster, 1994, p55). As with the arcadian naturalists, the Romantic writers are generally seen as being in opposition to the modernist approach that had denied nature a spirit and sought dominion over it. Nature for them was a living organism imbued with divinity, and they valued the emotional, subjective experience of nature (the 'secondary' qualities dismissed by mechanistic science) over objective, abstract, scientific knowledge of it (Oelschlaeger, 1991, p98-99). The Romantics can be seen as 'ecological' in that they saw nature in holistic and interconnected terms, and repeatedly emphasised this holism as they sought to restore the connections between people and nature (Worster, 1994, p82) that had been severed by modernism. William Wordsworth's ideas of personal growth and of self and nature existing in a reciprocal relationship are seen as anticipating ecological ideas of succession and the relationship between organism and environment, and Wordsworth is referred to by some as a "proto-ecologist" (Coletta, 2001, p74-83).

Despite this emphasis on holism, the nature that the Romantics often sought out and exalted was the 'wild' nature found in 'wild' places, accompanied by a rejection of urban environments that were seen as purely human creations and concerns. This anti-urban sentiment and the valuing of wild (or at least rural) places has persisted within much modern nature conservation and has reinforced the (ironically) modernist dualisms of urban/rural and nature/society (see Cronon, 1996, and also Wolch 1998 and 2002). In the Victorian era this anti-urban feeling, influenced in part by the negative aspects of urban growth and industrialisation, was expressed within the general social movement of preservationism from which emerged both the nature preservation movement and the animal rights movement. Macnaghten and Urry (1998) point out however that the preservationist impulse was not simply driven by a dislike of urbanisation, rather that it represented a wider intellectual shift and a "reaction against the Enlightenment mentality which assumed that nature was to be improved through human reason and interference" (p35-36). This was partly a continuation of Romantic ideas, though was also the result of an increase in the better educated, prosperous middle classes who had, as Moss (2004, p73) puts it, the "resources and imagination to care for other creatures", as well as an awakening of concern for animals within philosophy and within Christianity, especially non-conformist sects (Kean, 1998, p17-21; Hume, 1957, p33).

One of the earliest organisations arising from this change in attitude was the Society for the Protection of Animals (later the RSPCA) in 1824 (Moss, 2004, p73). Marren (2002, p80) notes a division of labour between those with concern for the welfare of individual animals such as the RSPCA, and nature conservationists who are more concerned with the survival of species and populations. Although the early nature preservation movement had a concern for nature in this wider and more ecological sense, it did not at first however have strong links with the science of ecology, and Sheail (1998, p2) comments that it had as much to do with sentiment as with study. It is also with the emergence of nature preservation/conservation that perhaps another division (and a division of labour) emerged, a division between animal species that are the concern of conservation (perceived as 'wild', rare and/or charismatic) and those that are excluded from this concern (often perceived as common, 'pests', feral, and so on). Earlier vernacular classifications were in some ways more inclusive, and yet also perhaps pre-empted this division with classificatory dualisms such as wild/tame.

The conservation of birds in particular has been an important and in some ways distinctly British endeavour since the days of preservationism, and began in part for 'sentimental' reasons. In the 1860s, the Yorkshire Association for the Protection of Sea Birds – arguably the first wildlife conservation society anywhere in the world - was formed to tackle the rampant levels of bird collecting on the Yorkshire coast, and influenced the passing in 1869 of the Sea Birds Preservation Act (Moss, 2004, p74). In 1889 the Society for the Protection of Birds (which became 'Royal' in 1904) was formed by a group of middle class ladies in Didsbury, Manchester, who campaigned to stop the use of bird skins and feathers in the fashion and millinery trades that was having a dramatic effect on bird populations (ibid, p72). Their campaign against the fashion trade eventually proved successful, and Wild Birds Protection Acts were passed in 1880, 1894, 1896, and 1898 that covered an increasing numbers of species (ibid, p75). As the society grew, many more members of the Establishment became involved, including many Members of Parliament (Samstag, 1988, p44). Marren, (2002, p59) notes that birdwatching is a popular hobby amongst MPs, perhaps partly explaining why "British birds receive far more sympathetic attention than any other forms of wildlife". The RSPB later focussed its attention on acquiring land as a means of bird preservation, and this reflects a wider move within nature preservation/conservation in general from protecting animals to protecting and providing

habitat for animals. Attempts to acquire land for the express purpose of conserving wildlife began to develop with the formation of the Society for the Promotion of Nature Reserves in 1912. In 1915 this Society produced a list of places that were deemed to be the best sites for nature preservation in Britain, and presented this list to the Board of Agriculture. These endeavours achieved little at the time however, as the Government was preoccupied with wartime matters, and the Society later lost its purpose when its pioneering founder Lord Rothschild died in 1923 (Evans, 1997, p45-46). Nature preservation foundered, but would later be reinvigorated as nature conservation (in the sense of active nature management) when the science of ecology began to take a serious interest in it during the 1930s and 40s (Bocking, 1993).

Alongside such conservation endeavours, the science of ecology itself emerged in the late 19th century, though many of the concepts that it used and later developed, and the ways in which animals, plants and the physical environment interacted, had been conceived and documented by naturalists, botanists, and zoologists long before 'ecology' became a named and discernable discipline (Simmons, 1993, p22). Indeed, it was only during the nineteenth century that such job roles became defined. As Soderqvist (1986, p17) states:

> "Clear distinctions between zoologists and botanists, between state employed and amateur scientists, and between scientists having a practical rather than an academic orientation only emerged in the course of the 19th century. Previously, studies of animal-plant-environment relationships had been an integrated part of the tasks of all round natural historians."

Thus 'ecological' studies were not necessarily new, but became defined in increasingly distinctive and narrow terms, with 'ecology' developing its own methods, specialisations and theories later on and becoming another (admittedly varied) way in which humans have looked for 'order' in nature (Golley, 1996, p167).

Bramwell (1989, p39) outlines how 'ecology' as both a term and a named scientific practice can be traced back to the German Darwinist and philosopher Ernst Haeckel, who in his *Generelle Morphologie* of 1866 used the word 'Oekologie' to denote the scientific study of the relations between organisms and their environment. Haeckel followed the

Romantics in emphasising the holistic view of nature, and he and his followers engaged in a mixture of scientific study and philosophising. Bramwell states three important ways in which Haeckel can be regarded an 'ecologist', or at least can be said to have an ecological perspective. These are firstly that "he saw the universe as a unified and balanced organism" (ibid, p39), secondly that he had a non-anthropocentric outlook and thought that humans and animals had equal moral and natural status, and thirdly that he "preached the doctrine that nature was the source of truth and wise guidance about man's life" (ibid, p39), ideas that are reminiscent of the pre-modern view of nature seen earlier. The scientific observations of many early ecologists were often understood with recourse to such perspectives.

Although Haeckel and many of those who followed combined scientific ideas with an often Romantic philosophy, other ecologists attempted to proceed in a more strictly scientific direction. Golley (1996, p8-34) describes how the British ecologist Alfred George Tansley worked to drag ecology away from excessive and radical philosophising and "maintain its connection to mechanistic, reductionistic science and therefore its reputation within biology". Partly to this end Tansley wrote his article *Use and Abuse of Vegetation Terms and Concepts*, published in the magazine *Ecology* in 1935. This article is important not only because Tansley attempts to maintain links with classical science, but also because within it he uses a new word and concept – that of the 'ecosystem' which he calls the "basic unit of nature". Golley outlines how Tansley conceived of the ecosystem as a physical as well as biological system - one that had its place in a hierarchy of physical systems from the universe down to the atom – in order to appeal to the "respectable" classical physical sciences and thus try to gain recognition for ecology as a serious science in Britain (see also Worster, 1994, p303). He had already co-founded the British Ecological Society in 1913, and this combination of efforts helped push ecology towards its later professionalism and respectability - important notions within the context of this thesis in terms of the later authority of ecology as a discipline and of its 'expert' opinions regarding the conception and place of animals, which have been varyingly influential within both nature conservation and pest control/wildlife management.

The ecosystem concept itself, that of a sub-regional unit of animals, plants, the physical environment and the interactions between them existing in various states of "dynamic

equilibrium", was not at the time entirely unique or entirely new, but it was Tansley's concept (and its developments) that proved more useful and influential than others (Golley, p168). The ecosystem is also a good illustration of how ecologists came to understand nature as a system of energy flows – which would become the energy-economic model of the New Ecology (Worster, p291-315) – as well as how they have dealt with concepts such as balance, and where they have placed animals within groupings and systems (not just ecosystems but also food webs, populations, communities, niches etc - see for example the work of Charles Elton in 1927 as described in Brennan, 1988, p48-49).

Despite the early efforts by ecologists such as Tansley, the science of ecology in Britain struggled for wider acceptance during the inter-war years. It lacked funding, the facilities required for consistent experimental work, the freedom to carry out this work, and also the recognition that ecology was of value and could serve a purpose (Sheail, 1987). In the same period the nature preservation movement had languished, but assumed a new urgency as increased habitat destruction occurred during the Second World War. It was then that ecologists saw the opportunity not only to contribute to nature preservation, but also to raise the profile and secure the future of ecology and its practitioners (Bocking, 1993). Within the wider move towards rational modernist planning in the post war reconstruction era – that placed great importance on science as the key means of informing decisions – nature conservation in Britain was reorganised with ecology at its heart. More widely, ecological thought influenced both the conservation and control of animals (including those studied in this thesis) - a point developed in the next chapter.

2.5. Summary of chapter

Covering the period roughly to the early/mid 20th century, this chapter has shown how the development of modernism and science gave rise to the nature/society dualism, and how Romantic, Preservationist and certain ecologically minded reactions to modernism have partly challenged yet partly reinforced this dualism – particularly through the championing of 'wild' nature in remote locations and the associated production of the nature/urban dualism. It has also shown how ecology today contains both Romantic influenced and also modernist scientific aspects, with the latter being important in how ecology began to assert its authority as a respectable science within societies that have increasingly been run along

rationalist modernist lines, though the former aspect remains important in how many conservationists and others view 'nature' and human-animal relations. The next chapter considers the practices of conserving and controlling animals in more detail.

Chapter 3: Management of Wildlife – Conservation and Control

3.1 Introduction

Within the general (though not exclusive) context of modernist ideas, the ways in which humans have related to animals and plants (and more broadly 'nature') have been influenced in part (as highlighted in chapter 2) by the roles they are perceived to play in human affairs and the wider world, and by the labels attached to them. Animals are generally defined as either 'domestic' or 'wild', with 'feral' denoting an ambiguous status in between. Plants are conceived of along similar lines, with those cultivated for agriculture and gardens generally seen as different to 'wild' plants that occur spontaneously without cultivation (though again there is often ambiguity here). Beyond these broad classifications there are further and more specific levels of definition that are applied. For 'wild' or 'feral' organisms one of the most important definitions in terms of influencing how relations with humans are conducted is whether they are seen as a problem of some kind and thus perhaps as 'pests', or whether they are valued in some way (or indeed if attitudes towards them are more neutral).

Conceiving wildlife as either valued or a problem is reflected in two of the major approaches to and practices of human-animal (and human-plant) relations, namely nature conservation and pest control/wildlife management. Although they occupy seemingly opposite ends of the pest/valued spectrum, the control of wildlife and the conservation of wildlife are not practices that should be seen as isolated from each other but have frequently overlapped. This is in part because particular kinds of wildlife can simultaneously be seen as valued and as a problem by different people in different places– such as in urban areas - and at different times, and so the pest/valued dualism dissolves in light of these more complex geographies. Indeed, some animals are controlled in the name *of* conservation. Conservation and control practices have also overlapped in sharing a generally (though admittedly very internally diverse) ecological way of understanding and interacting with animals, plants and the world.

This chapter will review the historical (primarily 20th century) practices of conservation and control of wildlife, particularly in light of the influence of ecology and modernist thinking, and (later in the chapter) their application in urban areas.

3.2 Conservation and control – early history

The arrangement and organisation of certain practices and ideas into the recognisable modern movements/professions now called nature conservation and pest control/wildlife management occurred for the most part during the 19th and 20th centuries, and was influenced by certain ideologies and interests - in particular the involvement of science. However, efforts to in some way conserve and/or control different animals and plants seen as valued or problematic have a much longer history than this, and generally involved particular animals and plants either serving or conflicting with some human interest (see Thomas, 1984; Lovegrove, 2007) *and/or* being in or out of place (see Philo and Wilbert, 2000) or favoured/unfavoured within a particular worldview (see chapter 2).

To refer to earlier practices of protecting or retaining valued animals and plants as 'conservation' may be construed as a misapplication of the term, as the practice of valuing 'wild' animals and plants both for their own sake and as a part of wider ecological systems is seen as a relatively recent one, whereas in earlier times certain 'wild' animals and plants are seen to have been valued more as resources or for religious, superstitious or moral reasons. The Romantic movement is widely considered as the source and starting point for some of the *ideas* of valuing 'nature' "in its own right" in Western societies (Nicholson, 1987, p33), though the *practices* of conserving wildlife because of its 'own' value came later (Ponting, 1991, p164). However, certain strands of nature conservation have been conceived of and conducted as an exercise in resource management and "wise use", particularly in America (Nicholson, 1987, p34), and the ideologies of many contemporary conservationists and environmentalists have a 'quasi-religious' aspect to them (see Pepper, 1996), so aside from the general differences in purpose the 'conservation' of different periods could be said to share a number of similar ideas and practices.

For example, from ancient to Medieval and Early Modern times the maintenance of populations of certain animals and plants was pursued via the designation and governance

of areas of land as royal hunting forests, parks and game reserves, the declaring of closed seasons, the construction of fish ponds and the importation and conservation of valued plants (Nicholson, 1987, p20; Thomas, p200-202, p276). Of course the ultimate purpose in these efforts was to use these animals and plants as resources rather than 'conserve' them for their own sake or for the sake of the wider ecosystem/environment, though they did inadvertently have benefits for wildlife more generally (Evans, 1997, p15). These efforts do contrast with other historical uses of wildlife that seemingly involved no attempt to conserve the 'resource', such as the use of wild animals by the Romans to be slaughtered in their games (see Whatmore, 2002, p12-34), and the many examples throughout history of uncontrolled hunting which led to many extinctions in various parts of the world.

By comparison, people have been trying to control wildlife that they have perceived to be a threat or a problem since at least the beginnings of agriculture. In Britain large animals seen to pose a direct threat to people and/or livestock had been wiped out by Medieval times, although wolves persisted in some areas of Scotland until the 1600s (Lovegrove, 2007, p17-25). Other threats to agriculture and food stores were more persistent, such as "vermin and insect pests [that] could quickly destroy grain and farm produce, and in an age in which community life depended on the success of each harvest this could be economic disaster" (Drury, 1992, p104). Control measures of late Medieval / Early Modern times consisted of both practical and magical methods, ranging from the use of baited traps to the placing of charms in fields. There was a vague understanding of an association between disease and 'pest' creatures, but understood in the sense of 'bad air' and 'miasmas'; strewing herbs were used to keep the air sweet and repel vermin. Plants that were seen as weeds of agriculture were also subject to control efforts, and Henry II issued an ordinance against the 'Guilde Weed' (corn marigold), "perhaps the earliest recorded enactment requiring the destruction of a pernicious weed" (ibid, p103).

Lovegrove (2007, p1), writing mainly about the control of vertebrate species in Britain, and working with the availability of written records from the sixteenth century onwards, claims to identify "four distinct phases in our approaches to wildlife management". The first of these was the 250 year period dating from the first vermin control legislation in 1532 to around 1800, when vermin control was organized and financially rewarded by the parishes of England and Wales. In the context of factors such as population growth, rural poverty

and failed harvests during the 1500s, any animal perceived as a competitor for food resources was a threat that needed to be dealt with, and an increasingly wide range of animals were officially designated as vermin (ibid, p79-82). The methods used to control them involved a plethora of nets, traps and hooks as well as bird lime applied to the branches of trees, poisons put into bait, and the use of captive animals as decoys (ibid, p51-60). Once captured the animals, if not already dead, would be beaten, drowned or otherwise killed.

The second phase that Lovegrove discusses, from around 1800 up to the Second World War, was characterized by "an indiscriminate war of attrition against predatory species" carried out "with little or no regard for long term consequences" (ibid, p1) by the new sporting estates and related interests that arose in the nineteenth century, following the enclosures of the late 1700s (Evans, 1997, p30). Wildlife species that were seen to compete with (a select group of) humans for game animals were now considered vermin, and were the subject of control measures by gamekeepers. Birds of prey in particular were a focus of control efforts, the status of some species as prized and protected falconry birds in Medieval times having changed with the decline of falconry and the increase in vermin control in the 16th and 17th centuries to the situation in the 19th century where "no effort was spared" against birds of prey, and "their decline was spectacular in all respects" (ibid, p30, p16). The development of more effective firearms added another important weapon to the range of devices and methods for capturing and killing animals in this period (Lovegrove, 2007, p58-59).

The third phase Lovegrove identifies (ibid, p1), in the post-war decades of the latter twentieth century, saw an increase in public concern about wildlife, which led in part to the "labyrinth of twentieth-century legislation" (p1) that sought to offer protection to the many species that "had previously been subject to a permanent open season" (p1), and the fourth phase is in the contemporary period of the early twenty-first century, and is characterized by difficulties regarding the "growing controversy about what constitutes the legitimate control of wildlife" (p1). I will return to these more recent periods shortly, but will first briefly review the increasing influence of science and ecology in the control and conservation of wildlife from the latter 19th century onwards.

3.3 Ecology and science in the development of conservation and control

The development of science and modernist thinking (as discussed in chapter 2) led to ideas of progress in the conduct of human affairs being necessarily supported by scientific knowledge. At different times and places in the 19th and 20th centuries various practices of both wildlife control and conservation became linked to and influenced by ecological and related sciences, as a means of both attempting to pursue these practices in more 'informed' ways and to give them a progressive and modern respectability, as well as enabling the sciences themselves to become more established. This meant that the techniques, ideas and personnel involved in these fields became altered in some way. For example, Pimentel and Perkins (1980, p14) describe this process in the field of agricultural pest control in America:

> "The late nineteenth century was a period of transformation of pest control from an art known to almost everyone to a science developed and implemented by a group with special knowledge (expertise). During the twentieth century, pest control scientists developed into a recognisable community distinguished by their education, places of employment, and daily work patterns".

Perkins (1980) contends that this development was triggered by the commercialization and expansion of agriculture, which both increased 'pest' problems and necessitated more effective pest control.

Science as pursued by naturalists had been a part of nature conservation since its beginnings, though the formal linking of nature conservation with a more 'rigorous' and 'progressive' ecological scientific approach came later (as noted at the end of Chapter 2). Evans (1997, p6) observes that "only in the mid-twentieth century did scientific arguments come to the aid of nature conservation, providing for some a foundation for their personal reasons, for others a barricade behind which to screen them". Nicholson (1987, p41) sees this as being partly linked to conservationists' increasing involvement in land management, as "only with the spread of the new habit of acquiring bird sanctuaries and equivalent nature and recreational reserves did the need for professional management begin to bridge the gap between sentiment and informed judgment".

With stronger institutional and ideological links with ecological and related sciences, pest control and nature conservation became influenced - though not necessarily in the same ways - by certain ecological ideas such as the 'balance of nature' (now critiqued but still influential – see Botkin, 1990; Jelinski, 2005; Zimmerer, 2000) and of the workings of ecological systems and the place of animals and plants within these systems. These ideas thus impacted on how pest and conservation issues were framed and tackled. This does not however mean that other ideas and practices disappeared. Ways of conceiving the place of wildlife and its relationship with humans that are influenced by sentiment, preference and human interest were and are of continuing importance, and exist alongside (and in tension with) ecological ideas in the fields of pest control and nature conservation and in the wider world.

3.4 Changing ideas of what should be valued and what should be controlled

Ideas of what is considered a pest and what is valued (and what is viewed with indifference) have changed over time and space, according to the specifics of land use and other practices, which species are involved in particular situations, and the worldview and ethical/moral framework that people apply to their dealings with particular animals and plants, and the 'natural world' more generally. These ideas are of course not singular at any one time but multiple, and different people and groups contest what is to be valued and what is a pest (see for example Brownlow, 2000; Woods, 2000). The development of ecological and conservationist views of the world, and the simultaneous development and expansion of modernist industrialisation, have increasingly influenced the ways in which such ideas were formulated, though not always in ways that might be expected.

For example, some species of insects and rodents (as mentioned earlier) have long been thought of as agricultural pests, and the change from subsistence to commercial agriculture added more importance (because of the increased economic importance of farming) to damage by insects, and thus the pest status of these insects grew (Perkins, 1980). Hill *et al* (1995) point to processes of agricultural intensification as similarly requiring the exclusion of more and more species ("non-crop organisms", p230), which thus increasingly defines more of these species as pests or amplifies their existing pest status. Pimentel and Perkins

(1980) placed world food losses (including food stores) in 1980 to pests at about 45%, and put this in the context of world food shortages and an increasing human population - a situation that seemingly sets the interests of humans and certain kinds of wildlife in increasing opposition.

With the increasing influence of ecological understandings of the world in the late 19th and 20th centuries, the conception of certain wildlife as 'pests' of agriculture and other land uses became not simply one of placing them in opposition to human interests (as often appeared to be the case in earlier times). Rather, 'pest' problems were seen by some to have occurred because of an upset in the 'balance of nature', caused perhaps by certain agricultural practices themselves or the introduction of 'exotic' species (see Pimentel and Perkins 1980, Palladino 1990). This ecological imbalance was thus seen to have created the context/conditions for particular organisms to behave in a 'pest' like way.

Similarly, the development of conservation, and its increasing relationship with science, has impacted on how different species are perceived. This can be illustrated with reference to Bildstein's (2001) account of bird persecution and protection and changing attitudes to raptors in Pennsylvania in the 19th and 20th centuries. As in earlier times many species of raptor were thought of as vermin because of conflicts with game hunting and farming interests and 'ignorance' generally - such views of raptors persisted into the mid-20th century. In the late 19th and early 20th centuries bounties were often placed on many raptor species, encouraging persecution. Developing conservation interests meant however that state protection was granted for most species of raptor in 1937, though unpopularity of the law with hunters and farmers and lack of enforcement meant that both protected and unprotected raptors continued to be persecuted. Conservationists themselves, far from being concerned for all raptors, were instead actually influenced by a particular moral and utilitarian view of nature (reminiscent of ideas about the places/roles of different animals and their correct treatment prevalent in the Early Modern period - see Thomas, 1983) and saw some raptors as being 'good' (those that preyed on rodents and thus controlled other animals seen as pests) and others as being 'bad' (those that preyed on birds including 'valued' birds such as wild songbirds and domestic fowl).

During the 20th century a different conservationist ethic developed that grew to value all the raptor species. The Hawk Mountain Sanctuary was founded and the scientific and educational work undertaken there led to more ecologically informed ideas about raptors and presented them as creatures that needed help rather than persecution. All the raptor species in Pennsylvania are now officially protected, though now that their numbers have increased in recent years their status as valued or vermin birds is again being contested by those (such as hunters and indeed many birdwatchers) who feel that populations are too high and damaging to human interests and other wildlife. In the face of renewed calls for controls on some raptors the Hawk Mountain Sanctuary is using opportunities for the public to view these often hard to see birds at 'migration hawkwatches', along with a programme of education and monitoring, to try and build local and regional support for the raptors and promote ideas of valuing rather than persecuting them. The notion of 'charisma' (Lorimer, 2007) is an influence on how species are valued or seen as problems, with some species often being valued in part because of how they look and act and the kind of charisma they are seen to possess. This is the case with many raptors, and conservationists often value and promote these and other 'charismatic' species (Lorimer, 2007; Whatmore and Thorne, 2000).

Different worldviews and reactions to different animals (as well as different land uses) are thus influential on how debates are been framed, in terms of what is valued/not valued and/or what constitutes the correct order of things and the place of animals and plants within these orders. The moralistic and utilitarian views of some of the early conservationists contrast with more recent ideas – based on ecological science – about the place of animals and plants within ecological systems and the importance and value of each type of (though not necessarily each individual) animal and plant *because of* its place and role within these 'holistic' systems. As noted in chapter 2, there was a general shift in the development of nature conservation in the mid-20th century away from sentimentalism and towards more scientific ways of understanding the natural world (though 'sentiment' is still an important aspect of conservation) (Evans, 1997, p7).

Although earlier ideas of equilibrium are now critiqued within ecology (Botkin, 1990), the concept of 'the balance of nature' was and continues to be influential. This has impacted on the contexts in which animals and plants are designated as valued or pests. For example, in

the United States wolves have both been valued in themselves and as integral to the functioning of eco-systems - and have also been seen as a problem where they have conflicted with human land uses (see Hampton, 1997; Brownlow, 2000). Ideas of balance can especially be seen in the context of nature conservation and its use of wildlife management in attempting to maintain 'balance' in wildlife populations and ecosystems. In Britain 'non-native' species such as American mink are often seen as being damaging to native species and the integrity of habitats, and are often controlled by conservation organisations in attempts to restore an idea of natural 'order' (Lovegrove, 2007, p281; Sutherland, 1995, p18). Notions of what animals are valued and what animals are seen as problems are in Britain reflected to a large extent by legislation, with some wild animals – particularly birds – receiving legal protection, whereas the control of some other animals (including 'non-native' and 'native' species) is permissible under different wildlife licenses (Lovegrove, 2007, p278-282; Natural England, 2010).

3.5 Wildlife seen as valued or as a problem in urban areas

Given the focus of this thesis on urban areas, it is worth particularly considering the ways in which wildlife becomes valued or seen as a problem in urban areas. The modernist separation of 'nature' from 'urban' has to an extent made the wildlife of towns and cities seem to some people as being out of place, and the related notion that urban areas are 'for' people means that many kinds of wildlife in urban areas can conflict with people's interests in economic terms and in ways deemed detrimental to health and safety. On the other hand some kinds of wildlife can be valued, in part as an antidote to the perceived 'artificiality' of urban areas.

Rather than being seen as threats to agriculture, 'pests' in urban areas are defined partly as economic problems in terms of damage to property, mess and the cost of treatment/repair/cleaning (Bryant, 2002), with the fouling done by birds such as feral pigeons being a notable example (Thearle, 1968, p181-182). Also of importance in how urban pests are defined are health and safety issues, such as contamination, risk of disease, and aggression towards people, as well as nuisance issues like noise and general mess and damage. Contemporary information about rats as pests for example is partly concerned with them as potential vectors of a wide range of diseases and parasites - the costs of

'contamination' and infestation by them being both in terms of health and economics - and in Britain they have 'official' status as pests in that legislation places responsibility on local authorities to keep their districts "as far as is practicable, free of rats" (RDS, 2006). Many of the issues relating to health and safety, mess and damage receive more attention in urban areas due to the simple fact that there are many more people (and properties) that can be affected in some way, along with the fact that urban management regimes are (in theory at least) focused to a large extent on tidiness and cleanliness (Gilbert, 1989, p311).

Beyond these perhaps more 'immediate' factors (that are often the ones expressed by those who feel affected or have to pick up the cost) there is recognition amongst some commentators of the importance of wider socio-environmental factors in producing situations where certain species may become 'pests' (in contrast to essentialising them as pests). As has been acknowledged by urban ecologists and conservationists (Gilbert, 1989), the physical make up of urban areas along with the various practices that occur within them help to produce an environment that is attractive to certain species (the 'urban specialists'), some of which proliferate and/or act in ways that lead to them being considered pests. Access to foodstuffs for 'pest' species in urban areas for example is often seen in terms of humans' messy habits and practices (Thearle, 1968, p194).

Issues of place and where the 'urban' *is* can be important, especially in terms of urban areas expanding into other areas. For example DeStefano and Deblinger (2005) and Davis (1998) refer to how urban expansion in California is bringing residents into conflict with mountain lions, creatures that had previously been considered a pest but more recently has been championed as a wilderness icon. Human attitudes to certain species thus also play a part in defining pests, and some commentators believe that there can be differences in attitudes towards wildlife between rural and urban (or urbanized) populations (Patterson *et al*, 2003), supposedly because of the different relationships with wildlife that urban and rural residents have (or perhaps had in the past). Such attitudes are seen as impacting on how 'pests' are perceived and subsequently dealt with, and over time can affect populations and behaviour of species - Vuorisalo *et al* (2003) contend that the decline in the persecution of hooded crows in Finnish cities is the main factor behind the large increase in crow populations, due to the opportunity for them to habituate to humans and traffic and also of course successfully reproduce. The resulting increase in numbers and in aggressive behaviour

towards people thus makes the crows an 'undesirable' species. The 'pest' (or otherwise) status of animals is thus not only partly produced by human perceptions, but is also partly productive of them.

Ecological and conservationist ideas about wildlife can (as seen earlier) help serve to define certain species as pests, particularly if they are non-native 'invasive' species and/or are seen to be affecting valued, native species or habitats. This can occur in urban areas as anywhere else, although some exotic species have come to be valued by urban conservationists and others (Barker, 2000), as these species not only add to the ecological interest of urban areas but can also have value to people by adding to the 'nature' and 'greenery' of towns and cities. Wildlife ('exotic' or 'native') can more widely come to be valued by some in urban areas if it does not cause too much in the way of economic, health, and safety problems (as outlined above), and if it also is promoted as being of nature conservation importance and/or it has a certain charisma and popular appeal. House sparrows, though in the past often considered a pest of food stores, are a classic example of a species that lives in close proximity to people in urban areas in Britain and that has inspired affection from many of those people - the birds being valued for their constant 'chirpy' presence (Lovegrove, 2007, p171-179).

3.6 Changing methods and technologies of controlling wildlife

I will now move from the ideas to the practices of wildlife control - and later to those of conservation - focusing on practices in general and also particularly in an urban context. I will give a certain amount of consideration to 'general' pest control practices as these have been little regarded in the literature. Practices of wildlife management have altered during the 20th century according to the particular interactions that have occurred between humans and wildlife, the ideas (ecological or otherwise) regarding the correct place of particular wildlife species in the world, the best or most appropriate ways of dealing with them, the limits and opportunities arising from the technologies and knowledge available, and the contingencies (such as place and attitudes) regarding its implementation. Sheail (1991, p201), in a statement that could be as equally applicable for the conservation as it is for control of wildlife, sees scientific understanding and social context as equally influential:

"The choice of options in wildlife management has always been severely circumscribed by a lack of understanding of intra- and inter- species relationships and habitat requirements, and, perhaps at least as significantly, by the constraints imposed by prevailing social and cultural attitudes towards the stewardship of land and natural resources".

As attitudes and approaches to controlling wildlife have altered over time, methods for controlling vertebrate pests have also changed in part, with a move away from the earlier focus upon culling to a more 'progressive' approach of finding control practices that are ethically and environmentally acceptable. However, for invertebrate and plant control, the focus of development has been on effectiveness coupled with acceptability in a wider environmental sense, rather than in terms of welfare. These are of course the 'ideals' of 'progressive' pest control – in practice many methods that are viewed by some as ineffective, unethical and environmentally damaging continue to be employed. I will consider vertebrate and invertebrate control separately as they are in many ways distinct if related practices, and will then consider the concept of 'integrated' control, before considering control in an urban context.

3.6.1 Control of vertebrates

The control of vertebrate animals employs a wide range of methods – mechanical, chemical, biological - derived from older and more modern technologies. Over the years some methods have fallen out of use or have been forbidden because of concerns some people have about whether they are 'humane' (as concern in the 20th and 21st centuries for the welfare and rights of animals has grown). Giving ethical consideration to animals labelled as 'pests' may however be less popular than for other animals (Oogjes, 1996).

In wildlife control, considerations of the rights and welfare of animals tend to occur in two stages – firstly there is the question of the *need* to do something, and if it is decided that something does need doing then secondly there is the question of *how* to do it. In recent discussions of the ethics of dealing with and controlling animals, a distinction is generally drawn between practices that are labelled as 'barbaric', and involve cruelty to animals for no good purpose, and practices that are deemed necessary in that they serve some human need or the good of the wider world. The Utilitarian argument of 'the general good' is often

used to make such distinctions (Marks, 1996), though who exactly the 'good' is for has been subject to intense and continuing philosophical debate about who is entitled to moral consideration. Notions such as 'sentience', the ability to feel pain and pleasure, and the ability to "shape its own life and have plans" (Muschamp, 1996, p6-8) have often been used to determine which animals get moral consideration – which may partly explain why vertebrates have received more 'ethical' attention than invertebrates, being widely perceived as 'higher' animals. Some approaches (see again Muschamp, 1996 and Marks, 1996) to developing an ethics of wildlife management attempt to deal with a wider set of organisms, and here ecology has had an influence, with the Utilitarian argument being developed into one where ecosystems have 'rights' in wildlife control debates, and in some circumstances have more rights than a specific animal or species (particularly a non-native one) that is acting in a way seen as detrimental to that ecosystem. In such a case this would be seen to allow the control of that animal, providing the 'costs' (principally suffering) are outweighed by the 'benefits'.

Once a decision has been reached about the need to do something, and that control of an animal is seen as ethically justified (for whatever reason), there follows the question of how best to do it. The amount of pain a method inflicts on an animal is the guiding principle for ideas of 'humane' control, with the less pain the better. However, in practice concerns about humaneness may have to vie for attention with other concerns such as the effectiveness, cost and availability of the method and the relative urgency of the need for control.

In his account of efforts to control the rabbit population in Britain in the mid-20th century, Sheail (1991) details how the use of 'gin traps' (4 inch steel traps that were mass produced) to control them came to be viewed by many as unacceptably cruel (as Sheail comments, by the urban population in particular); "the sight and sound of the animals struggling to free one or more limbs from the jaws of the trap caused many people, particularly in towns, to support the campaign directed by the University of London Animal Welfare Society (ULAWS)" (p190). This campaign sought to outlaw the use of gin traps, though met with difficulties both from those who saw there to be no effective alternative to the traps, and from those who stressed the importance of sales of wild rabbit meat and fur. ULAWS themselves did not dispute the need for some kind of control, and even proposed cyanide

gassing as a more humane alternative to gin traps. During the Second World War the debate was effectively put on hold, and rabbit control (by a variety of means – including gin traps) was stepped up because of the increased importance of domestic food reserves. In the 1950s, myxamatosis decimated rabbit populations in 1953 and virtually eliminated trapping for a time. Despite disagreements over the comparative humaneness of control by disease or gin traps, and calls for the needs of farmers and landowners to be considered, the subsequent Pests Act of 1954 made the deliberate spreading of the disease illegal (partly for issues of humaneness), as well as banning the use of certain types of trap.

Appeals for 'humaneness' have thus effected some changes in the ways wildlife is controlled, but within the context of wider arguments. Ideas about what allegedly constitutes a humane method are not always clear, and can vary between different groups and standpoints. For example, scientific debates about the relative humaneness of types of poisons used to kill rabbits and other animals involve the assessment of physiological and behavioural responses to the poisons as a means of assessing levels of pain and suffering (Oogjes, 1996; see also Barnett and Jongman, 1996). This seems to involve a certain amount of guesswork about what an animal is actually feeling, and the assessments made can be inconclusive (a situation not helped by an apparent lack of research). In her consideration of this issue Oogjes, writing as the representative of animal welfare groups, declares - despite the lack of agreement on some poisons by the 'experts' (her use of scare quotes) – that the poisons involved are inhumane, because there is the *likelihood* that some animals at least are probably suffering in way that is unacceptable.

Beyond finding lethal methods of controlling vertebrates that cause less pain, there have been increasing attempts to deal with 'pest' wildlife populations in non-lethal ways, both for welfare reasons and as part of ecological approaches to pest control - such methods include fertility control (Short, 1996), dispersal techniques (NRC, 1970, p74-75) and other measures as a part of 'integrated' pest control strategies (discussed shortly).

3.6.2 Control of invertebrates
With the commercialisation and expansion of agriculture in the 19th century, the 'pest' status of certain animals (primarily insects), plants and other organisms increased and the need to control them assumed much greater importance. The development of entomology

as a distinct discipline was intimately tied in with agricultural commercialisation, and a large amount of entomological research focused on the control of insect pests (Perkins, 1980).

Much of the focus in the late 19th and early 20th centuries was on biological methods of control through predation, parasitism or the spread of disease. Advocates of biological control based this approach on a belief that it was the 'balance of nature', in terms of the web of interactions between organisms, that kept animal populations in check, and argued that many 'pest' problems were the result of disrupting this balance in some way, in particular through the introduction of 'exotic' insect species from other areas that became major pests of agriculture and had no natural predators to control them. The 'biological' solution was thus to import the natural enemies of 'pest' species in order to control them, one of the first successful examples of this being the use of the vedalia beetle to control the cottony cushion scale in Californian citrus groves in 1888 (Palladino, 1990).

The major alternative to biological control was chemical control, which involves the use of various chemicals as pesticides and herbicides to kill unwanted invertebrates, micro organisms and plants (primarily). Though there had been work done in this area previously, it was the years following the Second World War that saw an increased development and implementation of chemical pest control, based mainly on research that chemical companies themselves conducted (Lundholm, 1989). In some senses this development proceeded "very successfully" (ibid, p384), due in part to the ease of applying and selling chemical pesticides and their seeming effectiveness, and in the 1940s the adoption of substances such as DDT was seen to bring in a 'new age' of pest control practice (Palladino, 1990, p258).

However, within a few years many of the problems associated with chemical pest control had become evident, such as effects on human health, damage to the environment and wildlife (most famously highlighted in 1962 by Rachel Carson in her book *Silent Spring*), the resistance to chemicals that developed in pest species, and the unforeseen ecological effects of species' varying susceptibility to chemical pesticides (e.g. the elimination of one invertebrate species that had previously been controlling the population of another, thus leading to a population explosion and pest problem with the latter species - Triantafillou,

2001, p206). The dubious position of the chemical industry itself as provider of both pesticides and the "advice to use them" in some instances has also been critiqued (Huffaker and Smith, 1980, in Lundholm, 1989). After the initial high hopes for chemical control faded, there came calls for an 'integrated' approach to utilise the best aspects of biological and chemical control and leave out the worst.

3.6.3 Integrated control

The notion of 'integrated' pest control has developed into a range of approaches that have not just been applied to insect control but also many other 'pests' and pest situations. The various approaches differ greatly, though in principle integrated control is seen as a more progressive approach for the control of wildlife, being informed by ecological knowledge of pest situations in a wide context and often deploying a range of control methods (lethal and/or non-lethal) in an organized, systematic way.

A review of a contemporary attempt at 'integrated' pest management is given in Bruggers *et al* (1998), who discuss the management of bird problems in South America, where pigeons, doves and parakeets are regarded as pests (as they damage crops). Management emphasises preventative and non-lethal methods (protecting crops from bird damage rather than killing birds) which typifies contemporary (and self-consciously 'modern' and scientific) attempts to deal with 'problem' animals in a more considered, sensitive and ecological way. The authors discuss the joint integrated bird pest management strategy set up between Argentina and Uruguay as being such a wider, 'ecological' approach to bird management, initiated to counter the informal (and generally illegal) use of poisoned bait by local farmers and its impacts on non-target species. Such uncoordinated and unscientific approaches were thus used to highlight the need for an organised, institutional and regional approach to pest control that considers bird ecology and agriculture at a wider scale and looks for alternatives to the highly toxic and hazardous chemicals currently used.

The perceived need to control or influence the wider practices of people in integrated pest control is explored by Triantafillou (2001). In his account of pest control in Malaysia since 1900, he explores efforts to promote different pest control practices in a wider modernist and (initially) colonial attempt to modernise agriculture using education and economic and legal coercion to make local farmers think and act in more 'scientific' and 'modern' ways

that would help control or limit the impact of pests. Later in the 20th century, when the problems of chemical pest control had become apparent, efforts were made to promote 'Integrated Pest Management' (IPM) with the emphasis being on turning the farmer into a self-governing 'IPM expert'.

The ideal for 'progressive' approaches to pest control in recent times has been to understand the issues ecologically and find methods of control that are humane and not environmentally damaging as well as effective and inexpensive. This has often not been the case in practice, due to the perceived problems of a lack of knowledge and understanding and conflicts with other interests. Later in this thesis, I will examine how pest control methods are deployed in different ways to manage bird populations in British cities, to illustrate the problems of applying these principles in practice - I will here give a more general consideration to the control of wildlife in urban areas.

3.6.4 Control of wildlife in urban areas

The ways in which people control wildlife in urban areas are seen to be influenced not only by the physiology and habits of each species and the availability of particular methods and technologies but also by a number of other contingencies, some of which are conceived of as being peculiarly 'urban'. Commentators and practitioners cite public attitudes, legislation, the physical urban landscape, 'urban' environmental and health and safety concerns, and the expertise, knowledge and attitudes of practitioners and contractors themselves as all being important factors in how practices of wildlife management and pest control are conducted in urban areas.

Whereas much pest control in rural areas was/is carried out by farmers, landowners and gamekeepers, in urban areas it is more the remit of local authorities and private pest control companies (though that is not to say that they do not operate in rural areas). National government agencies in Britain are not generally involved in the practice of control in urban areas, although in other countries such as the U.S.A. they are involved in control actions (often relating to larger vertebrates). Local authorities in Britain tend to focus practical control on rats, mice, and certain insects, which they have a statutory duty to control and/or are a threat to public health (which is the main reason for local authority

intervention in pest issues – Habgood, 1999). They may offer advice and (less often) practical assistance on other species. Private pest control companies offer services to control a wider range of species and some control also occurs 'informally', done by members of the public on private property. The practices and expertise of these groups, particularly certain private pest controllers, has sometimes been called into question by those who claim that their work is not environmentally, ecologically or ethically informed (Bryant, 2002). As a means of proving their skills, knowledge and willingness to use sound working practices, many pest controllers in Britain are accredited by the British Pest Control Association (BPCA, 2008).

Certain methods of control have been contested as incompatible with urban environments because of particular environmental and health and safety issues as well as the attitudes of the public. For example, Olkowski *et al* (1976) discuss an insect pest management program for the street trees of Berkeley, California and critiqued the use of chemical pesticides in urban areas because of the potential hazards they pose to people, animals and the wider environment, as well as being a waste of resources. In Berkeley an alternative biological control method had been introduced, which used imported 'host-specific parasitic Hymenoptera' to control the aphids seen as pests. This ran alongside (and initially emerged from) a public education effort that informed the public and managers of the shortcomings of chemical control and the advantages of biological control. The authors describe biological control as ideally suited to urban insect population management, being in their view low risk and also cost effective. Olkowski *et al* later go on to contend that in order to be successful, urban pest control managers need to be multi-skilled scientists, practitioners and educators, thus enabling them to invoke "invoke ecologically and sociologically desirable pest control practices" (p389) as well as save money.

The control of vertebrates in urban areas has its own particular issues. For example, the use of firearms in urban areas is highly problematic - Rondeau and Conrad (2003) refer to the law that forbids firearms or bows to be discharged within Irondequoit's (U.S.A.) town boundaries, and how this, along with opposition of citizens to lethal control methods, places restrictions on the control of urban deer. Similarly, Vuorisalo *et al* (2003) acknowledge that shooting and trapping are not "ethically or socially acceptable in built up areas" (p84). Poisoning - or narcotizing and then killing – has been widely employed in

urban areas (Thearle, 1968), though the risks to people and non-target species (NRC, 1970) and other issues has meant that use of various substances has become prohibited or strictly limited.

As noted earlier, attitudes of urban residents towards wildlife and to different control measures have been conceived of as different from those of rural residents. Patterson *et al* (2003) present urban residents as having more individualised, varied and often emotion-based attitudes towards animals, as opposed to the practical and utilitarian attitudes associated with traditional rural communities who are seen to have closer relationships with livestock and wildlife. This revives the urban/rural dualism already discussed as problematic in chapter 2, but applies it to humans, rather than to animals. Urban areas are therefore seen as places where the control of some animal species is more likely to be contested - Sheail (1991) notes that support for anti-trapping legislation in the mid 20th century came particularly from urban areas - although urban residents are not always against control measures - Loker *et al* (1999) in a study of wildlife management in New York found residents' acceptance of lethal control measures to be higher than expected. How far any contrast in attitudes to wildlife can actually be attributed to urban or rural location is unclear, though it is the case that wildlife management actions in urban areas are influenced by such ideas, as well as by the high density of people and the complex patchwork of private property that wildlife managers/pest controllers have to work amongst. Later in this thesis, I will explore the differences in wildlife management that are produced between urban areas and also between species, to illustrate the complexities of these ideas and practices.

3.7 Changing approaches to nature conservation

3.7.1 Nature conservation

I will briefly review nature conservation practices here – some of which have already been discussed in this and the previous chapter – before paying more attention to urban nature conservation. As mentioned in Chapter 2, early nature conservation efforts focused upon preservation of animals, plants and habitats in designated land reserves, and also through legislation upon the use and protection of particular species. Education has also been used,

particularly in more recent times, to raise awareness amongst the public of the need to protect wildlife (e.g. Bildstein, 2001). These methods of land management, legislative protection (and lobbying) and public education persist today in conservation groups like the RSPB (see Samstag, 1998; Evans, 1997; Marren, 2002; Nicholson, 1987).

However, other methods and technologies of wildlife conservation have developed in the later 20th and early 21st centuries, particularly in the form of practices that actively produce and/or recreate different kinds of nature. These have included breeding and reintroduction programmes, such as the reintroduction of sea eagles in Scotland and red kites in England and Scotland (see Marren, 2002, p277-282). Other forms of habitat restoration have developed so far as to constitute a specific discipline of 'restoration ecology' and various practices of 'ecological restoration' (notably in North America) drawing particularly upon scientific understandings of ecosystem development and community involvement. However, these can be highly controversial and also begin to overlap with control methods (see previous section), not least where restoration involves removal of non-native species and where opponents of restoration undertake culling (with or without permission) of reintroduced species (Lulka, 2004; Robbins, 2006). In some cases, successful conservation methods, such as national park designations, may cause animal populations to increase and thus for managers to initiate control (culling) methods as a consequence.

Nature conservation has been (and often still is) seen as a predominantly rural affair, and it is in rural and/or 'wilderness' areas where much of the attention and resources of nature conservation have been focused. There are however other practices of nature conservation and ecology that have developed in urban areas, and it is these that I will now consider.

3.7.2 Urban nature conservation and ecology

In the development of urban nature conservation and ecology, the commonly perceived separation of 'urban' and 'nature' within the context of the modernist worldview (see chapter 2) has meant that these practices have often struggled to gain support and be taken seriously by the conservation mainstream. This perceived separation (and this struggle) also goes some way to explaining why there has been (and is) a perceived need to continually reiterate and promote the presence of and importance of urban natures and wildlife. Harrison and Davies (2002, p96) identify this need within contemporary urban nature

conservation, where "the legitimacy of conservation claims, well established in rural areas, has to be demonstrated anew". This legacy of modernism, and these struggles for support, have made the development of urban nature conservation and urban ecology difficult, but have also helped define their existence as distinct movements.

It should be noted here that the 'urban ecology' being referred to is that which studies the animals, plants and wider ecological associations of urban areas and considers urban areas in holistic terms as ecosystems that include these elements. It does not refer to the earlier form of urban ecology as 'human ecology' that emerged from the Chicago School of sociology, which considered people's relations to urban areas and how the form of these areas was influenced by the activities of people (McDonald and Patterson, 2007, p172-173, see also Hall, 1996, p366-379). Although the Chicago School used, as Wolch (2002, p726) puts it, "an overtly ecological lexicon", it ignored wildlife and other aspects of nature within urban areas.

In the literature, the beginning of urban nature conservation and urban ecology as identifiable and organised movements is placed in the 1960s and 1970s (Vincent and Marshall, 1991; Goode, 1989). However, some of the themes and interests of urban nature conservation and ecology have a longer history. For example, the idea of nature in the form of greenery, greenspace and open, 'naturalistic' areas as being important for the good of urban inhabitants has a long pedigree – Botkin and Beveridge (1997) discuss the importance that vegetation in various forms has had in city planning for over 2000 years, and the efforts of the urban park movement in the 19th century to counter the social problems of industrialization, paying particular attention to Frederick Law Olmsted (the designer of Central Park in New York) who thought that vegetation in cities "plays social, medical and psychological roles" (p4).

Nor is the recognition that urban areas have their own particular wildlife interest new. In 1912 J.C. Shenstone published a study of the flora of building sites in London (cited in Adams, 2005), and W.H. Hudson, in his book *Birds in Town and Village* of 1919, wrote of the birdlife of London and some of its interactions with people and urban life. Some years later, R.S.R. Fitter in his book *London's Natural History* (1945) produced a much wider consideration of the wildlife of an urban area, and sought to understand how urban

processes, people and wildlife had interacted in (what would now be called) an ecological way. Matless (1998) describes Fitter's work as a "revisioning of city nature" (p230-233), linking it to other 'new naturalist' works such as Max Nicholson's *Birds and Men* (1951) through the shared notion that human history (and its associated urbanisation) does not necessarily bring about a continual destruction of wildlife and the natural world, rather it is an ebb and flow between humans and the rest of nature that can enrich some aspects of nature as well as reduce and damage it.

Despite this earlier work on wildlife in cities being seen as a part of the history of urban ecology (Wilby and Perry, 2006) the term 'urban ecology' was not in common usage until more recent times. Gilbert, writing in 1989 (p ix–xi), noted that the study of urban ecology had "until recently" received much more attention from amateurs than from professional ecologists, who he contends were put off by the many anthropogenic factors at work and the unfamiliar species and species mixtures. Some ecologists had started to develop an interest in urban areas in the 1960s, as a part of wider interests in the ecology of industrial and other landscapes that were used intensively by humans. In Britain, such interests arose partly from a need for scientific understandings to inform the reclamation of derelict industrial land (Sheail, 1987, p213-217), and can be seen partly in the context of the 'environmental revolution' (see Nicholson, 1970, 1987) of the 1960s and 1970s that saw an increase in wider public concern for environmental issues.

In Germany however serious urban ecological studies began to develop earlier and are now considered to be among the most advanced in the world. Lachmund (2003) recounts some of the events that influenced this development, with the initial impetus in the post-war era being the preponderance of rubble strewn bomb sites in German towns and cities, which were seen by many ecologists as an opportunity - an unintentional "*tremendous natural experiment*" as the botanist H. Pfeiffer described it (ibid, p239, italics in original) - to study plants and animals in a unique environment and observe successional processes from an early stage. Later much of this rubble was cleared in the process of reconstruction, though some remained - primarily in Berlin - and it was in West Berlin where urban ecology came to be studied most intensely, due in part to its political and physical isolation which both slowed the urban reconstruction that had cleared away study sites elsewhere and also deprived ecologists of access to much of the surrounding countryside, thus serving to focus

their attention on urban areas. Lachmund sees the postwar development of 'urban ecology' (not referred to as that until later) and its representations of urban nature as instrumental in the later calls for urban nature conservation, in that scientific understandings of new or unfamiliar 'natures' within cities and an acknowledgement of their importance led ecologists and others to see a need to conserve them.

The recognition of the value of urban sites by ecologists is thus considered to be one important factor in the emergence and development of urban nature conservation. Other factors included the aforementioned interest in land reclamation (which further linked the development of urban nature conservation and urban ecology). The decline in industry had left large areas of derelict land and wasteground in and around urban areas and "with the passing of the industrial age, sterile eyesores became familiar" (Evans 1997, p158-161). Though some perceived these sites to be beyond repair, efforts were made to do something about them, and to bring wildlife and nature back to this poisoned and degraded land through landscape planning and ecological parks. Evans sees these types of project as being in many ways "the start of the urban nature conservation movement" which "encompasses both nature conservation and recreation and yet transcends both" (p159). Goode (1989) discusses how this linking of ecology and planning became an accepted aspect of urban planning within (some) local authorities. Vincent and Marshall (1991) contend that ecological approaches to the reclamation of blighted land were also often the most cost effective, which of course added to their appeal for local authorities.

The engagement with these derelict and 'waste' sites was not however all in terms of reclamation and improvement. Ideas of wildlife 'returning' on its own to such sites were also important, and they were not all seen as 'scars' that needed removing. Some sites, as well as being of interest to ecologists who recognized their worth (as noted earlier), became valued 'nature' and access areas in their own right - Evans (1997) cites Cutacre Clough slag heap as an example of how dereliction could become valued when animals and plants moved in. Baines (2001) contends that the first 'official' recognition of the value of urban areas for nature and wildlife was when the Nature Conservancy Council commissioned T.G. 'Bunny' Teagle to survey the wildlife habitats of the Black Country. This survey, published as *The Endless Village* (1978), sparked further efforts in the urban wildlife movement such as the formation of the Birmingham and Black Country Wildlife Trust (the

45

first urban wildlife trust) in 1979, which brought "naturalists, campaigners and educationalists together, all determined to secure protection for the region's wild green places" (Baines, 2001, no page number).

It is worth briefly summarising some of the key themes of urban nature conservation and urban ecology that are seen as distinct – some of which will be picked up on later in this thesis.

First, there is the idea that, as well as being important 'refuges' for wildlife (that has been squeezed out of the countryside – English Nature, 2006), urban habitats and wildlife are in some ways unique – and that they therefore cannot be conceptualised in the same way as the accepted, 'traditional' semi-natural habitat types of 'rural' conservation in Britain, but must be conceptualised and approached differently. This is partly because urban habitats are often relatively new, and/or are unlike anything previously focused on by conservation, due to post-industrial contamination, artificial substrates, other intentional or unintentional ecological features and novel assemblages of 'native' and 'exotic' species, and impacts from and on people. Goode (1989) notes that standard criteria for assessing the ecological value of sites - such as 'naturalness, diversity, rarity and size' etc - focus on 'intrinsic' value but ignore things such as 'social' factors, local context, residents' feelings for sites, and usefulness for education, and thus need to be adapted in urban contexts to take account of the particular qualities of urban sites.

This distinctiveness means that urban wildlife and habitats are seen by some to need distinctive management in ways that differ from that applied to rural sites. One recent idea seeks to account for the pressures of and dynamism of development and redevelopment within cities – instead of trying to preserve particular sites forever (which can be difficult in urban areas), the aim is to have a particular *total area* of wildlife habitat at any one time in urban areas, even though the particular sites making up this total may themselves change (SWT, 2004). .

Second, there is the notion of urban nature conservation being distinct because of the particular relations between wildlife/nature and local people it involves (see Baines, 1986). This is in terms of both the importance placed on local people's involvement in urban

nature conservation (being the means by which many urban nature conservation concerns arise and are put into practice) and – related to this – the importance placed on urban nature, wildlife and 'greenspace' *for* people. Conservation groups, Government and others have repeatedly highlighted and promoted this perceived importance of urban nature or urban greenspace for the wellbeing (physical, mental, spiritual) of people, and that having access to and contact with nature and wildlife is of social and educational value (particularly for children) (Fuller, *et al*, 2007). Discussions of nature and wildlife within urban areas are now often linked in with the discourse of sustainability, and the provision and promotion of urban 'greenspace' is seen as delivering multiple sustainability benefits in terms of nature conservation, amenity use, the aesthetic improvement of an area, the attractiveness of an area to investors, and the mental health benefits of contact with nature (CABE, 2004; UWN, 2005).

3.8 Summary of chapter

Marren (2002, p199) states that urban nature conservation "is not so much about saving natural habitats and species (though it does involve that too) as about living with wildlife." This chapter has therefore outlined the diverse ways in which living with wildlife, especially in urban areas and especially since the 19th century, has involved changing ideas and practices for both wildlife conservation and pest control. These contrasting practices do however overlap in terms of their use of ecological science, their perceptions of what constitute humane and effective practices, their changing responses to environmental, economic and social contingencies and their contested character across time and space. Later chapters in this thesis will examine how these ideas and practices operate in the specific context of human-bird relations in cities.

The next chapter reviews the theoretical ideas that will underpin this examination, particularly focusing on recent work in the social sciences about how to analyse and promote better ways of 'living with wildlife'.

Chapter 4: Re-theorising Animals and Nature – A Review of Relational Geographies

4.1 Introduction

The previous two chapters reviewed the development of science and the associated modernist, dualist worldview that has broadly become dominant in Western societies, the ideas and practices of conserving and controlling animals that have emerged within the general context of this modernist worldview and reactions to it, and the increasing importance of science to these ideas and practices. In this chapter the focus will shift onto how a number of geographers and other social theorists have attempted to engage with, conceptualise and understand nature and animals (generally, and in urban areas specifically) in better ways, and especially in more *relational* ways that seek to reject modernism's dualist separation of nature and society, and its tendency to essentialise and objectify animals and 'place' them into certain spaces and categories. Those working from a broadly relational perspective often see modernist, dualist understandings of nature and animals as the root cause of poor and highly unequal human-animal relations, and hope that reconceptualising these issues will help lead to more equitable relations.

In reviewing this diverse literature, consideration will move from work that has examined the ways in which people perceive and 'place' animals, to work that has highlighted animals as co-producers of events, places, knowledges etc and has sought to engage more with the animals 'themselves' and ideas of animal agency and subjectivity, and work that seeks to bring animals (and other non-humans) in to a wider conception of politics and social relations. This development in how animals are considered involves an increasing engagement with ideas of relationality, being in part a theoretical approach that does not give humans a privileged and automatic position of power and importance in accounting for the constitution and dynamics of human-animal relations. First, I will briefly review ideas and re-conceptions of nature, and of nature and urban areas, both as an introduction to some relevant theory – as ideas of relationality and the co-construction of actors/events/places/knowledge do not just inform work regarding animals but are part of wider debates about nature and society – and also because animals are often subsumed

under and essentialised as part of 'nature'. I will then move on to consider work relating specifically to animals in more detail.

4.2 Nature

In order to better understand alternative approaches to nature and their rejection of modernist dualisms, it is useful to start with a critique of modernism itself. An influential (if for some iconoclastic and/or controversial) one is that offered by Bruno Latour in *We Have Never Been Modern* (1993). Here Latour argues that since the Enlightenment, the modern 'project' has sought to separate the world into two distinct 'poles', that of 'nature' (objects, the knowledge of 'things in themselves', nonhumans) and that of 'society' (subjects, humans, culture), and it has done this through the process of 'purification' (creating the first 'Great Divide'). Simultaneous to this there is the process of 'mediation' between these opposite, pure poles; this act of mediation allows for the 'mixing' of nature and society to create 'hybrids' and form connecting 'networks' between the natural and the social. These two contradictory processes (the division between them being the second 'Great Divide') have to be considered separately if a 'modern' view is to be maintained, and yet both processes need the other – without the other, purification would be pointless and mediation would be limited or impossible. This then is Latour's view of the 'Modern Constitution', with a separation between nature and society and a further separation (but secret mutual need) between purification and mediation. Seen in this light modernism is paradoxical, requiring nature and society to be separate but also mixed for the world to work. Science plays a key role here, being held up as the only way to 'truly' know the supposedly separate realm of nature, and both engages with yet distances society from nature. Latour contends then that much of what is involved in being 'modern' (the divides and their paradoxes) is a matter of faith, and instead proposes a 'Nonmodern Constitution' that seeks to treat humans and nonhumans more symmetrically and democratically (and which rejects nature/society dualisms).

The insights of a number of theorists – including Latour - who have worked within different areas of 'science studies' (e.g. Latour, 1987; Haraway, 1991; Pickering, 1992) have demonstrated (in differing and cross-cutting ways) how science produces knowledge about 'nature' in a situated, partial, subjective and transformative manner – notions that

dispute the modernist ideal of science as being a completely objective endeavour that is able to directly record a nature that is 'out there' and separate to humans. 'Nature' therefore, and ideas of what is 'natural', are constructed (or more correctly *co-produced* by humans and non-humans) rather than found. This is not to deny the material existence of the things that are gathered together under the term 'nature', rather it is that science (along with every other knowledge practice) is of the world and not detached from it, and the knowledge it produces cannot accurately depict some separate nature as it 'really' is, but is the product of creative and transformative processes. The people, things and processes of science do not exist in some neutral, objective and detached space but are situated within the wider world – thus what science looks at, how it looks at it and what conclusions are drawn can be as much a product of funding, personalities, fashion, institutions and so on as they are the product of data gathering and analysis. Such factors that influence the practice and products of science have their own particular sociologies and geographies (Gieryn, 1995; Powell, 2007).

As part of this critique of modernism, it can be argued that the things collected together within 'nature' are not transferred into knowledges about them by science in a one-to-one mapping or copy, but in gathering and analysing data the processes of science itself involve a series of transformations or translations. For example, Latour (1999a) illustrates this in his description of a scientific expedition to the Amazon to investigate the possible expansion/retreat of forest into/from the savannah. Here the scientists do not discover a set of pre-existing 'facts' about the forest and savannah, rather this knowledge is produced through a series of translations - each translation, such as the collection of soil samples into a pedocomparator, and the classification of these into numbers using the Munsell code, carries something of what it translated and also loses something as it becomes more universal and standardized. To go backwards along this chain of translations would reduce the universality and amplify the particularity of the thing in question. Each translation relies on reference ('circulating reference') to other 'actors', such as maps, colour charts, fellow scientists, field drawings etc; all of these are Latourian 'mediators' that create as well as partially transmit. The world (or 'nature') can never be completely known or reflected through this process, but it can be connected to – 'nature' for Latour is not a pure and separate realm but is simultaneously real, social and narrated, constructed by relational interactions between things, people, practices and discourses.

Influenced in part by such insights of science studies, and also by other areas of social theory, essentialist views of what 'nature' is (i.e. stable, fixed, knowable, separate from society) have been contested by geographers who posit non-essentialist views of 'nature' as socially and discursively constructed from various political and cultural standpoints (Hubbard *et al*, 2002, p18-20). According to Castree (2001) alternative approaches to nature in geography are concerned with the production of knowledges of nature, with the entanglement of nature and society ('socionatures'), and with the 'remaking' of nature by society.

Interest in knowledges has ranged from Marxist approaches where geographical knowledges of nature are seen to reflect the wider class interests of powerful elites and are presented as "ideologies of nature" (p11 – see Smith, 1984; Harvey, 1974), to Feminist and postcolonial approaches interested in how such knowledges also reflect gender, race, and colonial interests and issues and present them as "discourses of nature". This latter group take a generally poststructuralist approach and share with those in science studies the view that it is impossible to objectively know nature first hand, as all knowledges of nature are "discursively mediated" (Castree, 2001, p12), and that we are unable to step outside of these discourses to see what's 'really' there. Interest in 'socionatures' – a perspective which views nature and society as irreducibly entangled and contingent on each other – has included work that redefines 'natural' hazards as being relative to different social groups (Blaikie, *et al*, 1994), and work in the field of political ecology (see Walker, 2005, 2006, 2007, for reviews) that focuses primarily on society-nature relationships and environmental justice in terms of the poor in developing countries.

Interest in how nature is 'remade' by society has included Marxist and other readings of how societies produce new natures as a part of capitalist processes (see Castree and Braun, 1998; Katz, 1998), but has also included – in a different and wider sense – work that takes a more *relational* perspective, and which has specifically emerged from on going debates between geographers and those involved in science studies. This perspective – 'actor-network theory', and later work that has developed from it - takes the view that it is not so much that nature is produced by society (or vice versa), but that different things, situations, space and time are produced by different relational associations of myriad nonhumans and humans (different actor-networks) - which an actor-network approach seeks to consider

symmetrically - and through acts of translation (see above) within actor-networks (see Latour, 2007, 1999a, 1999b; Law, 2004a; Hubbard *et al*, 2002, p193). Particular entities are understood as not possessing essential qualities or capabilities; rather, these are understood as effects of enrolment in, and the relational position of entities within, particular actor-networks (Murdoch, 1997). Agency and subjectivity are not seen as fixed properties of particular entities but circulating capacities (Latour, 1999a, 1999b) that are constantly in the making (just as places, processes and entities themselves, though varyingly stable through the consolidation of their networks, are also constantly in the making).

Actor-network theory initially emerged from the work of Bruno Latour along with Michel Callon and John Law, though subsequently developed as a perspective through dialogue between science studies, geography and other fields. Geographers have been interested in how actor-network and relational approaches can be used to analyse the production of spaces (Murdoch, 1998), different natures (Eden *et al*, 2000), and human-nonhuman relations, with the symmetrical approach to humans and nonhumans in particular being engaged with by geographers who have explored the importance of things (Latour, 2000), their indeterminacies and their agencies within scientific and political controversies (Hinchliffe, 2001; Whatmore, 2002), and who wish to reject modernist, dualist conceptions of nature and society. Such work has also highlighted some of the perceived limitations of actor-network theory – its potential for obscuring difference (through its symmetry), and the lack of scope it seemingly allows for making judgements (see Eden *et al*, 2000, and Castree and MacMillan, 2001) – and has led theorists to subsequently develop relational approaches in differing ways.

4.3 Nature and the urban

Amongst alternative approaches to nature in geography and the social sciences an important and increasing focus for work is the consideration and re-conceptualisation of nature within urban areas. As we have already seen (see chapters 2 and 3), dualist ideas of nature and society as separate, distinct and opposite realms have influenced widely held understandings of society 'belonging' to urban areas and nature 'belonging' to rural or non-urban areas. Such spatial conceptions of the nature/society dualism have influenced a large amount of ideology and practice within such fields as nature conservation and

planning. Murdoch and Lowe (2003) recount how the preservationist drive to protect rural nature led to the physical and legal demarcation of boundaries between urban (society) and rural (nature) with the use of green belts. Commentators such as Matless (1998) have noted the irony of how anti-urban sentiments (within preservationism and more widely) had led to the flight from inner-cities and increased housing development in the very rural areas that were valued. Cronon (1995) has argued that the emphasis by nature conservation of valuing 'pristine' nature that is located in 'wilderness' areas far removed from centres of human population such as cities has reinforced the view that nature and things that are 'natural' are ultimately separate and distant from people, and that things that are close to people and the places they live are (or have become) in some way unnatural.

The consequences of this dualist thinking are that there can ultimately be no place for people within nature – and conversely no place for 'natural' nature within society – meaning that the nature closer to home goes unvalued and unnoticed, often with negative consequences. Although Cronon's essay relates to an American context, and in Britain the lack of large wilderness areas means that the idea of 'pristine' nature has less importance, there has still been a comparable sense of anti-urbanism and the valuing of distant nature within much British nature conservation discourse, despite the fact that the 'wild' or rural nature valued by conservationists is arguably as altered by human intervention as nature elsewhere (Adams, 1997).

Such dualist thinking has not only been prevalent in such fields as conservation and planning. Commentators such as Braun (2005) have observed that up until recently within urban geography there has been a failure to acknowledge and engage with the presence and importance of 'nature' and the non-human things that make up cities, which has served to "reinforce the view that cities are purely *social* spaces" (p635 – original emphasis). Where the presence of nature in urban areas has been acknowledged in the past it has usually only been as inert resources – indeed, the process of urbanisation has been seen historically as "a progressive distancing from nature through the production of second nature", with cities as the key (or rather the most obvious) sites of human "control over ecological processes" (Kiel and Graham, 1998, p100). Thus 'nature' in urban areas has often been ignored, or seen just as raw material for humans to transform.

Braun notes however that such views of nature and urban areas in urban geography (and other fields) are changing, and that there is a growing body of scholarship that has "begun to challenge the view that cities are the antithesis to nature" (p635). Such work has involved different ways of reconceptualising the relationships between nature and urban areas that have varyingly sought to emphasise the importance of nature and non-humans in the very composition of urban areas and their assorted processes (Wolch, 2007; Gandy, 2005), to also emphasise the complex connections that such processes involve between urban areas and other places both near and far, urban and non-urban (Wilson, 1991; Kaika, 2005); to consider the politics and political ecology of urban environments (Keil, 2003; Keil and Graham, 1998), and to also acknowledge the presence of and engage with the various non-humans that live alongside humans in urban areas (Davis, 1998; Wolch, 1998, 2002; Thomson, 2007; Hovorka, 2008) and indeed try to conceptualise a politics that is inclusive of them (Hinchliffe and Whatmore, 2006; Whatmore and Hinchliffe, 2003; Hinchliffe *et al*, 2005; Michelfelder, 2003).

Research that has focussed on the flows of "energy and matter, as well as capital, commodities, people and ideas" that move within and beyond urban areas and connect them to "distant sites and distant ecologies" has not only revealed the presence and importance of different natures to urban areas but has also challenged ideas of cities as discrete, bounded places that are distinct and separate from rural areas (Braun, 2005, p637). Such insights can problematise 'cities' and the 'urban' as objects and scales of analysis, particularly in light of the topological space-times of their connections and flows (see Thrift and Amin, 2002), and that the 'nature' of urban natures is not just that which is within or which is brought into towns and cities, but is also that in places elsewhere affected by 'metropolitan' ideas and practices (Wilson, 1991).

Despite this increasing engagement with 'nature' as a part of urbanisation and in understandings of cities, much of the work produced has been critiqued for treating the non-humans of urban areas as a static, homogeneous group of things that are mobilised by people (Braun, 2005, p645-647). Animals are one such group of these 'missing masses', and Wolch (1998, 2002) has asserted the importance of taking seriously and engaging with the animals of urban areas, linking these concerns in with wider efforts to reappraise geographical engagements with animals (which themselves are partly linked to relational

approaches and their symmetrical focus on humans and nonhumans, as seen earlier). It is to this body of work concerning animals (in urban areas and generally) within geography and the social sciences, and its attempts to engage with and conceptualise animals in better ways, that attention will now turn.

4.4 Animals and geography

As part of ongoing challenges to modernism through re-conceptualisations of nature - and urban natures – established ideas of animals and of human-animal relations have been increasingly critiqued by geographers and other social theorists. The remainder of this chapter will (primarily) focus on recent work within geography and related disciplines that has sought to take animals more seriously in social theory, and has sought to do so in progressively better and fuller ways – involving to a large extent an increased engagement with relational geographies and approaches. Attention will be given in turn to work that has considered the places and placings of animals, that has conceptualised animals as agents and subjects, and that which seeks better relations with animals. Firstly, a brief consideration will be given to the development of geographical concern with animals, and to the field of 'animal geographies' which has been at the forefront of such work. This field has struggled in some regards to deliver on its aspirations, and which has subsequently increasingly engaged with other areas of research and theory.

Philo and Wolch (1998) discuss the emergence of a 'new' animal geography in the context of two main areas of earlier work that were labelled 'animal geography' - these were zoogeography and cultural animal geography. Zoogeography emerged in the early 20th century and was concerned with the distributions of different animal species; being closely linked to zoology and biology, it was seen by some as a part of the wider field of animal ecology and (both then and now) much closer to the 'conventional' natural sciences than to geography. Philo and Wolch claim that the "natural-scientific bent" of zoogeography meant that it said little about animal-society interactions, bar a few examples where human influence on animals was/is generally treated as an "unwanted and alien intrusion" and remained "wholly untheorized", and the animals were treated as "purely natural objects....devoid of any "inner life", sociability and experience" (p106).

In contrast to zoogeography, cultural animal geography emerged in the 1960s and was much more closely linked to the concerns of human geography. Bennett (1960, cited in Philo and Wolch, 1998) proposed the field as one that could investigate human-animal interactions, how humans/human practices and animal behaviours have influenced each other, and also how animals have been an aspect of the natural environment which "determine" the particular human geography of a region. Philo and Wolch see this as sharing concerns with the Berkeley School of cultural geography, which itself inspired a number of later studies of human-animal relations in such areas as domestication and ceremonial uses of animals. The authors highlight as important in this cultural animal geography approach the recognition of non-economic explanations of animal-society relations and an engagement with an "enlarged cultural realm" (p107) in which animals are more than just resources or units of production.

Despite these early starts, the fortunes of both zoogeography and cultural animal geography waned to the point where in the 1970s 'animal geography' "had vanished from the geographical lexicon" (Wolch, 2002, p725). However, a 'new' animal geography has emerged in recent years, influenced in part by the earlier critical approach of cultural animal geography, but also heavily influenced by conceptual developments in fields such as social theory, cultural studies, feminism and anthropology (Philo and Wolch, 1998). Wolch (2002) sees the impetus for this 'resurrection' of a cultural animal geography as arising from a potent mix of factors, namely: the wider social context in which powerful environmental and animal rights movements, that have often questioned the human dominance and animals and environments, have achieved positions of prevalence; the increased interest that social theorists began to take in animals; and the insights and developments of scientific research that increasingly revealed the complexity and sophistication of animals *and* also increasingly involved animals in genetic engineering, cloning and xenotransplantation - practices which troubled accepted boundaries between animals, humans and machines. Thus an increasing interest in, and profusion of, complex and contested human-animal relations created a perceived need for a new animal geography, both as an academic endeavour and as a political project that seeks to bring animals 'back in' to social theory, to critique these changing relations – which Emel and Wolch (1998, p22) see as often being defined by Modernism's detached, objectifying and even insensitive attitude towards animals – and to hopefully help engender better ones.

This 'new' animal geography, as defined by some of its key advocates, has sought to assert the importance of exploring space and place in understanding different human-animal relations (Philo and Wilbert, 2000), and by examining how animals have been defined, used, labelled, classed and othered by different people in different times and spaces/places "it thereby endeavours to discern the many ways in which animals are 'placed' by human societies in their local material spaces... as well as in a host of imaginary, literary, psychological and even virtual spaces" (p5). Thus attention is given to both the physical presence of animals and also the many representations of them, and how these are implicated in the spatial relations between human and animals that can be conceptualised as inclusions and exclusions (Philo and Wolch, 1998, p110). It has also sought to move on from earlier considerations of animals as only either resources or representations - animals as "merely passive surfaces onto which human groups inscribe imaginings and orderings of all kinds" – to consider how animals themselves figure in practices and the making of representations, which in turn raises questions about non-human agency, animal agency, and "the extent to which we can say that animals destabilise, transgress or even resist our human orderings, even spatial ones" (Philo and Wilbert, 2000, p5). There is then a stated intent to take animals *themselves* seriously, as co-producers of events, places and knowledge, as agents and as subjects.

In turning now to consider in more detail these different aspects of studying human-animal relations it should be remembered that this is not just an 'animal geographies' issue, and work from other areas of geography and the social sciences will be engaged with. Indeed, as consideration moves from investigations into the 'places' and 'placings' of animals towards engagements with animals 'themselves' as agents and subjects, and towards conceptualising better ways of living together, the ability of (a narrowly defined) field of animal geography to tackle these issues becomes limited, and other theoretical tools are needed to develop things further.

4.5 The places and placings of animals

An increased amount of critical attention has been given in recent years to the ways in which people attempt to 'place' animals both physically and conceptually, to how this can involve including or excluding particular animals in or from particular material and/or

imaginary spaces/places, processes of representation, and to how these places and placings are a constituent of human-animal relations and wider processes and practices. Such work has not just been the preserve of animal geographers; for example, Baker (2001) has studied ways in which animals are represented by people in popular culture and 'folk taxonomy', how these representations, images and symbols are used, and how these representations affect the ways 'real' animals are perceived and treated.

Human relations with 'real' animals have also been explored, in, for example, a recent collection of anthropological studies of people-wildlife conflicts (Knight (ed), 2000). Marvin (2000, p189-211) explores the contradictory and contested ways in which foxes have been represented as both vermin and as a beast worthy of being hunted by an elite in order to justify killing them in different ways, at different times, by different people, and also discusses the relationship between what different people want from the hunt and what the fox does during a hunt in determining how a hunt in practice is played out – fox hunting can thus be seen by different people as ritual or pest control. Ideas of 'legitimate' and 'illegitimate' actions by foxes and people to justify hunting/control are loosely spatially contextualised by Marvin within 'English rural space' to show how landscapes can effect the way a hunt plays out.

In the same volume, Milton (2000, p229-246) considers the campaign by British (and European) conservationists to eliminate the ruddy duck because of the threat it allegedly poses to the white-headed duck in Europe. She suggests that conservationists' efforts reflect their wider understandings of nature as being both a collection of separate things, and also being something that is separate from humans – thus nature conservation is an exercise in boundary maintenance. More specifically, the ruddy duck campaign involves the maintenance of boundaries between different species, between 'alien' and 'native' species, and between the 'human' and the 'natural' (which paradoxically involves a great deal of human intervention in 'nature'). The focus of Milton's analysis, being anthropological rather than geographical, is ultimately the conservationists themselves, though the concepts of boundaries, transgressions and things being out of place are ones which appear in much of the geographical literature concerned with 'places' and 'placings'.

Work on the spatialities of human-animal relations focuses not only on how animals are physically and conceptually 'placed' by people, but also on the relationship between animals and the making of place, and on a more spatial understanding of how different people are defined in relation to animals.

For example, Brownlow (2000) investigates the controversies surrounding the proposed reintroduction of wolves into the Adirondack Mountains in upstate New York - which, in common with many other reintroductions of wolves, has its supporters and opponents – in terms of its social and cultural 'appropriateness'. Despite the recent general 'restoration' of wolves from feared and loathed to admired in the American imagination, physical restorations in particular places can be more complicated and contentious. In the case of the Adirondacks, Brownlow argues that disagreements about reintroducing wolves are not simply about perceived present day conflicts between wolves and people, but that they need to be understood in the context of historical contestations of the Adirondacks as a place, and what is deemed to belong or not in such places. Wolves were seen as incompatible with early settlers' idea of a pastoral landscape, and later with wealthy urban dwellers' idea of the mountains as a leisure landscape; more recently conservationists have deemed them compatible with their idea of a wild, 'natural' landscape. The legal protection afforded the Adirondacks, brought about by the preservationist impulses in the 19th century, meant that the local residents have been left with a limited range of poorly paid seasonal work. The reintroduction of wolves is thus seen by them as yet another attempt by urban elites and an "urban based conservation ideology" (p154) to dictate what the landscape is and who it should be for, despite the fact that such urban dwellers don't have to live with the consequences. In Brownlow's account of this issue inclusions and exclusions are not fixed but variable over time and space, and the power to define a place - and thus what belongs in it - appears in this instance at least to reside mainly with a particular human group.

This notion of places being defined by powerful groups, and how that affects other humans and animals, has also been addressed more recently by McGregor (2005) in her investigation of conflicts between crocodiles, fishermen and conservation interests in Lake Kariba, Zimbabwe. Conservationists and local fishermen have represented the crocodiles in conflicting ways: the conservationists see them as an ecological and economic asset and wish to protect them, the fishermen see them as a threat and a pest and would like to be rid

of them. Such conflicting representations arise in part from different kinds of relationships with the crocodiles, with the fishermen's views influenced by direct concerns such as competition over resources and the potential danger to humans from crocodiles, as well as the crocodiles' associations with magical power and witchcraft in the beliefs of the fishermen, whereas conservation views them through the lens of population data and concerns over species extinctions.

However, McGregor's perhaps more pressing concern here is to demonstrate how the conceptual and physical making of place (Lake Kariba was constructed by people) and its subsequent administration by colonial and later postcolonial powers served to marginalise local people, displace them from their former lands and push them into conflict with crocodiles and conservation concerns - much of the lake is designated for conservation (including that of crocodiles) or other interests of the powerful elites. McGregor argues that in conflicts with wildlife it is not always the animals that are the most marginalised or poorly served group - here the feeling is that the interests of crocodiles have been put ahead of the local fishermen, as crocodile attacks on local fishermen have not created the sort of public outcry that a large animal attack on someone in the developed 'North' would, due to the marginal status of the fishermen and their poor relations with local authorities. She suggests situations like this present challenges to notions of bringing animals 'back in' within theory and politics, and stresses the importance of trying to address the needs of animals as well as marginalised human groups.

Griffiths, Poulter and Sibley (2000), in their study of feral cats in Hull, also consider how animals can be thought of as in or out of place depending how a place is defined or is 'ordered'. The idea that feral cats are, as the Cats Protection League puts it, the 'inhabitants of dereliction' and in need of 'saving' is questioned by the authors, who see this view as predicated on the idea that cats are necessarily domestic animals who only belong in a (loosely defined) domestic setting: if cats act in ways contrary to this they are thus seen as transgressive and out of place. The authors highlight through their studies in Hull that relations between humans and feral cats, and how people perceive feral cats, can vary greatly, and the relationship between cats and people is ambiguous due to cats' domestic yet semi-wild behaviour. Thus whilst some people view feral cats as transgressive and in need of redomesticating, others view them with some affection, perhaps appreciating them

either for their 'wildness' or seeing them more in pet-like terms. The authors suggest that in derelict industrial areas the 'wildness' of feral cats may be seen to 'fit' better with such a place, although for some people this sense of wildness, partially conferred by place on cats, and vice versa, may inspire aversion to both.

Some of the ways in which different types of people are defined in relation to animals is explored in more detail by Elder, Wolch and Emel (1998). They discuss the 'animal practices' of different ethnic groups living in the contemporary United States and how these practices, when taken out of the context of their cultural and physical places of origin (in 'postmodern' time-space conditions) and are inserted into new contexts and places (such as contemporary American society), can be a source of conflict if they are seen to transgress the norms of the dominant culture, and can be used by that dominant culture to racialise the subaltern, ethnic groups and maintain dominance over them. Thus in the examples the authors give of Cambodians killing and eating dogs, Latinos shooting a deer in the throat and taking it home half alive, horse tripping by Mexicans, and Santeria animal sacrifice, those involved are seen as transgressors because they varyingly killed the 'wrong' type of animal (such as 'pet' dogs), killed or treated animals in the 'wrong' way or the 'wrong' place (such as in the home), and/or simply 'looked' wrong because of who they were in a particular context (such as hunting deer, which is more associated with white Americans). The use of these animal practices to racialise, dehumanise and downgrade different subaltern groups is presented by the authors as being the postcolonial equivalent to the colonial practice of representing different ethnic groups as being themselves similar to animals (as a means of dehumanising and dominating them). Thus the human-animal divide can be used to attribute differential worth to humans, as well as to animals. The authors see 'dehumanisation' of both people and animals as negative, and that building better relations between different humans and between people and animals requires differences to be respected rather than used as a means of justifying domination.

Many of themes discussed already here, such as the relationships between animals, animal practices, place and people, and ideas of correct and incorrect behaviour, can be seen to coalesce in Matless, Merchant and Watkins' (2005) notion of 'animal landscapes'. They compare the practices of otter hunting and wildfowling in England in the mid-20th century, and consider how wildfowling was able to restyle itself (to an extent) as a modern,

61

conservation-minded practice, whereas otter hunting became increasingly viewed as cruel and anachronistic. They use the term 'animal landscapes' as a way of signifying the importance of the places and spaces of these practices and their relations to humans and animals, particularly in terms of how they affected (and were affected by) the nature of the relationships between humans and animals, the forms the practices took, the associations that gathered around them, and the chances of re-branding these practices by linking them with modernity and science. These animal landscapes are not just physical but also cultural and moral – moral landscapes are a particular focus here, and animals and their relations to moral landscapes (and ideas of correct behaviour – human and animal) are cited as a key theme within animal geography (Wolch, 2004, in Matless *et al*, 2005).

Matless *et al* show that the morality of killing different animals changes over time - with older ideas being overtaken by the drive for modernity in human affairs - and is shaped by the different landscapes in which killing takes place. Wildfowlers were able to 'modernise' to some degree as the landscapes of their practices (marsh and mudflat) are flat and open, and - in the case of such specific, bounded sites as Cley Marshes in Norfolk – easily compartmentalised, organised and managed. Wildfowl themselves are regarded as a migratory mass rather than as individual birds, and are encountered at a distance by shotgun or binoculars. Thus the act of killing wildfowl could appear clean and efficient and compatible with modern "good conduct" (p202). By contrast, otter hunting and its complex landscapes (different rivers and side streams and the land in between) were not as amenable to modernising influences. Otters were encountered as individual animals at close quarters rather than as a faceless mass seen at a distance, and the mode of killing was much more visceral, messy, and bloody than the 'clean' and 'efficient' practices of 'new' wildfowlers; that otters are mammals added to the sense amongst its critics of otter hunting being less humane, and the practice of skinning and 'masking' an otter once it had been caught only added to the sense that it was a savage, barbaric ritual completely at odds with modern ideas of good conduct.

In the above examples of geographers examining the 'places' and 'placings' of animals, there has been an engagement with notions of how both things and practices can be seen as in and out of place depending on how the places (or indeed times) themselves are defined, how animals themselves are a part of the making of places and relations, how animals and

people are represented, how people can be defined in relation to animals, and how these notions can vary over time and space. As such this concern with places and placings serves to go some way to bringing animals into theoretical and practical considerations.

However, although the above papers could arguably be said to carry some sense of animals as co-producers of events, places and relations, it is for the most part implicit, and is expressed more in terms of how the representations of animals figure in debates and how they are used by people, or how animals as 'static' things figure in relations that are seemingly driven by people. Such an approach does not in itself satisfy the perceived need to bring the animals *themselves* more fully into understandings of relations – a need that follows from the political motives of geographers (in animal geography and beyond) to seek better relations between humans and nonhumans.

Such a need has been highlighted by Wolch (1998, see also 2002) in her calls for a 'trans-species urban theory' and conceptualisations of 'zoopolis' that aim to take non-humans seriously in urban theory. In critiquing the nature/society binary that views animals and urban areas as somehow separate and challenging the anthropocentric bias of and objectification/omission of animals in much urban theory and urban development, Wolch asserts that animals as well as people socially construct their worlds and influence other's worlds - they are not objects but subjects (and agents) – and thus animal standpoints need to be engaged with in order to rethink urban theory and urban practices. She acknowledges that knowing what animal standpoints actually are is fraught with difficulties, though in outlining what the 'zoopolis' model would involve – gaining better understandings of the impacts of urbanisation on animals, of how urban residents think about and behave towards animals, of the adaptations made by animals to urban conditions, and of the current practices and politics arising around urban animals – she focuses on the need for more 'joined up' research and the breaking down of divisions between social and natural scientists (in their understandings of nonhumans) and between different activists as a possible means of getting animal (as well as different human) standpoints taken seriously.

4.6 Animals as agents and subjects

Such calls to take animals 'seriously', to understand them as agents and subjects, and to attend to or somehow grasp their 'beastly' natures (Philo and Wilbert, 2000), all involve looking at animals in different ways and require theoretical and methodological developments from the work already reviewed. In order to attend more fully to the notion of animals as co-producers of events, places and relations, and to try and take animals (and nonhumans in general) seriously as actors, agents and subjects, a number of geographers have engaged with concepts arising from and in dialogue with certain areas of science studies – in particular from actor-network theory, and from Feminist science studies. Actor-network theory has provided a means for geographers to understand animals as equal partners in the production of places and of conceptualising them as agents and subjects. The principle of symmetry within actor-network theory seeks to treat all humans and non-humans within networks equally and not to make a priori assumptions about where power, agency etc might be located. As highlighted earlier (4.2), this approach contends that entities do not possess essential qualities, but that qualities and capabilities are relational effects, and as such agency and subjectivity are also not fixed properties of particular entities but circulating, contingent, relational capacities (Latour, 1999a, 1999b; Murdoch, 1997).

4.6.1 Relational agency

In one respect actor-network theory has freed up conceptualisations of animal agency from necessarily having to be linked to ideas of intentionality, which can itself stir up a range of contentious debates about animals' mental capacities and being able to know what animals think. If agency can be understood as an effect of relations, then the ability of an animal to have an agential influence within a network does not have to stem from that animal deliberately intending to influence things in a particular way. For example, Woods (2000) studies how animals are represented in the hunting debate. Using an actor-network influenced approach he discusses the act of representing animals as a process of translating them into 'immutable mobiles' that can travel and do work elsewhere. Animals, though physically unable to participate themselves in the political process as it stands, are often represented by these immutable mobiles – though these mobiles should be considered as products of the actors who construct and mobilise them rather than of the animals

themselves. He goes on to outline how foxes are represented and mobilised in conflicting ways - by different interest groups - as worthy sporting foes, as pests, and as victims, and similarly illustrates how hunted deer are represented as animals that do or do not suffer from their experience of being hunted.

Woods notes that the animals themselves are totally absent from political debate, only their "ghostly representations, rendered as immutable mobiles" are involved [p199]. He then contends that although the animals may appear to have no agency to participate or to challenge their representations, this understanding of agency as a possession is challenged by actor-network understandings of agency as relational and not necessitating intentionality, and that through their actions the animals are able to have (unintentional) effects on how debates play out through disrupting the discursive space of the countryside, and the political space of parliaments. As such, he contends that the political empowerment of nonhumans may only require "recognition of the complex micro-processes of representation through which politics already proceeds" (p200). A more critical and responsible approach to the use of representations within politics – if this is what Woods is advocating – would presumably be a good thing, although he does not outline how this 'recognition' would change human-nonhuman power relations, and nor is it clear how unintentional animal agency would necessarily empower the animals.

Another engagement with the relational notion of agency can be found within Hovorka's (2008) study of chickens in the city of Greater Gaborone, Botswana. Following Wolch's advocation of a trans-species urban theory that considers animals as actors, agents and subjects in the making of urban areas, Hovorka outlines the importance of understanding the role of chickens in African urbanisation, and takes the position that the agency of chickens can be understood as an effect of relations, in that changing urban structures and processes, changing chicken-human relationships, and the chickens themselves are all interacting to make chicken keeping a more valued and empowering option for urban dwellers in Gaborone. Bearing in mind that Hovorka's attempt to discuss the relational agency of chickens is described as a 'thought experiment', it emphasises the potential traps of such an approach to animal agency. Firstly, the language she uses to describe the agency of chickens is perhaps inappropriate – take for example sentences such as "chickens have persuaded humans of their importance to the Batswana" (p106) and "for 2000, chickens

65

together with their human producers generated approximately 27 million kilograms of broiler meat worth over 20 million pula for the Botswana market" (p108). Rather than helping to outline the relational nature of the chickens' agency such language actually has the effect of making it look intentional and as if the chickens are somehow deliberately complicit in their own exploitation. Secondly, the analysis is almost entirely focussed on the usefulness of chickens to humans, and there is little sense of how the chickens themselves, who are discussed as a seemingly undifferentiated mass, might experience or figure in these relations – this presumably follows on from Hovorka's seeming unease at discussing animal subjectivities.

The recognition and interrogation of relational, unintentional animal agency is thus a useful insight into understanding animals as co-producers of events, places and relations, yet it also involves difficulties in terms of how it is presented, and whether such representations of animal agency can offer opportunities for better relations between humans and animals or whether they are seen to be misrepresentations of the power animals actually have within particular relations.

4.6.2 Animal subjectivity

Hovorka's (2008) unease with questions of animal subjectivity and intentionality is certainly not unique, and is reflected in the difficulties that theorists have encountered when attempting to conceptualise whether animal subjectivities can be said to exist, what they might be, how we might know them and how we might represent them. Questions of whether particular animals are capable of subjectively experiencing their worlds have been negotiated by reference to firstly the notion of the human-animal divide (formalised through Enlightenment, Cartesian concepts) that sees humans as the only beings who 'possess' subjectivity and animals as at worst mere automata, and secondly via the related issue of understandings of animal minds and behaviour, and their capabilities for cognition, reflection etc. 'Traditional' understandings of subjectivity as uniquely human have been challenged not only through the work of social theorists but also by developments in animal ethology and biology. Crist (2004), in her study of the scientific disputes over the honey bee 'dance language', examines how understandings of bees communicating to each other about the whereabouts and quality of resources through 'dances' came to be seen as what could genuinely be termed a language – the dances have a stable and dynamic rule set, they

are symbolic, and they are also performative – and highlights how the disputes surrounding this idea of language were not so much to do with the empirical evidence than with received assumptions about insect capabilities and animal intentionality (Crist 2004, p35):

> "The dance upset deep-seated assumptions, lay and scientific...it disturbed the 'great chain of being' still at large despite the Darwinian revolution: the picture of man (and other 'higher mammals') at the apex and invertebrates in the basement of a hierarchy of ability and value. The discovery of the dance contributed to undermining the idea that language is a distinguishing human possession – an idea that has also been damaged by primate studies. The dance language threw a monkey wrench into the cogs of the pervasive, if often invisible, belief that insects are 'natural automata' (Descartes, 1981 [1646-49]: 244). Finally, the discovery of the dance intimated the possibility that conscious awareness – associated with a capacity to represent landscapes, products, needs, and sentiments symbolically – may exist in worlds we have been disinclined to imagine".

There is then more to animals than 'conventional' understandings would permit – but if there is more going on, how then do we get at it? Questions of how can we know what animal subjectivities are and what are they like, how can we know what animals think, and whether we can (even begin to) faithfully portray these things, are in part methodological issues (see chapter 5), but are also caught up with wider debates surrounding issues of anthropomorphism and representation.

Although not claiming to know what animal subjectivities are 'like', actor-network theory has, as we have seen, provided a means in which to begin to conceptualise nonhuman agency and subjectivity through the understanding that these are not essential qualities of entities but are circulating capacities, produced as effects of relations within particular networks. Such a relational understanding of subjectivity (in the making) serves to 'de-centre' the human subject from an automatic place of privilege, and in this it can be linked in with wider poststructuralist and posthumanist critiques that have sought to de-essentialise human subjectivity and challenge ideas of human uniqueness (see Castree and Nash, 2006, and Gray, 2002).

Yet this actor-network understanding of subjectivity as effects of relations has attracted some criticism. Risan (2005), in his study of cows and farming technology, claims that the general principle of symmetry and agnosticism in actor-network theory in relation to subjectivity and intentionality is flawed, and that these things cannot be thought of as just effects of relations. In comparing the interactions of cows, humans and computers in a cow shed, and through relating a lively story about the effect of his gaze and manner on a cow that in some sense seemingly knew (partly from previous experience) it was being singled out for a particular reason (and which subsequently bolted), Risan states that it is impossible to be agnostic about where to find subjectivity and intentionality, as it is an essential property of the cow (a 'natural being') and not the computer (a 'cultural artefact') to have a mind and subjective experience, and that the subjective positions of the interacting cow and the human are attributable in some degree at least to a partly shared natural history, and are again essential properties (though ones that are expressed through relations).

The idea of commentators such as Risan that actor-network symmetry serves to erase or deny the evident differences between entities and their capabilities is countered by Holloway (2007), who argues that this symmetry does not disallow the recognition of particular qualities that come to be possessed by entities, and that "the 'symmetry' referred to relates more to a nonacceptance of a priori categories than to treating everything as if it were exactly the same", adding that "the agency, subjectivity and even bodily capacities of an animal (for example) can be considered as the *effects* of sets of relationships which have a history, rather than as essences simply 'brought into' the establishment of a relationship" (p1045). Holloway suggests it is problematic to essentialise the cow as 'natural', as although the cow's body, behaviour and subjective experience can be seen as 'bovine' in a way that signifies a particular genealogical lineage, there are firstly also histories of human intervention within this lineage, and secondly the cow exists in relation to particular material and social relationships, such as different farming practices - thus the cow is simultaneously 'social' and 'natural' and reducible to neither. To talk of essential properties risks attributing a fixed, "species specific and seemingly transhistorical subjectivity" (ibid, p1045) to animals, and also risks ignoring the relational and emergent subjectivities of particular animals in particular circumstances – subjectivities that Holloway discusses in his own study of cows and robotic milking technologies.

A number of theorists, whilst not seeking to detract from the important insights afforded by an actor-network approach, have articulated perhaps more valid criticisms of actor-network theory's usefulness in understanding animal subjectivities and fully apprehending and engaging with animality and the 'beastliness' (Philo and Wilbert, 2000) of animals. The focus of actor-network theory on the functional place and role of nonhumans within networks, whilst emphasising their importance within these networks, is also taken to miss something of the character, differences, otherness and particularities of animals, and the very technical register of actor-networks appears in some ways unsuited to engage with animality and beastliness (Johnston, 2008). Thus geographers have sought to engage with other areas of theory, including work derived from Feminist science studies, which shares with ANT a relational conception of agency, but has much more 'visceral' preoccupations and engages more with animals as embodied and lived presences that are shaped by and shape others through relations. Haraway's work on the co-constituitive subjectivities of dogs and their trainers is particularly influential (see Haraway, 2003, 2008). In relation to subjectivity, Whatmore (2002) notes that both modes of enquiry "acknowledge embodiment as integral to the unstable fabric of subjectivity – but their respective emphases on material configuration and experiential being frame the political and ethical import of the question 'what is a self' very differently" (p36).

Whatmore, in her development of 'hybrid geographies' (2002), has attempted to take some key insights of both ANT and Feminist science studies and develop them further, also bringing in Deleuzian ideas of fluidity and becoming and other ideas regarding bio-philosophy, corporeality, performativity and the knowledge practices of everyday life. Following Latour she critiques the division between nature and society and rejects both purely natural realist or social constructionist accounts of the world that perpetuate this division, and seeks instead to decentre social agency and to attend to the 'hybrids' that proliferate in the middle. In doing so she wishes to emphasise much more the fluidity (rather than the stability) of relations and networks, to bring a more 'fleshed out', 'closely textured', and 'lived' sense of hybrid relations, and to understand these relations as "topological, emphasising the multiplicity of space-times generated in/by the movements and rhythms of heterogeneous association" (p6).

Whatmore's work relating to animals has included critiquing 'wildness' as a category that has been used to conceptually define and physically demarcate animals (or certain animals) as 'outside' of and separate from society (thus allowing such animals to be treated and exploited in different ways). Keeping 'natural' or 'wild' things on the outside is a prevalent urge within nature conservation and environmentalism, as critics of Cronon (1995) have demonstrated, yet Whatmore proposes that understanding the wild as not separate from society and "reconfiguring the wild on the 'inside'" (p34) is an important move in beginning to treat animals as if they matter – as agents and subjects, as having ethical importance, and even as representations that have consequences within networks and relations.

In reviewing and comparing two wildlife networks – the use of leopards in Roman games, and the conservation and ranching of crocodilians (caimans) under the terms of CITES (2002, p12-34) – she attempts to bring in a sense of the subjective experiences of the animals involved in these networks. She points out that these are not meant to be truthful representations of the animals' experiences, but rather they take their cues from imaginative fictional engagements with animals that highlight the possibilities of animal experiences and the presence of lived animal subjectivities through multi-sensory perspectives that link human and animal experiences. She contends that the problems of knowing what animals think and feel, though valid, should not be taken to diminish claims that animals have (quoting Marian Scholtmeijer) "sufficient Being to disturb human complacency", even, as Whatmore puts it, "in the face of ingrained ways in which such claims have been rendered unutterable, let alone answerable, in the scientific calculi that pervade public life and which consistently reduce ethical questions about what counts to empirical questions about what can be counted" (p33).

Being able to get a sense of embodied animal subjectivities and agency is explored further in her "tales of becoming elephant" (2002, p35-57), in which she details how elephants are mobilised (ostensibly for their own good) within two global 'spatial formations of wildlife exchange' – zoos and their involvement in elephant breeding programmes, and science based conservation research projects in Africa – and considers both how elephants are made to work in these networks, and how their subjectivities are reconfigured in these processes. Taxonomically the elephants in these networks are considered to be essentially

the same, yet 'Duchess', an elephant living at Paignton Zoo, has become through living at the zoo an elephant who "bears only distant relation to those of her kind in the African bush" (p47). Elephant (and animal) lives and subjectivities are thus fluid and relational rather than fixed and essential (as Holloway, 2007, commented on earlier). This point is picked up on again in Hinchliffe *et al* (2005; also Hinchliffe, 2007) where individual water voles at a location in Birmingham are thought to be acting in site specific ways that go against received wisdom about the behaviour of water voles as a species. Such emergent and relational qualities of organic life are seen to be problematic for nature conservation that works with an assumed unity of species and the protection of species as a whole.

Whatmore's consideration of animals here - as embodied subjectivities *and* as representations - has highlighted the importance of different kinds of and definitions of animal within how particular sets of relations operate (Johnston, 2008, p238). Her actual engagement with animal subjectivities has though been critiqued to an extent for not going far enough in terms of bringing a sense of the animals 'themselves' to the fore – they remain "shadowy presences" (Philo, 2005), with little in the way of ethnomethodological detail to enliven the stories told about them. Philo suggests this is because Whatmore is more concerned with attending to the "'performative' aspects of wildlife (what animals do), rather than trying to imagine the more interior aspects of wildlife (what animals possibly think, feel, experience, intend, etc), precisely to avoid the dangers of anthropomorphism" (2005, p829). Whatmore counters by stressing that she is more concerned with "affectivity" – the capacity to affect and be affected – as being perhaps a more reliable means of dealing with "the more heterogeneous company of the 'non-human' " (2005, p845) rather than just with animals specifically (though which can of course be used as a perspective for examining human-animal relations in particular). Nevertheless, issues of speaking 'for' others remain relevant and remain difficult.

The issue of anthropomorphism is a key concern for work in various fields concerning animals, especially for those within geography and related disciplines who wish to engage with animals more fully (Philo and Wilbert, 2000; Johnston, 2008). The unease about the use of anthropomorphisms when discussing animal lives and subjectivities is itself critiqued by Fox (2006), in her study of pet animal–human relations. She discusses the varied and contradictory ways in which people mobilise the categories of 'animal' and 'human', and

how the boundaries between these categories are maintained, disrupted and crossed, in their attempts to understand and make sense of their pets. Pet animals she argues occupy a liminal position on the boundaries of the perceived human/animal divide, being varyingly considered on the one hand as subjective experiential beings, 'one of the family' or even as 'little humans' who are understood in anthropomorphic terms, and on the other as animals, things and possessions that are understood through popular notions of animal psychology that reduce animal actions to instinct and 'natural' behaviours. Fox notes that some pet owners feel guilty about their own anthropomorphisms, and/or try to interact with their pets according to ideas of 'natural' behaviour, although reductive understandings are not fully accepted and are mixed in with 'anthropomorphic' understandings of their pets' individuality, intelligence and emotions that challenge reductive ideas.

Fox agrees that people are right to be suspicious about 'highly' anthropomorphic accounts of animals, yet points out that people do not have a 'separate' way of engaging with and understanding animals from that used with other things. In this sense anthropomorphising can be perhaps understood as a means of trying to understand animals and engage with them subjectively – which is perhaps preferable to just regarding animal communication as being a purely reductive instinct - even if the terms used are suspect. In her research Fox found herself using 'anthropomorphisms' without realising it – describing animals as 'bored', 'excited' etc – and considers whether such qualities can only be thought of as 'human'. Here she engages with post-humanist notions to question the idea of 'anthropomorphising' itself. By attributing particular qualities only to humans, anthropomorphising is predicated on an essentialist and fixed notion of what 'human' is – thus post-humanist ideas problematise the charge of anthropomorphism as these qualities can no longer be seen as distinctly human.

Johnston (2008) follows this line of argument, and develops it using the 'dwelling perspective' of Ingold (2000) which focuses on the everyday 'lived' relations between humans and animals as a means of gaining better understandings of animals. Johnston contends this can move "beyond the clearing" (2008, p643) of concerns with herdsmen (Ingold's focus) to consider the close, lived relations of other humans and animals in order to gain a greater sense of nonhumans and these relations, citing Hinchliffe *et al*'s (2005) work with ecologists and water voles as an example of how this could be approached.

Johnston further posits that such an approach can include a "responsible anthropomorphism", which accepts that as humans we can only ever see the world through an at least partially 'human' perspective, yet remains critical of (though interested in) attempts to speak for and of others, and is based not on "abstract philosophical" notions of shared sentience or shared place in the world but on "actual relationships" and "day-to-day living and working" (2008, p646) with animals.

This approach for engaging with animals 'themselves' and their subjectivities shares elements with the work of Donna Haraway, who is concerned with the co-constitutive subjectivities of humans and animals in close relations, particularly those of 'companion' animals such as dogs, and their trainers (2008, 2003). For Haraway, animals cannot be fully known, but come to be known in a different and partial, messy sense through these relations – their 'significant otherness' foregrounds certain practical and ethical issues, and the need to attend to them in certain ways whilst respecting their differences from us.

In attempting to engage with animal subjectivities, there has then recently been a focus on closely lived relations with animals, which for the most part has (perhaps necessarily) been concerned with 'domestic', 'companion' and livestock animals. This work has produced useful theoretical and empirical insights, yet for the most part 'wildlife' and 'wild' animals have seemingly remained at more of a distance (exceptions here including the aforementioned work by Hinchliffe, *et al*, 2005). This potentially has consequences for reconceptualising relations with different animals, and it is to this that attention will now turn.

4.7 Better relations with animals through relational politics

A key part of, and impetus for, the recent re-conceptualisations of animals - and nonhumans more widely - in geography and the social sciences has been the desire to, as Lulka (2004) puts it, "bring about more equitable social relations between humans and nonhumans" (p439). Interrogating and rethinking animal agency, animal subjectivities, and the places and placings of animals (as well as researching animals in other ways), is (broadly speaking) pursued not just as an interesting intellectual exercise but as one that can hopefully feed into attempts to live alongside and engage with animals in more thoughtful,

inclusive, informed and fairer ways. The challenge for theorists then has not just been to critique human-animal relations and the ways in which animals are understood, but to also consider the ways in which politics currently affects these relations and understandings, and beyond this to try and develop methods by which such critical insights could inform better relations through a reworked politics.

The general goal of seeking better relations with animals is shared with the animal rights movement. However – and whilst acknowledging that the 'animal rights movement' is less homogenous than popular representations might suggest - in terms of both theory and practice there are important differences between it and the approaches taken by geographers and social scientists. Animal rights theory (see Singer, 1984; Regan, 1984) has traditionally based its politics upon an extension of moral consideration – in a traditional, humanist, liberal sense based on rational centred subjects – to animals, arguing that as sentient individuals animals have 'interests', and should thus be afforded rights, even though they cannot "assert their interests through speech and reason" (Pepper, 1996, p55). The notions of sentience and the ability to feel pain as criteria for extending rights were noted in Chapter 3 as a part of debates about when, and in what manner, it is ethically acceptable to control animals, as were related utilitarian ideas of the 'wider' good, and the idea of treating animals 'humanely (e.g. if animals do 'need' controlling, then doing so using 'humane' methods).

The animal rights approach has been critiqued from relational perspectives – in part for being based on problematic humanist conceptions of rights that are possessed by subjects, for excluding some animals from moral consideration (sentience based arguments favouring a select group of 'higher' animals), and for focusing on an essentialised understanding of organisms (possessing an essentialised set of characteristics) as a means of forming an ethical community, which results in an emphasis on homogeneity and a rejection of difference (Hinchliffe, 2007, p153-155). Instead, geographers and others seek to emphasise that rights and ethics emerge from relations between people and animals, and do not pre-exist them. If the 'extension' of 'rights' as pursued by traditional animal rights theory is thus seen as flawed, how can relational perspectives help to involve animals more fully in political consideration, and what can they offer for finding better ways of 'living with' animals.

Hobson (2007) attempts to engage with (and rework) relational hybrid approaches for use by political geographers, and explores the issues involved in operationalising such theories. In seeking to pursue a broader conception of how the political is constituted she firstly considers how these ideas help to conceive of animals as political subjects, through embodied relationality rather than as (traditional) rational independent moral subjects - ethics and ontologies being intertwined. She then considers how to deploy relational ontologies in ways that speak to political geographers' concerns - "does it change how we understand the processes and outcomes of political struggles?" (p258). Hobson considers a case study of the campaign by the Animals Asia Foundation (AAF) against bear bile farming in China, and the rescue of bears from such farms farming. This is worked through using a relational approach, after which the bears emerge as contingent (political) subjects, essential to how this story has played out:

 "The conceptual move here has been to argue for bringing the animals into theorizations of how specific political spaces are constructed, relying not on contentious ideas of human-ness and rights but simply an appreciation that agency is relational. As such, the bears in the AAF story – their bile, their physical appeal, their 'rehabilitability' – is as an essential ingredient as all the other components of the story" (p263).

It is certainly important to work through and reiterate the ways in which humans and nonhumans can relationally affect and be affected, thus highlighting relational ethics. Yet the question seems to remain (as she notes) where now? In considering the compulsion for and acknowledgement of ethical consideration (of animals) that supposedly follows on from relational ontologies, Hobson suggests that this is easier in some scenarios (and for some people) than others - pet owners, activists etc probably already have their own relational ethics, but "this is not an ethic that easily rolls out in liberal discourses and practices" (p263).

She goes on to highlight a critique of relational approaches - that they can diminish the potential to search for causes, which is a central plank of critical theory, adding "yet, the causes of the bear bile farming and the animal's suffering in this paper are more than clear – rising living standards in China, recalcitrant authorities and vested interests, bolstered by

'cultural practices reinvested with nationalistic overtones in the face of exogenous criticism" (p263-264). Hobson feels that such a causal argument probably breaches the "linguistic and ontological exactitudes of hybrid theorizations" and slips back into "structural categories that relational approaches seek to abolish", yet contends that this need not be a problem:

> "I argue it is feasible to deploy the sentiments of hybrid geographies through existing political vocabularies wherein conceiving of animals as already-active political constituents is taken forward to ask a range of questions about institutions and practices enacted through thoroughly uneven processes and diverse forms of power"(p264).

In employing a relational approach (instead of an animal rights approach) to argue for the ethical and political status of animals, Hobson would seem to acknowledge the wider point about ethics emerging from relations rather than pre-existing them (Hinchliffe, 2007, p155; see also Whatmore, 2002, and Haraway, 2008), whilst also highlighting the difficulties involved in rolling this out in existing political structures. Yet in seeming to abandon a relational perspective for a structural one when looking for causes, the critique of existing political structures that relational approaches tend to involve appears to be undermined. Whilst this move is perhaps understandable in light of wider criticisms of relational perspectives (such as actor-network theory) regarding the lack of scope they seem to provide for making judgements (see Eden *et al*, 2000; and 4.1), and although she later cautions against solely relying on "structural imperatives" (p264) as explanatory factors, it does not seem to offer much in terms of changing the 'structures' that Hobson identifies as the problem. It is perhaps more important then to emphasise what Hobson has done here - which is show how animals can, through relational approaches, begin to figure within politics.

Other geographers have sought 'better relations' through rethinking how animals are conceptualised and managed. Lulka (2004) argues that the ways in which nonhuman ontologies are represented and understood is of vital importance: this not only affects the political treatment of nonhumans, but rethinking these ontologies also offers a way of renegotiating human-nonhuman relations. He explores these ideas with reference to the

case of bison management in and around Yellowstone National Park. Increased numbers of bison within the park in recent years has been followed by movements of bison across the park boundaries, and this has resulted in conflicts with local residents and ranchers, partly because of property damage caused by the bison but especially because of the potential for disease transmission from bison to cattle livestock. Management actions have primarily focussed on shooting transgressive bison, or recapturing them (and either killing disease carrying bison or releasing non-disease carriers back in to the park). Lulka critiques this management for reducing nonhuman ontologies to genetic material (i.e. the conservation within the Park of a representative stock of a species defined as a genetic type) and ignoring or downplaying the importance of movement and experience: in "overtly political situations" such representations of nonhumans, and the conservation of representative populations, can become inverted and used to facilitate the "spatial ordering of nonhuman species when social interests prevail" (p445). Instead, Lulka proposes a "Deleuzian theory of wildlife" that seeks to understand nonhuman ontologies as immanent, and in which movement and experience are crucial aspects of the process of becoming via an approach whereby boundaries, although continuing to persist, are made more flexible and transparent. Lulka describes this as a "slip-fault geography of human-nonhuman relations defined primarily by coexistence and the process of moving past" (p461) and where nonhuman agency has more freedom.

Such an approach, that appreciates the wider and changing ontologies of animals, is promising, though apart from the difficulties involved in enacting a 'slip-fault' approach, the 'problems of representation' would seem to remain. Attempting to work with a wider ontological sense of animals would seemingly still require certain forms of representing animals and reference points - 'slip-fault' implying moments of stasis and 'consensus' as well as moments of movement and 'dissent'.

The problems that particular representations of nonhumans and nonhuman ontologies can engender in human-nonhuman relations is an issue picked up on by Hinchliffe *et al* (2005), who claim that representing – speaking of and for - nonhumans *at all* is problematic. Developing Latourian ideas, they question the usefulness of traditional representative politics – and its traditions of majoritarianism and liberalism - in serving the interests of nonhumans, both in terms of the issues involved in 'faithfully' representing nonhumans,

and in terms of the idea that differences can be resolved by (and that politics is pursued by) fully-formed, like minded political subjects. Put slightly differently, there is no guarantee that nonhumans will 'show up' when required in the process of representative politics because viewing individual creatures as representative of a particular species or individual sites as representative of a particular habitat both misses their emergent differences and allows the interests of particular creatures to be subsumed underneath the preservation of a representative population. The authors thus critique "a representative political ecology that starts with ideal forms and can only deal with presence or absence" (p655).

The authors thus attempt to work out an alternative political science – referred to varyingly as 'cosmopolitics' or an 'ecological politics of differences' – that rather than being representational and prescriptive, is diagrammatic and indeterminate in its ways of knowing, is interested in and produces unfinished collectives, and engages with the humans and nonhumans within those collectives as 'colleagues' in producing knowledges and as fellow subjects:

> "[Cosmopolitics] – as well as refusing to recognise all the old settlements, involves a double injunction: to take risks (to engage in ontological politics rather than in perfect epistemological eyepieces), and to allow others (as colleagues), of all shapes, sizes and trajectories, to object to the stories we tell about them, to intervene in our processes as much as we intervene in theirs. Only by doing this can we hope to learn how things matter to humans and nonhumans" (p656).

This relational sense of emergent collectives working things out in experimental ways is one that has – implicitly if not explicitly – informed much of my approach within this thesis, and I have sought to investigate both the problems and opportunities that such an approach offers for re-evaluating human-wildlife relations in urban areas, and for seeking better relations – as well as indeed considering the challenges brought to it by these relations.

4.8 Summary and development of the research interests of the thesis

The consideration of literatures in this chapter has highlighted how animals and nature are being reconceptualised with geography and the social sciences, and how theorists have focused efforts on attempting to help envisage and produce better relations between humans and nonhumans. Relations between humans and wildlife in urban areas have emerged as one particular recent focus of this work, and this has tied in with (and to an extent been inspired by) the increased interest shown in urban areas by nature conservationists and others who have sought to promote the importance of urban areas for wildlife (Chapter 3), and promote the importance and value of this wildlife in itself and for people, as well as undertake increasingly innovative practical measures to make urban areas more amenable to wildlife (English Nature, 2006). Urban nature conservationists and social scientists share a similar concern (albeit often expressed and pursued in differing ways) with understanding how people and wildlife co-exist in towns and cities, and in considering whether they can live together in better ways (e.g. Marren, 2002; Bryant, 2002; Hinchliffe *et al*, 2005; Hinchliffe and Whatmore, 2006).

My own research interests arise from a shared concern with this search for better relations, but also from what I perceive to be the highly uneven ways in which different kinds of wildlife and human-wildlife relations are engaged with, both in practice in urban areas, and also within the literature. Much of the recent work on animals in the social sciences has tended to focus on particular kinds of animals, notably companion and 'domestic' animals, and on particular kinds of wildlife, primarily those that are regarded as important by nature conservation interests, such as those perceived as rare or otherwise special and charismatic. Whilst concerns with these different kinds of animals are important, continual focussing *only* on them risks ignoring the practical and ethical dimensions of relations with other kinds of wildlife, including wildlife that is more common and familiar and/or that in some instances is regarded as 'pest' wildlife.

Similarly I contend that (in practice) within urban areas people to an extent privilege some kinds of wildlife, and that uneven relations exist between different people, different kinds of wildlife, and different urban places. Urban nature conservation and urban sustainability discourses often talk of the need to bring more 'nature' into towns and cities, and to make

urban areas 'greener' and more wildlife friendly for the benefit of both people and wildlife (e.g. Nicholson-Lord, 2003). However, many wildlife species that already live in urban areas, particularly those that are seen as being 'successful' (including those that Gilbert, 1989, refers to as 'urban specialists') are often seen as undesirable by people, and instead of being the concern of nature conservation they are caught up in the parallel discourses and practices of pest control and wildlife management. It has been noted elsewhere that most people generally like wildlife, but only as long as it doesn't get in their way or too closely share space with them (English Nature, 2006; Marren, 2002, p234-253). There is therefore a partial disparity between the types of wildlife successfully inhabiting urban areas and the types that (put simplistically) different people want or don't want in urban areas, and more specifically in particular urban places. This suggests highly uneven human-wildlife relations in urban areas, and a range of practical and ethical issues that receive highly uneven consideration.

Additionally, attention on 'nature' and wildlife in urban areas has primarily been focussed (by practitioners in conservation and planning, and academics in the social sciences) on what can broadly be described as 'green spaces', be they urban nature reserves, parks, 'green corridors' or even (more recently at least) areas of 'wasteground' largely abandoned by humans. Though this is understandable, as much of the wildlife interest of urban areas can be found in such spaces, and there is indeed value in giving them attention, wildlife can also be found in other urban spaces, including spaces that are more closely shared, used and inhabited by people and wildlife, such as buildings and built up areas. Urban nature conservation *is* increasingly engaging with these 'other' spaces but lack of engagement with such spaces by social scientists (aside from some recent work such as Hinchliffe and Whatmore, 2006, and Lorimer, 2008) again risks ignoring the practical and ethical dimensions of relations that occur within (and which co-produce) them, particularly relations with the 'other', less considered types of wildlife.

In seeking to contribute to geographical and social science efforts to not only engage with animals more fully but also to improve relations between people and wildlife in urban areas, I propose giving more consideration to the constitution of some of these uneven relations (and to their practical and ethical implications), and, as a part of this consideration, to attend more fully to some of the wildlife, spaces and relations of urban

areas that have thus far received little attention from the majority of nature conservationists and social scientists. In particular, I propose in particular to focus more (though not exclusively) on buildings and built up areas as urban places where different human-wildlife relations are varyingly successful or contested, and wish to do so both because such places are the sites of different relations that merit attention, and as a means of challenging spatially expressed nature/society and human/animal theoretical dualisms. A consideration of human-wildlife relations in urban areas that looks at *different kinds* of wildlife which are varyingly welcomed and encouraged, and disliked and deterred, by people, and that considers in part such relations within the *more closely shared spaces* of the *built* environment (amongst a diverse and sometimes difficult gathering of humans and nonhumans), is important both as a means of highlighting certain practical and ethical issues within these relations, and as a way of working through and with social science theory that is concerned with producing better relations.

In carrying out this research agenda, I chose to examine different examples of relations between humans and birds within urban areas (see chapter 5). As I am working from a broadly relational perspective, I need to give a wide consideration to the different elements that relationally produce human-bird relations in order to understand and potentially re-conceptualise them. I have thus framed my research in terms of two broad research questions:

1. How are different human-bird relations in urban areas constituted, in terms of the different birds, people, things, knowledges, practices, agencies and subjectivities involved, and the roles that they play in how these different relations are comprised and enacted?

2. What are the key practical and ethical issues that arise from the constitution of these relations, and in light of these issues what are the possibilities for living with birds/wildlife in urban areas, and for more generally living with difference and finding "more equitable social relations between humans and nonhumans" (Lulka, 2004, p439)?

In the following chapter I outline my methodological approach for answering these questions.

Chapter 5: Methodology

5.1 Introduction

At the end of chapter 4 I responded to some of the key themes from the literature review through a consideration of certain issues within contemporary human-wildlife relations in urban areas. I subsequently outlined my research interests, and formulated some broad research questions. These were, firstly, to examine how different human-wildlife relations in urban areas (particularly in built up, closely shared spaces) are constituted, and secondly to identify (from the constitution of these relations) the key issues within these different relations and the problems and opportunities they present to finding "more equitable social relations between humans and nonhumans" (Lulka, 2004, p439), to living with wildlife in urban areas, and more widely to ideas of living with difference and living well together with others (Latour, 1993; Hinchliffe, 2007; Bingham, 2006).

In this chapter I will outline the methodology I have employed to address these research questions, and discuss associated methodological issues. In section 5.1 I will outline and explain my decisions regarding which particular species and human-wildlife relations I have used as case studies. In section 5.3 I explain my rationale for using particular research methods, and give an overview of the research I have conducted. In section 5.4 I discuss some of the practical, ethical and theoretical issues involved in the research. My methodology has to an extent been informed by my 'theoretical position' as a researcher. This can be described as one which is broadly "relational" (Law, 2004a, p2-3) in how it seeks to investigate and understand situations, informed by actor-network theory (Latour, 1993, 2005), feminist science studies (notably work by Haraway, 1991, 2003, 2008), and associated work in geography (e.g. Whatmore, 2002; Hinchliffe, 2007). Whilst such a perspective might have more of an obvious bearing on the analysis of research data than on the methods used to produce it, I would contend that thinking relationally has certainly influenced the way in which I have assessed my own research methodology, and also influenced some of the questions I have asked or wanted to ask (humans and nonhumans) and attempted to answer.

5.2 Case studies

The wildlife of urban areas might appear to be an easily defined group of organisms from which to narrow down and choose more specific case study examples. However, using the term 'wildlife of urban areas' (or even 'urban wildlife') is merely a convenient shorthand for a diverse collection of organisms, spaces and relations, and describing something as 'wildlife' or 'urban' or indeed as both can be problematic. The different conceptual and spatial boundaries people construct to define 'urban', and to define 'wildlife', have been critiqued within the literature (see 4.3 and 4.5), and as well as acknowledging that any such definitions are provisional, partial and changeable - and must be used within research in a critical, reflexive way - it should also be remembered that they are themselves elements of the constitution of relations. In this imperfect, reflexive sense then, I am using the broad term 'wildlife of urban areas' to refer to a wide set of organisms that that spend at least some of their lives within the physical bounds of towns and cities, and that are generally considered 'wild' not 'domestic' (see again chapter 4 for discussion of the problems in such definitions).

From the wide array of (animal) organisms that can be provisionally grouped together under the term 'wildlife' I chose to focus on birds in particular. This was in part because of my own interest in birds (as a birdwatcher and as someone who has previously been involved in conservation work, including volunteering for the RSPB), though was also because of birds' theoretical suitability for this research. Birds are probably the most obvious (to humans) and readily perceived (by humans) group of organisms that occur within urban areas, particularly within built up areas of towns and cities more regularly frequented by people, and are thus (in terms of non-'domestic' animals at least) the organisms with which people mostly closely share, or are more aware of sharing, space. The mobility of (most) birds through the air enables them to move through and occupy many urban spaces used by or near to people, such as building exteriors and roofspaces and more generally built up city centres, in ways that few other organisms (of comparible size at least) can. This relative 'visibility' of birds in urban life outside the household means that there is often a lot going on in terms of different discourses and practices regarding birds (perhaps more so than with most other organisms) within the shared space of built up urban areas. This relative 'visibility' is further enhanced by the unique position birds have within

British culture, with many people having an especial interest in and regard for them. In considering the British interest in birds, Fisher (1966, p15) posits the idea that "birds, the most observable of animals, are a litmus paper of a country's state of native culture", an idea which neatly summarises in part my own reasons for deciding on birds as case studies.

Birds are thus in my opinion of particular interest and usefulness in researching human-wildlife relations in urban areas and for exploring ideas of what living with difference and better relations between humans and non-humans could mean. They are also particularly useful in this regard because of my interest in moving away from discussions of wildlife in urban areas that only focus on nature reserves, parks, green corridors and other 'green' spaces – and that perhaps sees wildlife as only existing in or belonging to such spaces – and in moving towards (as others have done – e.g. Fitter, 1945; Mabey, 1999; Gilbert, 1989; Hinchliffe and Whatmore, 2006) a wider conception of wildlife in urban areas that includes the aforementioned closely shared spaces of built up areas.

There are other kinds of animal wildlife that occur within built up urban areas which could have been chosen, notably rats and various types of invertebrate, though these do not generally share space with people in the ways that birds can do, and where they do share space with people they are usually all eliminated with little hesitation. By contrast, birds, or rather different kinds of birds, elicit much more contested and sometimes ambivalent responses from people, and I shall show that people seek to both encourage and discourage birds in shared urban spaces. Thus in my opinion, birds provide a more interesting focus for research that is concerned with difference, better relations, and how people and wildlife can and could share built up urban spaces.

The specific bird species I chose to use as case studies were the black redstart (*Phoenicurus ochruros*), the peregrine falcon (*Falco peregrinus*), and large gulls (both the herring gull (*Larus argentatus*) and the lesser black-backed gull (*Larus fuscus*). I consider the two gull species together as they are often regarded and treated by humans as just 'gulls', although there are differences between them.

The black redstart (see plate 5.1) is a robin sized bird, greyish-black with a red tail. It is common in continental Europe, though rare in Britain where it is considered to be at the

edge of its range, and where it has a high level of legal protection. In Britain it favours primarily urban areas, particularly areas of industrial dereliction, as its habitat in the breeding season. Recent urban regeneration has destroyed much of this habitat, and conservationists have sought to create new habitat to mitigate for that lost to development (see for example www.blackredstarts.org.uk for further details).

Plate 5.1: Black redstart

(Image from www.blackredstarts.org.uk)

The peregrine falcon (see plate 5.2) is one of the larger falcons, greyish above with a barred white and grey underside. Its numbers declined dramatically in Britain in the 1950s and 1960s due to the effects of pesticides such as DDT in the food chain (which had the effect of causing the shells of the birds' eggs to become thin and brittle, rendering them useless – Ratcliffe, 1970; Peakall *et al*, 1976). After the use of DDT ceased, the numbers of peregrines increased, although they are still subject to some persecution from people. In recent years peregrines have moved into many towns and cities in Britain, where they roost and nest on tall buildings, and have become a focus of interest for conservation groups who seek to ensure their survival and see them as a good way of enthusing the urban public about wildlife.

Plate 5.2: Peregrine falcon

(Image from derbyperegrines.blogspot.com)

Herring gulls (see plate 5.3) and lesser black-backed gulls (see plate 5.4) are amongst the larger gull species, and are respectively light grey and dark grey above, with white undersides on both. Traditionally associated with the coast, the gulls have in recent years increasingly been moving into urban areas further inland and establishing breeding colonies, using rooftops as nesting sites. In some towns and cities the gulls have come into conflict with people, who dislike the noise, mess and damage that the gulls cause and the gulls' sometimes aggressive behaviour. These birds have thus become a focus of attention for pest controllers and other people who attempt to get rid of, control or manage the gulls.

Why I chose these species follows to a large degree why I decided to look at birds in urban areas generally, with these species in particular, as outlined above, being notable for their use of built up areas in towns and cities and their differing interactions with these spaces and with people - they are thus of particular interest in an examination of how humans and wildlife live alongside each other. In addition, these species are quite different in their ecologies and in their relations with people, thus providing contrasts and emphasising difference in how 'living with' them is experimented with and/or contested.

Plate 5.3: Herring gull

(Image from www.marksukwildlifephotos.com)

Plate 5.4: Lesser black-backed gull

(Image from www.marksukwildlifephotos.com)

I should make it clear that I have not been trying to produce a representative 'sample' of all human-bird or even human-wildlife relations in urban areas. Although I chose to look at quite different types of bird, this was not because I wanted to try and have any kind of representative 'coverage' of types in order to explain how most or all such relations work. Trying to be 'truly' representational is a probably impossible task (see for example Bear, 2006), and one that has been widely critiqued (Thrift and Dewsbury, 2000; Hinchliffe, 2003; Strohmayer, 2003; Castree and Braun, 1998;). If a true representation of relations were my chief aim (if indeed it was valid) then I would have needed to examine a much larger number of case study birds, and for one thing this would have made for a research project that was too large and unwieldy (Silverman, 2001, p5, warns against this trap of taking on too much when formulating research projects, and instead contends that researchers should focus on particular things of interest). Aside from such considerations of time and space, I chose to look at specific, different types of birds because, as outlined above, these birds are engaged in different, changing, interesting relations with people in urban areas, and because it is *difference*, and *living with difference*, that is one of the key points and interests of this research. This interest in the differences and the specifics of relations, rather than in representativeness, has methodological implications, which will be discussed in the next section.

5.3 Research methods

5.3.1 Overview

In this section I explain which research methods I have used and why. Considering which research methods to use (and would be most appropriate) in a research project requires an assessment - informed by one's theoretical position - of the information needed to address the key aims. This research project has been concerned with examining the constitution of different human-bird relations in urban areas, and from this considering what problems and opportunities are involved in 'living with' and finding better relations. In order to examine how particular relations are constituted, I needed to unpack and examine the range of ideas, practices, networks, agencies and subjectivities involved in the co-production of these relations. I was thus concerned with the specifics of who and what was involved, in what ways, and with what relational effects and changing outcomes.

I was not concerned, as mentioned earlier, with trying to produce a representational account of all human-bird relations in urban areas, nor was I trying to definitively establish what and how a majority of people supposedly think about and act towards particular birds. Although ideas about what 'public opinion' might be, and certain recurrent trends in thought and action, might certainly be important constituent parts of relations, they do not in themselves dictate (or indeed account for/represent) the specifics of how particular relations work. In employing a broadly relational approach to my research I have been seeking to avoid producing accounts that are too fixed, too essentialised and too generalised, and too simplistically representational.

Having said that, I have not restricted myself from making some more generalised points in my conclusion where this seems appropriate, which perhaps does not sit well with certain "strong" versions of actor-network theory, that have been critiqued for not allowing any kind of abstractions or generalisations to be made (Castree and MacMillan, 2001) in attempting to assess and evaluate situations, something for which ANT in general has been critiqued for not being able to do, and for being purely descriptive (see Eden, Tunstall and Tapsell, 2000). I do not see a particular problem with making generalised points if they emerge from the research, and do not think this conflicts with a relational approach. I have however wished to avoid using a methodology that in itself produces or only deals in generalisations, when much of what is important in considering *relationally* the constitution and workings of relations are the *specifics* (and the differences). This concern with specifics in relational thinking is important methodologically: it stresses the need to consider the many humans and nonhumans involved, and their varied interactions, as all being important to the constitution of relations, and seeks to avoid approaches that explain things through simplistic ideas of pre-existing structures or agencies (Latour, 2005). Researching both humans *and* non-humans in itself raises issues, some of which will be discussed shortly (see 5.4.4).

This assessment of what I have and have not needed to investigate led me to discount using any primarily quantitative approaches (representative samples not being a key concern here), and concentrate solely on conducting qualitative research. It also seemed appropriate that in order to produce a fuller understanding of particular relations, use should be made of more than one research technique. I have therefore used a combination of semi-structured

interviews, a desk study of documentary evidence and texts, and observations made on field visits. It can be noted (from the research methods) that in practice the majority of my research focussed on what humans do and say, in part because of the difficulties involved in researching nonhumans. This does not mean that nonhumans were 'left out', but methodologically had to be 'accessed' in less direct ways and through multiple methods (again, see 5.4.4). Researching nonhumans does however remain problematic, and is an issue that demands further investigation in future (see 8.3 and 8.4).

5.3.2 Semi-structured interviews

In considering how to investigate the constitution of relations, it was apparent that one of the main focuses for information gathering should be the individuals and groups who are involved (directly or sometimes indirectly) in the pursuit and enactment of certain relations with the case study birds. These people and organisations are themselves key constituents of relations (along with other key constituents, e.g. birds, things, spaces), and their ideas about and practices directed towards birds in urban areas are also important influences on and constituents of how these relations develop and are performed. The explanations and opinions of these people were therefore vital sources of information and research data, and so a major area of the research methodology was a series of in-depth semi-structured interviews, which allowed for the ideas and practices of these key personnel to be discussed in detail. Semi-structured interviews were appropriate here as they enabled particular issues to be focussed on but also allowed research participants the conversational space to discuss such issues widely and bring up related issues (see Mason, 2002, p62-83). Such interviews were able to produce often rich, detailed personal and technical accounts of ideas and practices, and highlight things and issues that I had previously been unaware of or had not placed much importance on, thus enabling reflexive adaptations in the conduct of the research.

I conducted thirty semi-structured interviews (which mostly varied in length from approximately an hour to over two hours long) between Autumn 2006 and Spring 2008. A summary of these interviews is given in table 1. I selected potential interviewees initially through background research into the case study species, and later as the research process was underway also through snowballing - being made aware (directly or indirectly) by interviewees of other useful contacts. I approached potential interviewees predominantly

via e-mail, and was generally able to arrange an interview through further e-mails or phone contact. With the initial e-mail I attached two documents, one an explanation of my research, and the other an ethical statement (see section 5.4 for more on this statement, and see the appendix for copies of these documents). The majority of people I contacted agreed to be interviewed, though there were a few instances where an interview could not be arranged, either (predominantly here) because those contacted did not respond and/or were difficult to get hold of, or (in a couple of cases) the request for an interview was refused as those contacted felt it would not be appropriate.

In carrying out the interviews themselves, I drafted some rough guides regarding the kinds of questions that needed to be asked (see appendix for copies of these), though of course these were subject to considerable additions and alterations depending on who I was interviewing, and within the performance of reflexive semi-structured interviews I was also able to ask new and additional questions as appropriate. I recorded my interviews on a portable Olympus digital dictation device, which saved recordings in .wav format and allowed interviews to be transferred direct to a computer for transcription. The sound quality of the recordings was generally good, though varied to an extent depending on where the interviews were conducted – most were conducted in offices where background noise was not generally much of an issue, though through necessity some were conducted in the field and in places like coffee shops where noise could be a problem. In each interview I endeavoured to place the dictation device as close as possible to the interviewee, and always carried out a 'test' recording to check what was being picked up in each case.

Once interviews had been recorded and transferred to computer, they were transcribed using Olympus DSS Player Pro software. I read through these interview transcripts and made some brief notes summarising the key points, though the main analysis was conducted using NVivo software, which I discuss (in relation to all research material) shortly.

5.3.3 Desk study of texts and documentary evidence

Although the ideas, opinions and practices of particular people are very important in how certain relations work (and are thus important sources of data), they are by no means of

course the whole story. Relations are also comprised of other people, birds, things, ideas and interactions, which may or may not figure within interviewees' accounts (in certain ways, or at all). I therefore also engaged in a wide ranging desk study of documentary evidence and texts. The use of different texts as sources of research data in geography and the social sciences is done for different reasons, and I have made use of such data in different ways. Firstly, texts and documentary evidence can be used (as I did) as a way of accessing information and source material about a subject, such as in Hinchliffe's (2001) examination of science and policy in BSE crisis which predominantly used archive material from the BSE Inquiry. The use of such material is not necessarily straightforward, as Hinchliffe is aware, noting that "many of the documents are undoubtedly mediated through a judicial or quasi-judicial framework" (p187), with what was said and what was recorded being to an extent undoubtedly circumscribed, and the responsibility for statements being dispersed through complex paper trail. He points out that because of this "the analytical difficulties in using this archive should not therefore be underestimated" (p187).

This leads onto another reason for conducting a desk study of texts, which is that certain kinds of texts (of varying types) are themselves a part of how relations are constituted, how they work, and how they are enacted. Such texts can contain particular representations and ideas about birds and human-bird relations and have effects on how relations work in direct or indirect and intentional or unintentional ways, from policy documents about how to manage a particular bird species in a particular city to far more general information on websites. As inscription devices different texts can "enact realities that have become inscribed" (Law, 2004a, p7). For example, the comparison of wildfowling and otter hunting that Matless, Merchant and Watkins, (2005) conduct in their discussion of "animal landscapes", and Matless' (2000) consideration of different representations of bitterns, coypu and the Norfolk Broads during the mid – 20th century, both use different 'texts' (such as books, articles, radio broadcasts and pictures) not only as sources of information but as examples of how different ideas of human-animal relations were expressed. In such studies, some texts (such as the New Naturalist books that were a part of making nature conservation "modern") are seen as a deliberate part of relations, produced to promote and enact certain ideas and understandings of nature and ways of relating to it.

In a similar vein to the examples discussed above, I have used texts in my research as a general source of information and data, as an (indirect and partial) means of taking into account a range of other ideas, practices and (human and non-human) voices beyond those who were interviewed (see section 5.4), and as constitutive, performative elements of relations themselves - particularly in the case of texts that have been deliberately produced to influence how people interact with and think about birds. I engaged with a range of different texts and different kinds of texts (for one or more of the above purposes in each case) – these have included advisory leaflets, policy documents, news stories, documentaries, websites, pictures and even warning signs, which have been produced by councils, government bodies, conservation groups, pest control companies, newspapers, and others. Where texts were examined as means of expressing and enacting relations I analysed them in a similar fashion to interview transcripts within NVivo (discussed shortly).

5.3.4 Observational field work

The interviews and the desk study comprised the bulk of the research I conducted, and from them I was able to gather much of the source material I needed to address my research questions. It is true however that these methods only (directly) engaged with (certain) humans, their ideas and practices, and their accounts of others. In order to further enhance the research with other perspectives and engage with some of these 'others', I conducted observational work in the field, and it is only through conducting this work (as opposed to interviews or desk study) that I was able to directly encounter (some of) the birds for myself. I am not suggesting that through conducting observational work (or through potentially using more and more different research methods) I have (or could have) necessarily addressed all the absences of others (such as the birds) in the research (such a task being difficult - see section 5.4 – though of course *all* knowledges are partial (Haraway, 1991) and involve absences, and as mentioned earlier, ideas of true or 'complete' representations are suspect). I do contend though that my understanding of human-bird relations was enhanced through observational work and field visits, and enabled me at least in part to engage with birds directly. The usefulness of observations in similar research is demonstrated by (for example) the work of Griffiths, *et al* (2000, p56-70), in their study of feral cats and their relations with humans and different places within the city of Hull. Observational field work allowed for the collection of data regarding cat

behaviour and site context (thus adding insights about places and nonhumans to their research), and also enabled the researchers to consult with local people in an informal way.

I conducted observational work and other field visits wherever possible, usually in the company of research participants, though I also made some field visits on my own. This moved the research 'out of the office' (my own and those of my interviewees) and into some of the (other) spaces of human-bird relations in urban areas. This enabled me to see and encounter some of the birds, people and places involved for myself and to see how certain aspects of relations and certain practices occur 'in situ'. The 'field visits' I conducted were primarily to outdoor locations, though I also attended a small number of meetings and workshops indoors - I have not disregarded the importance relationally of what occurs within offices to the constitution of human-bird relations, nor do I privilege outdoor sites, though I have sought through 'field work' to in part get a better sense of the places that are the focus of relations, which are primarily outdoors.

In terms of being able - through observational field work - to encounter and get close to birds, and indeed to certain management practices, my experiences were variable, and reflect certain themes of place, movement, behaviour, form and encounter within different human-bird relations in urban areas more widely. It is to an extent perhaps unsurprising that of the case study birds it is gulls (being the most numerous and through their actions the most obvious of the birds) that I was able to encounter more closely (relatively speaking), more regularly, and in a greater number of locations. Peregrines, being much less numerous, less 'obvious', and less likely to come to ground level, were only encountered occasionally in particular locations and generally at more of a distance. I did not encounter, nor as yet have I ever in my life (knowingly) seen, a black redstart (the smallest, rarest and most elusive of the case study birds).

These different 'levels of encounter' I experienced with the different birds are to an extent probably commensurate with the experiences of many people who spend time in urban areas. Of course, I had, through my research participants, a certain degree of 'added' access to places less visited by or out of bounds to most people, though my access both to birds and to practices 'close up' was not as extensive as I would have liked due to difficulties in negotiating (in more than one sense) this access. Firstly, the birds themselves, and the

places they were in, were often physically and/or legally difficult to get at, and remained to varying degrees at a distance. Secondly, although I did attempt to arrange to accompany personnel from council pest control departments onto rooftops and observe certain management practices, permission for this was not forthcoming due to their (the councils') health and safety concerns. Thirdly, access to birds and practices was also limited to an extent by the simple fact that certain key activities (to do with management or research) were not being conducted during the period in which I was conducting my research. I *was* successful in accessing a number of key locations, and this proved very useful and interesting and offered (physically and conceptually) new perspectives, though the degree to which this altered the kinds of direct encounters I had with birds was limited. Thus I encountered gulls at a distance (from different low or high vantage points) and fairly close up at street level, but not very close up on their rooftop nesting sites. My encounters with peregrines were limited to ones conducted at a certain distance from street level (often from vantage points set up by conservationists to show people the birds), and my encounters with black redstarts were (and currently remain) restricted to indirect encounters through pictures and other people's accounts.

The observations I made in the field were recorded using field notes and photographs – the role of these within my analysis is discussed shortly. The details of all field visits (and interviews) are listed in table 1 below. It will be noted from table 1 that I have conducted interviews and field work in a range of different towns and cities. In part this reflects the interest in 'difference' within the research, not just in how human-bird relations are different in the case of different bird species but also in the case of *different* places *within* a particular urban area and *different* towns and cities as urban areas. Looking at different places has also allowed instances of not just difference but similarity to be picked up on, which has highlighted how certain relations can develop in different ways in different places, or how they can become more alike (as for instance certain networks grow and exert more influence). Choosing which locations to look at has predominantly been a case of going to where interesting things are happening and where certain human-bird relations have become 'issues'. This way of deciding on locations is I believe valid, as my interests have been with specificities and differences, and I have not been concerned with producing a 'complete' study of one location, nor indeed have I been trying to be representative of all urban areas.

Table 5.1: List of interviewees and field visits

Name	Role and Organisation	Rationale for interview – what connection to case study species?	Additional site visits and observation work?
Dr Adam Bates	Researcher - Birmingham University	He is involved in research/work on green roofs and black redstart conservation in Birmingham.	I visited a green roof research station with him on a rooftop at Birmingham University.
Stefan Bodnar	Ecologist - Birmingham City Council / Birmingham and Black Country Black Redstart Research Group	Key contact for black redstarts and the associated action plan in Birmingham and the Black Country.	
Meyrick Brentnall	Planning Officer - Gloucester City Council.	Planning officer in the Policy, Design, and Conservation Section of Planning Services. In charge of the Council's gull control work.	I conducted informal site observations on my own in Gloucester. (I attempted to organize site visits with him and/or other personnel to observe gull control work but permission was not granted due to perceived health and safety issues).
Nick Brown	Education and Community Programmes Manager - Derbyshire Wildlife Trust.	Co-runs the Derby Cathedral peregrine project / watchpoint.	I visited Derby Cathedral peregrine watchpoint with him.
Clive Bryant	Pest Control Officer - Cardiff Council.	Involved with gull control work in Cardiff.	I attempted to organize site visits with him and/or other personnel during gull control work but permission was not granted due to perceived health and safety issues.
Jo Bunner	Events Officer - Royal Society for the Protection of Birds (RSPB), London.	In charge of the RSPB peregrine watchpoint at Tate Modern.	I visited Tate Modern peregrine watchpoint with her.

Matthew Capper	People Engagement Officer – RSPB, Northern Region.	In charge of the RSPB peregrine watchpoint in Manchester.	
Ian Carter	Ornithologist, Evidence Team - Natural England (based in Peterborough).	Involved in advisory and policy work relating to birds at a national level.	
Nigel Clark	Head of Projects - British Trust For Ornithology (BTO)	Involved with research and consultancy work that addresses human / wildlife conflicts, including urban gull issues and building design / modification.	
Lisa Cowley and Emily Poulton	Lisa Cowley: Projects Officer, Emily Poulton: Events Officer - RSPB Birds Near You project, Birmingham.	Run the RSPB peregrine watchpoint in Birmingham.	I visited the peregrine watchpoint in Birmingham on my own.
Rosemary Coyne	Project Officer - Sustainable Eastside (Groundwork / Birmingham City Council).	Involved in providing green roofs for black redstarts/wildlife as part of the regeneration of the Eastside of Birmingham.	
"Rob" (pseudonym)	Freelance researcher - connected to Birmingham and Black Country Black Redstart Research Group / Wildlife Trust.	Involved with monitoring and research of black redstarts and peregrines in Birmingham. Wrote the Black Redstart Species Action Plan for Birmingham and Black Country.	I visited some key black redstart habitat / survey areas in Birmingham with him.
Nick Dixon	Freelance researcher/consultant – connected to the Hawk and Owl Trust.	Key researcher and expert on peregrines in urban areas.	I visited St Michael's church in Exeter with him – peregrine breeding site, and research site.
Ed Drewitt	Freelance researcher (works for Bristol Museums in a different capacity).	Key researcher and expert on peregrines in urban areas. Also involved in research on gulls in urban areas.	

Pete Etheridge	Showing People Birds Officer – RSPB, South Wales.	In charge of the RSPB peregrine watchpoint in Cardiff.	I visited (with him) Cardiff Town Hall peregrine breeding site (watchpoint site was not operational on day of visit), and also visited information point/webcam footage screen in adjacent Cardiff Museum.
Dr Alan Gange	Professor of Microbial Ecology – Royal Holloway, University of London.	Involved in research on green roofs for biodiversity and black redstarts.	
Dusty Gedge	Independent green roof campaigner, consultant – Living Roofs (also works in association with London Wildlife Trust and other bodies).	Key London and U.K. contact for black redstarts and green roofs. Wrote the Black Redstart Species Action Plan for London.	I visited a number of green roofs in London with him – including the Barclays Building Canary Wharf, and the Laban Dance Centre Deptford – along with other sites of importance for black redstarts and brownfield wildlife.
James Hale	Ecological researcher and consultant.	Involved in urban nature conservation through Sustainable Eastside and other projects in Birmingham.	I visited experimental brownfield conservation sites in Birmingham with him.
Emma Haskell	Director – PiCAS (Pigeon Control Advisory Service)	Advises organisations and building managers on strategies for humane bird control, including gulls in urban areas.	
Graham Jones	Biodiversity Manager for Greater Manchester - (within the Greater Manchester Biodiversity Project).	Key contact for black redstarts in Manchester. Wrote the Black Redstart Species Action Plan for Greater Manchester.	

Gyongyver Kadas	Researcher - Living Roofs	Involved in research on green roofs for biodiversity and black redstarts.	I visited experimental green roofs at London Zoo with her.
Pete Massini	Senior Specialist Advocacy and Partnerships - Natural England, London.	Key contact for London peregrine falcon action plan.	
Gary Pickering	Environmental Health Officer – Scarborough Borough Council	Involved with gull control work in Scarborough Borough area.	I visited a number of locations of interest in Scarborough with him, including sites where gull (and other bird) deterrent work had been carried out
Peter Rock	Freelance urban gull researcher / consultant.	Key contact for urban gull research in Britain – consults local authorities and others on urban gull issues.	I visited rooftop vantage point with him - from where Peter surveyed some of the roof nesting gulls in Bristol. I also visited some other locations of interest in Bristol with him.
Clive Salisbury	Environmental Health Officer - Cheltenham Borough Council	Involved with gull control work in Cheltenham.	
Antonia Scarr	Conservation Team / Marine Policy Advisor - Environment Agency, London.	Environment Agency a key player in planning process in London, with relevance for black redstart issues. Also have peregrines on EA property.	
John Tully	Freelance researcher. Member of Bristol Ornithologists Club. Assistant Regional Representative for the BTO.	Involved in the Avon Gorge peregrines project / watchpoint, other peregrine work and research.	I visited the Avon Gorge watchpoint site with him.
Richard Van Den Heule and Paul Harrison	[Assistant] Location Manager and Transfer Station Manager - SITA Waste Disposal and Recycling Transfer Station, Birmingham	Waste transfer station is used as a food source by gulls and other birds – Staff are taking some measures to control this.	I visited the waste transfer station with them.

David Van Vynck	Managing Director - Van Vynck Environmental Services / Avian Solutions	Private pest control company involved in control of gulls and other birds.	
Paul Wilkinson	Ecologist - British Waterways (West Midlands)	Involved with black redstart conservation and monitoring.	

5.3.5 Analysis of the research material

The interview transcripts, field notes and some of the 'texts' (those being examined as enactments of relations) were all transferred into NVivo 7 (and later NVivo 8) qualitative analysis software in order to conduct analysis of this data (and also as a means of archiving all of this material in one place). The data was coded into main themes and sub themes, enabling key issues to be identified and similarities and differences between different cases to be highlighted. I also collated a wide array of information around particular cases in order to tell certain illustrative stories within the thesis, though as this involved some material that was more difficult to transfer into NVivo (such as old paper documents and pictures) this process was in part conducted out 'on the desk' so to speak, with notes being made in Microsoft Word.

A brief consideration should be given here to issues of validity of data, and rigour of analysis, within qualitative research.

The usefulness of the accounts produced by qualitative interviews has been debated in the literature. Silverman (2001, p18) highlights an important unresolved issue here, namely whether such accounts are "true or false representations of such features as attitudes or behaviour", or whether they are "simply 'accounts' whose main interest lies in how they are constructed rather than in their accuracy". Whilst acknowledging that all such accounts are constructed within the performance of interviews, and cannot as such be seen as 'direct' or 'truthful' representations of events and practices and even of ideas and opinions, I do not feel that this invalidates these accounts or renders them worthless. In general terms I see the accounts produced in the interviews I conducted to be of value not only because 'truthfully representing' is in itself a problematic endeavour/concept (which is perhaps of limited use

as a criticism), but also simply because of what the interviews were about. They were not, for example, conducted with, and focussed on the experiences of, people who might be seen by some as 'difficult' interviewees and/or 'unreliable' witnesses, such as people who had been through traumatic experiences or were in some way troubled or marginalised or might give 'false' accounts for other reasons (Silverman – 2001, p17-18 – gives an example of interviewees giving accounts of the influence of alcohol on their sexual activities, where ideas about good conduct, and the effects of alcohol on the memory, might influence such accounts). Rather, my interviews were conducted with people who have particular interests in and/or are engaged in practices directed towards birds in urban areas, and by interviewing these people I sought to gain an understanding of their ideas and opinions about these birds and their relations with people, and of how and why certain practices are pursued. I do not therefore in general believe that such interviews would produce wildly 'false' accounts of these ideas and practices, because of both the people involved and the subject matter, which has more in common with (for example) the interviews conducted with ecologists by Harrison and Davies (2002) in their study of brownfield conservation in London (interviews that provided detailed insights into the working practices and ideas of the ecologists), than with the type of more 'traditionally' sociological interviews referred to by Silverman above.

The question of rigour in qualitative analysis has also been addressed in the literature. Baxter and Eyles (1997) assert the importance of reflexively questioning how research is conducted and analysed, and propose that credibility, transferability, dependability and confirmability are useful general principles (though not hard and fast rules) for evaluating the rigour of qualititative work. I contend that I have employed sufficient rigour in the production and analysis of my research data. I have within this chapter reflected on and justified the rationale for and conduct and analysis of my research. Additionally, I would stress again my concern with specifics rather than representations of 'general' situations, and this has meant that I have gathered and analysed data in certain ways (the analytical focus on both coding data within NVvio to highlight themes, and also on telling particular interesting stories, being equally valid in this regard). Each of Baxter and Eyles "general principles" (1997, p521) are applicable to varying degrees because of the nature of my research – I would affirm my own reflexive rigour, and the confirmability of my data (much of which can be checked through accessible data sources such as online policy

documents), though would argue that the notion of 'transferability' is of less importance because of my concern with specifics (although certain things do 'transfer' to other scenarios).

5.4 Practical, ethical and theoretical issues in the research

In this section I discuss some of the other practical, ethical and theoretical considerations within the research.

5.4.1 Identity as a researcher

In the planning and execution of the research, my own role as a researcher and the possible effect this could have on interviewees, fieldwork participants and others needed consideration. The 'identity' of researchers, and how others perceive that identity, is considered within the social sciences to potentially have some bearing on the success of research and the quality of the data gathered, depending on whom the researcher is interviewing or working with (Mason, 2002, p93). Part of my 'identity' was as a PhD student with (as mentioned earlier) an active interest in birds and wildlife conservation, and also a concern for animal welfare (I am a vegetarian): it is conceivable that I may have been more easily 'accepted' as an interviewer/observer by conservationists than by pest controllers if I were to 'project' this identity in an obvious fashion. In practice this was not the case, as firstly I did not, in my interactions with people, express any strong views or otherwise give them any obvious cause to be prejudiced against me (which could thus have affected the rapport and openness of interactions). Whilst not being distant or completely 'objective' (this being impossible, as knowledge production is always embedded in the world, not apart from it – see Haraway, 1991), I was to a certain extent 'neutral' regarding my own opinions, in order to allow research participants to discuss their ideas and practices without feeling that they were under attack, and where I had to ask possibly contentious questions I attempted to ask them in a manner that showed interest in rather than suspicion of participants. Secondly, the people I interviewed and otherwise interacted with were generally very friendly, open, and happy to discuss what they did and their opinions, and so for the most part there were few problems in establishing a rapport and getting people to talk.

5.4.2 Confidentiality and relations with research participants

In the process of approaching potential research participants I attached to my e-mails two documents – an outline of my research, and an ethical statement. This ethical statement (see appendix) set out, for the sake of formality and the research participants' peace of mind, the terms of any research relationship that would be entered into between myself and others. One of the main points of this was to offer assurances that I would honour any requests by research participants for anonymity (regarding their own identity) and confidentiality (regarding sensitive information). Anonymity was requested by one research participant, and I have used a pseudonym when referring to this person in the thesis – all others are referred to using their own names, with their permission (although in a couple of instances I do not name people directly when discussing 'difficult' issues. I have been party to certain confidential information regarding the location of birds' nests, and have not specifically referred to these locations in writing or mentioned them to anyone other people. On the ethical statement I had provided a space where both myself and research participants could sign our names in order to agree on the terms of the research relationship somewhat more formally, though in the process of conducting the research no-one felt the need to do this (the provision of an ethical statement in itself was possibly reassurance enough).

5.4.3 Health and safety, and practical ethics

A wider practical concern within the research has been health and safety considerations (a point also highlighted on the ethical statement). Such considerations have been formalised through the (mandatory) production of risk assessments (as required by the University). Issues dealt with in this regard related primarily to health and safety when working in the field or when visiting different locations for interviews. Modes of working thus involved informing people of where I was going and who I was meeting with, not venturing into possibly dangerous urban areas alone, to take due care in physically hazardous environments, and to observe the health and safety procedures of other organisations. Working in places that would potentially bring me into close contact with birds also received consideration, from a health and safety point of view regarding risks to myself (to for instance be aware of the possibility of aggression from gulls), and from an ethical point of view regarding appropriate ways of behaving near birds (so as to not unduly disturb or distress them, and to follow appropriate legislation). In the actual conduct of the research –

as discussed earlier (section 5.3) - such a degree of close contact with birds did not generally occur.

5.4.4 Researching birds and other nonhumans

In the discussion of my research methods in preceding sections I have in places highlighted a concern with being able to bring more voices and more perspectives into the research. Studying human-bird relations in a relational way, which seeks to give equal consideration to all the humans and non-humans involved in relations and avoid both anthropocentric *and* ecocentric accounts, would thus seem to require an engagement not just with what people do, say and think but also with what all the nonhumans do (and perhaps say and think) as well. Considering animals in particular here, this is (as discussed in chapter 4) an issue that has concerned those who wish to bring animals more fully into geographical and social science accounts of the world, not just as 'symbols' or as mute entities placed or acted on by people but as beings with agency, intentionality and subjectivity (Philo and Wilbert, 2000; Emel and Wolch, 1998).

Relational approaches, such as actor-network theory (see 4.2 and 4.6), have been engaged with by those seeking to bring animals 'in' precisely because of the emphasis placed on giving equal, symmetrical consideration to humans and nonhumans – this has allowed animals to be conceived as a more equal partners in the production of relations, with agency and subjectivity being relationally produced and not the sole possession of humans. However, work in animal geographies, including that influenced by ANT, has struggled to attend to the 'animality', 'beastliness' and intentionality of animals and bring fuller conceptions of animals (including ideas of how animals think and feel) into social science accounts in ways that seen as theoretically and ethically necessary (Johnston, 2006). For instance (and of particular relevance here) Wolch (2002, p734) contends that rethinking the ethics and practice of urban life more inclusively involves not just taking animals and how they figure in people's lives into account in decision making, but also involves attempting to answer the more difficult questions of "what do animals want? Can we ever really know?"

Nagel, in his classic paper *What is it like to be a bat?* (1974), contended that we cannot know what or how animals think, as bats (in the example he uses) perceive the world in

ways that are different from humans, and thus 'think' in ways that humans cannot comprehend. In contrast to this is the 'thought experiment' conducted by Gullo *et al* (1998) in their paper *The Cougar's Tale*, which attempted to formulate ideas of how cougars perceive and think about people and changing landscapes (based on scientific accounts of cougar ecology and behaviour). Nagel's view seems to lead to a dead end when it comes to knowing how animals think and feel, and Gullo *et al* have been criticised for indulging in excessive anthropomorphism based on human ideas and representations (Johnston, 2006: Wolch, 2002). How then can animals be more fully engaged with in research in useful and critically valid ways?

Regarding my own position here and my approach in my research, I cannot know literally what animals think and feel, and have not made any absolutely definitive claims in this regard. In itself this is and was not quite as much of a problem as it may have at first appeared, as definitively knowing what people (as well as animals) 'actually' think and feel is itself problematic (Wolch, 2002, p734), and that differences between humans and animals are ones of degree rather than of kind (Hinchliffe, 2007). The problematic question of access to the thoughts and feelings of others is one that need not lead to inertia, but should be addressed in a variety of innovative and creative ways that enable others to in some way 'speak' and allow their otherness to be better apprehended

One way of seeking 'access' (and by extension a means of formulating better relations) is through those people who work closely with animals (see 4.6), as exemplified through Ingold's 'dwelling perspective' and related work (Ingold, 2000; Johnston, 2008; Lorimer, 2006) and in a differing way through Haraway's ideas of co-constitutive human and animal subjectivities (Haraway, 2003, 2008). It can be argued of course, as noted earlier, that any accounts of animals given by people are prone to anthropomorphism, and will be based on human ideas and representations. Yet if we accept the critique of fixed notions of human and animal subjectivities (see Fox, 2006; Castree and Nash, 2006), then there is room for what Johnston (2006) refers to as "responsible anthropomorphism", which accepts that as humans we can only ever see the world through an at least partially 'human' perspective, yet remains critical of (though interested in) attempts to speak for and of others, and is based not on "abstract philosophical" notions of shared sentience or shared place in the

world but on "actual relationships" and "day-to-day living and working" (p646) with animals.

Though such work as Ingold's and Haraway's has generally focussed on relationships between humans and pet or livestock animals (which implies more constant close relations), and my work is focussed on animals outside the 'household' (see section 5.2), I see no reason why focussing on people who regularly work with and study 'wild' animals should not also produce useful insights. Indeed, the usefulness of this approach is demonstrated in Lorimer's work on "nonhuman charisma" (2007), where he contends that those who research wild animals through long periods of study in the field go through a process of 'becoming' animal, by becoming more attuned to an animal's habits, movements and relations with its environment. I see such work as providing a certain level of access to, and giving a greater sense of, dynamic animal (and human) subjectivities, and in this respect I have in my research engaged (critically) with scientific literatures on animal cognition and behaviour, and more directly with the accounts of research participants who study and work closely with birds.

As well as approaching animal subjectivities through those engaged closely with them, I have also sought to conceive of them more experimentally. Beyond working on the premise that birds do have subjective experiences (see Wolch, 1998), and that bringing an acknowledgement of this into research and analysis is necessary, it is important - if particular ethical and practical relations are to be better assessed and reappraised - to go further than this and to understand how particular subjectivities are contingently produced in specific circumstances (Holloway, 2007, p1054-1055). Making absolutely definitive claims about what animals think and feel is not possible, though suggesting how they *might* perceive, experience and even think about particular situations in partial, creative and still critical ways *is* I contend possible, and can be a useful exercise in experimentally rethinking specific aspects of human-bird relations in urban areas and how they. By considering the relations of birds, people, places and things and how birds and people react in particular circumstances then a sense can be gained of how particular subjectivities are contingently produced and performed, and by further re-examining what changes in these relations might do to those subjectivities, then it is possible that a wider (if indeterminate)

sense of such subjectivities can be produced as well as ideas being raised regarding the potentially better reworking of relations.

Though what arises from such an endeavour is provisional, I would suggest that at the very least it gives an enriched sense of how subjectivities and relations are constituted, and highlights the need to consider a greater number of factors when assessing human-animal relations. In attempting to consider the contingent subjectivities of others, I have made reference to the accounts of research participants who work closely with birds, to the ideas of workers such as Temple Grandin (see Grandin and Johnson, 2005) who uses both her knowledge as an animal scientist and her own perspective as autistic (which she contends gives her a closer understanding of how animals think and feel) to assess how animals are reacting in given situations and suggest changes to those situations to resolve problems, and also to scientific literatures on animal cognition and perception (e.g. Wynne, 2001, Manning and Dawkins, 1998).

5.4.5 Positionality of Research Participants

As has been mentioned earlier in this chapter, this thesis has not sought to engage with, or produce a representative 'sample' of, all human-bird relations in urban areas - it's focus being instead on the specifics of particular relations. This point applies as much to the particular people involved as it does to the birds and the places that have been considered, and it is important to note here the positionality of the research participants I interviewed and worked with, as to a large extent they belonged to (or could be associated with) particular social and cultural groups, and particular groups within British human-bird relations. Thus the human-bird relations examined are primarily those of, or according to, particular groups of people, with many other different relations involving different groups being on the edges of or outside the methodological and/or theoretical scope of this study.

It is certainly the case that all of my research participants could be (broadly) described as white (one participant originating from Eastern Europe), with the majority being male. Social class is perhaps more difficult to specifically comment on here, though I would suggest (from meeting and conversing with them) that at least two thirds of my research participants could be described as middle class, or indeed as 'middle class professionals' in terms of their class and occupations. This broad social and cultural bias amongst my

research participants can be seen (it could be argued) as reflected in their specific positionality within the wider array of human-bird relations. Whilst I am certainly not claiming that the predominantly white / male / middle class demographic of my research participants means that they necessarily represent one particular group or position within, or set of opinions about, human-bird relations – such a view being problematised by the participants' range of job roles and opinions relating to the conservation or control of different birds – it can be said that by and large they belong to a particular set or small number of groups / positions within human-bird relations.

The majority of the participants worked for (or were in some way associated with) local authorities, government bodies or wildlife groups. As was noted briefly earlier in this chapter, the bird 'lobby' - which, loosely defined, includes groups and individuals interested in conserving, understanding and observing 'wild' birds, and promoting bird interests - is particularly strong in the context of Britain, with the size and influence of the RSPB being perhaps the most overt expression of this. Indeed, a number of RSPB staff were amongst those interviewed, along with others with particular interests in birds. Participants who were involved in differing ways in bird management (including research and management within government, NGOs and private companies), were not, by contrast, necessarily people with such a special interest in birds (though some were). There was certainly then a degree of diversity amongst the research participants, yet it can be stated that - generally speaking - they were in the main part of more 'official' networks of 'wild' bird management, and/or were part of the bird 'lobby' in Britain. These particular positionalities of my research participants should be borne in mind when considering the specific human-bird-urban relations examined in the following chapters.

5.5 Summary of chapter

This chapter has outlined my main research methods and the practical and ethical considerations that they raised, particularly in the difficulties of engaging with nonhuman research participants. The empirical detail gathered through these methods will be used in the following chapters to explore the relationships between humans and birds (and often also between birds and other birds) in different urban areas in England.

The next two chapters are organised thematically. Chapter 6 deals with ideas about birds, and primarily examines the production of scientific knowledges about birds in urban areas. Chapter 7 deals with the different practices of management of birds in urban areas that seek to either conserve and assist or control and deter different birds.

Chapter 6: Ideas about birds - representing, understanding and producing knowledge about birds in urban areas

6.1 Introduction

This chapter, and the chapter that follows it, discuss different aspects of how human-bird relations in urban areas - and specifically those pertaining to the research case studies - are constituted. Chapter 7 examines the various practices involved in attempting to 'manage' birds, people and places in urban areas in order to try to shape and enact human-bird relations in certain ways. This chapter is about the different ideas, knowledges and understandings of the birds that people have, and how such ideas arise or are produced. Such an arrangement of the chapters is not meant to signify a theoretical split between knowledges and practices, or a belief that knowledges and ideas always inform and precede practices (although that may sometimes be the aim of their producers), and I follow the more relational notion that ideas and practices (and thinking and acting) are interrelated and co-constituent, and emerge together out of situated relations (Hinchliffe, 2007, p12-13). Rather, I have arranged the two chapters in this manner partly for the sake of convenience, and also because knowledges are produced through particular practices and relations, and can therefore be discussed as distinct things of interest, whilst simultaneously acknowledging their situatedness within wider relations (rather than assuming their independence from them). Deciding whether to look at knowledges/ideas or (management) practices first is a kind of 'chicken or egg' problem, there being no completely satisfactory answer either way.

With this in mind, the next section will discuss in general terms how and why the birds are perceived, represented and understood by humans in certain ways in urban areas, in order to illustrate the range of ideas and knowledges that partly constitute, help shape and are produced within human-bird relations. The subsequent sections in this chapter will more specifically examine how scientific knowledges of the birds are produced – these are a part of relations in themselves, and are also relevant to the management practices discussed in chapter 7.

6.2 Perceptions, representations and knowledges of the birds

6.2.1 Introduction

As chapter 5 explained, I have not tried to pin down or produce a representative survey of what the attitudes and ideas of the majority of people (the 'general public') are towards different birds. The idea that there is a 'normal' or 'right' attitude towards particular birds that can be established (and perhaps act as a baseline for analysis or management) is in itself dubious. What is important is establishing what ideas and perceptions are present within particular human-bird relations in urban areas, and then trying to understand which ones have effects, and in what ways – this being more revealing about the constitution and workings of relations. This is because the ways in which people perceive, describe, represent and understand different birds (and other animals) varies - from person to person, and from one organisation to another - depending on personal opinions and feelings, the way a particular group's role interacts with a particular species, and on how particular birds and people are situated in a wider set of relations. Also of importance are the different *ways of* knowing and perceiving birds (and the wider world) that people/groups use, which ones they attribute greater validity to, and which ones have greater effects on human-bird relations.

Drawing on the research material, this section will give a broad overview of the different ways in which the case study birds are perceived, represented and understood in urban areas. I will review the main attitudes (both positive and negative) expressed towards the case study birds and examine each through an illustrative example – this will serve as a starting point for considering these relations (from a primarily human perspective) and will help situate subsequent analysis of more detailed examples in later sections (where the birds will be brought further into the discussion). I will close this section with an overview of scientific knowledges of the birds – being a particular way of perceiving and understanding them – which will lead the discussion into the following sections that specifically address different scientific knowledges.

6.2.2 Reactions and attitudes to the birds

The ways in which people react to different birds, and the differing attitudes people have towards them, are not fixed or essentialised properties of relations, but emerge from, and change, within these relations. Some people, including some of my interviewees, do however present and report people's reactions and attitudes to certain birds as generally being of a certain type.

For instance, people's reactions to peregrines are in the main presented as being positive, involving – in the example of people being shown peregrines at an RSPB watchpoint (discussed later in chapter 7.4) - pleasure and delight at seeing such birds in urban areas. Matthew (RSPB People Engagement Officer) contends that;

> "The majority of people were absolutely delighted to see them. Most people they, what you say to people is, 'Have you ever seen a peregrine?' 'No.' 'Would you like to see one?' 'Yeah.' And, you know, you put a good quality telescope on a bird like a peregrine and they look through and you'll even see them step back, you know, bloody hell, you know, so hugely, hugely positive".

Matthew typifies the reactions of all the interviewees with whom peregrines were discussed and their perceptions of the general public's reactions also, which is presented as being a positive one - people are repeatedly described as saying 'wow' when they see a peregrine, as being 'gobsmacked', 'excited' and 'overjoyed'. Pete, an RSPB Showing People Birds Officer, asserts that "a lot of people in Cardiff have just engaged with it, they've just accepted it as, you know, part of our city". Many interviewees themselves have similar reactions and opinions, that peregrines are 'fantastic', 'a great bird to look at' and 'cool', and that they have a 'positive impact'.

This positive reaction and attitude to peregrines is not entirely universal, however. Nick, an Education and Community Programmes Manager for Derbyshire Wildlife Trust, explains that the presence of peregrines causes concern for some pigeon fanciers - "certainly the older generation of pigeon fanciers are more the hard core, if you like, and I think they, you know, they certainly resent it very much", and John, a birdwatcher and researcher from Bristol, recalls that in 1990 two peregrine chicks were killed by people he suspects of being

113

amongst the 'hardcore' of pigeon fanciers/racers who dislike peregrines (the peregrines being blamed by some pigeon fanciers for the deaths and disappearances of pigeons). In urban areas these negative attitudes to peregrines are generally seen *by interviewees* (I did not interview any pigeon fanciers myself) as being restricted to a few people, mainly pigeon fanciers, though Ed, a peregrine researcher, points out that there are "some parts of the country (where) peregrines are still targeted and persecuted" more generally, a point echoed by Nick who observes that "they've always been persecuted in the Peak District in the north of the county by the grouse people, the gamekeepers".

By comparison, people's attitudes to gulls in urban areas are often presented as being quite negative, though not universally so. Meyrick (a planning officer at Gloucester City Council) alludes to the strong reactions that people have to gulls, and to his own uncertain position:

> "They're [gulls] quite cute in many respects, but of course they have this dark side as well that they squawk a lot and shit on people, and so you do you get this total polarized view. People either love them or hate them, and, you know, I feel a little bit caught in the middle".

This uncertainty is repeated by some interviewees when discussing their own reactions/opinions, seemingly perhaps arising from their position as 'experts' with an understanding of gulls in a broad context. Other interviewees' reactions to gulls vary from "they're a bugger" and "they're pretty grisly things" to "a young gull chick is, they're really pretty aren't they?". The reaction of the wider public is commonly presented as negative, although varies by source and by area. Nigel (Head of Projects at the BTO) describes representations of gulls in the press as often negative, where they are "seen to be villains". Clive, an Environmental Health Officer in Cheltenham, states that "the correspondence [from residents] is almost universally against them". Yet Dusty, an ecological consultant/campaigner from London, thinks that "there's not really an attitude to gulls around here" and that "it's neutral in London", although "it would steer toward the vermin if pushed".

From my own examination, accounts in the press vary: quite often a negative stance is taken with gulls described as 'flying rats' and a menace, with headlines like 'Attack of the Killer Gulls' (Stuart, 2004), and frequent references to the Alfred Hitchcock film *The Birds* adding to the dark tone. Sometimes however the coverage is more tongue in cheek with stories such as those about 'Buster the Seagull' ('Catch of the day for 'Buster' the seagull at stall' - SWE, 2006) who used to regularly visit Cardiff open air market and had "learned where the best pieces of fish are on the open-air fish stall" and who had "become a local attraction", and other stories show concern for gulls, as in the case of a story about a gull that was shot with a crossbow and had to be put down ('Gull arrow attack fury', Abrams, 2005).

Black redstarts have a far lower profile than either of the other case study birds. Out of all the research material, black redstarts garner the smallest amount of coverage in terms of attitudes and reactions, mainly because the public is generally unaware of the presence (or indeed existence) of black redstarts (their lack of wider 'presence' has been noted by Lorimer, 2008, and Hinchliffe, 2008). Within the relatively few mentions they get in this regard, black redstarts are seen as being special and unique, though this often appears to be linked to their rarity and their association with urban areas, rather than being a more personal attitude or response from people (as seems more the case with peregrines and gulls). Lisa, the RSPB 'Birds Near You' Project Officer in Birmingham, observes that the general public have little reaction:

> "They're [black redstarts] quite difficult to see, they're not very fantastic looking, although fantastic to see if you know all about birds, if you were just Joe Bloggs walking down the road and you looked through a telescope you just going to be like, 'Hmmm [in unimpressed tone], it's [only] a little bird".

For those who do "know all about birds" however, Lisa says that seeing a black redstart is "fantastic" and Stefan, an ecologist involved in a black redstart species action plan, thinks that "they're pretty little things… very distinctive song, and really nice to see".

There are then a range of different attitudes towards and ways in which people react to different birds in urban areas. To generalize somewhat, attitudes towards peregrines in

urban areas are presented as largely positive; attitudes towards gulls are presented as often being negative (though are also presented in terms of there being *strong* opinions either way); and that in the case of black redstarts attitudes appear positive, but only for the small number of people who know about them. Such reactions and attitudes are not given but are produced within particular, situated relations – they do not represent some fixed 'natural' state of affairs where some birds will *necessarily* always be favoured over others, but emerge from changing relations and are themselves changeable (see Ingold, 1994; Philo and Wilbert, 2000). They are influenced both by the 'lived' relations and interactions people have with birds, and by existing ideas about the birds that circulate, influence and are altered by relations (e.g. Proctor, 1998; Michel, 1998; DeStefano and Deblinger, 2005). These ideas and experiences both involve the attribution by people of characteristics, qualities and status to the birds, and it is these factors that will now be considered.

6.2.3 Characteristics, qualities and status

For comparison, an overview of such ideas for each type of bird is given in Table 1 below, quoting a selection of words and phrases from interview transcripts and other texts.

There is then (within the table) a range of qualities and characteristics ascribed to the birds, some shared by more than one species, some seemingly unique to a particular species, and some even varying between individuals of the same species, producing seemingly contradictory comments. To summarise Table 1, gulls generally are seen as highly intelligent, but peregrines are seen as more variable, with some being less bright than others. Peregrines are thought of as beautiful, enigmatic and charismatic by many, whereas gulls are often described as noisy, messy, and loud. Gulls are also seen as sometimes being intimidating and aggressive, though this can vary between gulls, with "the odd psychopathic" being one extreme – which contrasts with the more light-hearted representations of gulls as 'cheeky' that sometimes appear in the press - suggesting the ways in which birds are anthropomorphised (see Baker, 2001) by comparison with human personality. Black redstarts elicit fewer responses in terms of qualities and characteristics: some see them as being attractive, others see them as being a bit grey and dull, though there is more of a consensus on them being special and unique.

Table 6.1: Qualities, characteristics and status afforded to the birds by interviewees and press accounts.

	Peregrines	Black Redstarts	Gulls
Qualities or characteristics (positive)	charismatic, interesting, enigmatic, sexy, beautiful, Impressive, amazing mobile, fast, agile urban rural wild, natural a good hook [for getting things done] experienced	attractive, pretty unique, distinctive sort of pioneer urban specialist adaptable	fluffy, pretty, cute really quite bright, at the higher end of animal intelligence visible interesting, canny, agile ginormous long lived adaptable
Qualities or characteristics (negative)	they spend a lot of time sitting around doing nothing, lazy inexperienced some birds just aren't very bright	little, tiny, grey and barely noticeable	hairy, threatening, intimidating, grisly, predatory, psychopathic, aggressive noisy, loud, messy scavengers
Status	Schedule 1 flagship, celebrity bird, rare, iconic, important valued, welcomed, an asset wild doing pretty well, thriving persecuted, threatened, vulnerable	Schedule 1, Species of Conservation Concern, Amber Data Book of Birds rare, iconic, important, valuable, flagship endangered	On (some) General Licenses ubiquitous, ever present, numerous not a problem a real issue, contentious, a long term problem nuisance disease carriers

The different kinds of formal and informal status afforded to the birds reflects some of what we have already seen. Both peregrines and black redstarts have full Schedule 1 protected status, whereas both herring gulls and lesser black backed gulls are on the License allowing for their control (though as of 2010 herring gulls are no longer on some licenses due to conservation concerns regarding a decline in their numbers – Natural England, 2009 – highlighting that designations of status can change, and be changed by/affect change on relations). Peregrines and black redstarts also share the labels 'iconic' and 'flagship', with

peregrines being 'welcomed' and 'valued' – so some species may be accorded certain kinds of 'nonhuman charisma' (Lorimer 2008) and others are not. Black redstarts are considered to be 'rare' and 'vulnerable' and peregrines, although considered (by some experts) to be 'doing pretty well', are often seen by others as being rare and threatened and 'endangered'. Gulls by contrast are seen as numerous and ubiquitous (in spite of reports of an overall decline, as noted above), and also 'a problem', 'contentious', and 'a real issue'. This emphasises not just the heterogeneity of human-nonhuman relations in urban areas, but also how nonhumans are differentiated through and by these relations (e.g. Lulka 2009, 2004; Griffiths, *et al*, 2000), so that different bird species – and even different individuals within species – elicit different human reactions.

The discussion above and Table 1 provides a summary of how the birds are more widely perceived, represented and (to an extent) related to by people. Yet this summary in itself does not go very far in explaining why these particular ideas and perceptions exist within human-bird relations in urban areas. I noted earlier that both other 'existing' ideas, and lived experiences, are influential here – both these factors have histories and relational specificities, as will become apparent in the discussions in the rest of this chapter and in chapter 7. Of particular importance to the ways in which birds are perceived and related to, especially amongst many of the conservationists, wildlife managers, planners and others that my research has focused on, are scientific knowledges of birds. These knowledges influence such things as the status of birds, and are key factors in how human-bird relations are often approached and enacted by people. The remainder of this chapter will thus focus on the production of certain scientific knowledges about birds, and will consider how they relate to other aspects of human-bird relations in urban areas, *and* indeed how they are a part of these relations *themselves.* The next section will introduce scientific knowledges theoretically, before the chapter moves on to deal with specific knowledge practices.

6.2.4 Scientific knowledges of birds

As was discussed in chapters 2 – 4, scientific knowledges and understandings of birds shape many people's perceptions of birds (alongside other forms of knowledge, such as folklore) and inform management decisions and practices. Yet scientific knowledges are not abstract, detached things that somehow just inform or even dictate the way in which

practices and relations play out. Rather – as mentioned earlier - knowledges work within wider practices and relations (such as managing birds), and knowledges are themselves produced through situated practices (Haraway, 1991; Livingstone, 2003; Pickering, 1992; Hinchliffe, 2007). Knowledge practices are thus not one step removed from human-bird relations, but are clearly relations *in themselves* (with the associated ethical and practical considerations that accompany them) as well as being influential on other sets of relations between birds and people. It is therefore essential to investigate them as constituent parts of human-bird relations in urban areas.

It is not just the knowledge products or 'inscriptions' (Latour and Woolgar, 1979) that are important, but also the patterns of practices that can be considered as "modes of enacting naturecultures" Law (2004a, p9). The notion of enactment is useful here as a means of highlighting how the practices of knowledge production do not only produce particular knowledges of the birds (especially through inscription), but also enact human-bird relations. Scientific knowledge practices can sometimes involve particularly intense kinds of human-animal relations. This intensity comes from the efforts required to negotiate the differing life-spaces that birds and humans inhabit, from the efforts to make sense of and translate the birds and their lives into forms of knowledge that are seen as valid and useable, and indeed from the sometimes very physical encounters between birds and humans that this knowledge production involves - so these practices can be considered as much for the human-bird interactions they involve as for the knowledges they produce.

The remainder of this chapter focuses particularly upon scientific knowledges of birds in *urban* areas. Although the case study birds have been the focus of research for many years, many interviewees contended that there has been a noticeable lack of research about these birds in an *urban* context in Britain (with other countries being seen as ahead of Britain in some regards), because of the prioritization of other issues (and therefore resources) by conservation bodies and local authorities, along with a sometimes negative attitude to urban areas as not being of great interest and/or not being particularly nice places to focus on. This relates to Bowker's (2000) work on biodiversity knowledge practices, where he contends that the research process and therefore knowledge is 'skewed' in favour of things that are (varyingly) distant and exotic, attractive, relatively easy to research and which have previously been well researched. Such a bias can reinforce itself in a 'feedback loop' where

research in established areas or ever more exotic locales is repeatedly favoured, and things which are difficult or in one's own backyard get forgotten. This perceived paucity of research on (certain) birds in urban areas is also however probably due to the birds becoming present (or becoming an 'issue') in urban areas relatively recently.

Yet producing knowledges about birds in urban areas involves gathering data *in* urban areas, and this can be problematic, as I will illustrate. In the discussions that follow, some key questions will be: where does the demand for the knowledge come from; who is involved in the knowledge production process; what are the issues and contingencies involved in producing the knowledge; and how does the knowledge circulate? Insights from relational geographies and STS will help inform the analysis, although as Eden (2008) notes, work on science in these areas has "tended to neglect the field in favour of specialized and clearly demarcated spaces of knowledge production and circulation" (p1019) such as laboratories and institutions.

Each of the following sections will examine a different theme and method of producing knowledge of birds, which involves focusing primarily on one type of bird in each section. This focus is not random, but is informed by the types of research being carried out in relation to different kinds of birds, and thus certain birds are more appropriate to consider in each case. Section 6.3 will look at the issues involved in finding, counting and observing birds within urban landscapes, and will focus primarily on the case of black redstart research in British cities. Section 6.4 will examine ringing as a means of marking, tracking and observing particular birds, and will mainly consider research on gulls (with some consideration of peregrines). Section 6.5 will discuss research that investigates what the birds eat and which food resources they exploit, and will focus primarily on peregrine research.

6.3 Finding, counting and observing black redstarts in urban areas

6.3.1 Bird research in urban landscapes

Knowledges of birds take a variety of forms, from seemingly simple records of whether birds are present and in what numbers, to more complex understandings of movements and behaviours. However, being able to produce 'simple' records of presence and numbers, and also observe and define behaviours, can be a complicated and difficult process. Conducting any research can involve a range of contingencies, and attempting to research birds within urban landscapes presents its own set of issues that researchers have to negotiate. Scientific research of all the case study birds is concerned to varying extents with presence (and in what locations), numbers and behaviours, and this will be apparent through all the subsequent sections. The focus of this section will be black redstart research, as it has perhaps the strongest concern with ascertaining the presence of the birds in particular urban locations (as well as recording numbers and behaviours), and yet in many ways is the most difficult in being able to produce such knowledges.

6.3.2 Knowledges of black redstarts - some background

As breeding birds, black redstarts have had a fairly tentative foothold in the urban areas of Britain during the 20th century and into the 21st. Knowledges of them have been patchy (though the presence of the birds is also presumed to have been rare and patchy), and these knowledges have been produced primarily through the efforts of birdwatchers and ornithologists, driven (until the 1980s) by their own interests in the birds. In terms of research activity, Hart-Davis (1964) contended that there was in Britain an increase in observers and recorders of (all) birds during the 20th century (although there was a "marked drop in the volume of records" (p4) during the Second World War), and that by the 1960s there were "three times as many contributors to the *London Bird Report* as there were in the thirties" (p5). Yet he also noted, alongside a summary of black redstart records in London for the first half of the century, that "after 1951 observation (of black redstarts) decreased to such an extent that comparative figures would be misleading" (p253), so in the observation of black redstarts specifically there has been a marked fluctuation.

During the 20th century these patchy knowledges of black redstarts were collated primarily within the archives of bird clubs and natural history societies, such as the London Natural History Society (who produced the *London Bird Report* referred to above). Yet this process itself could be patchy. Fitter, writing in 1945, noted that "it has only quite recently come to light that black redstarts began to breed in the Palace of Engineering at Wembley in 1926, the year after the end of the Empire Exhibition" (p120), and that three pairs nested there from 1926 to 1941, with a fourth pair also nesting there in 1937 – "here, year after year, all unknown to the numerous ornithologists who live in and around London… these rarest of British breeding birds reared their two broods of young" (p121). That many ornithologists were unaware of their presence shows not only the scarcity of the birds but also the sporadic and uncoordinated nature of the knowledges of the birds, with previously uncollated and unarchived records of them only coming to light years later. As Fitter additionally notes, "if black redstarts could nest at Wembley for so long unsuspected, it is more than likely that they did so elsewhere, and there is every reason to suppose that additional records for past years will continue to turn up from time to time" (p126). Not withstanding the patchiness of these knowledges, there seems to have been enough records of black redstarts for Nicholson, writing in 1951, to confidently state that the increase in numbers and distribution of black redstarts in Britain during the preceding years was something that he himself had predicted back in 1926, and that it represented part of a wider north-western expansion of the black redstart's range in Europe.

Since the 1980s, the relations within which these knowledges are situated have changed dramatically in terms of why they are needed, who they are for and how they will be used. Earlier authors noted the black redstart's fondness for bombsites (Fitter, 1945; Nicholson, 1951), and other people have (more recently) commented on the birds' similar attraction to areas of industrial dereliction during periods of economic decline, one observing that it is a bird that does well out of human suffering (interview with Graham, Biodiversity Manager for Greater Manchester). This use by the birds of rubble strewn, sparsely vegetated bombsites and industrial wastelands, with an associated range of derelict structures, is seen in ecological terms as providing the birds with a habitat similar to the rocky, scree covered landscapes that are their 'natural' habitat in Europe (Weightman and Birkhead, 1986; Gilbert, 1989). However, with the beginnings of urban redevelopment and regeneration in the 1980s many such sites were built on or otherwise altered and 'improved', a process

which destroyed much of the birds' former urban habitat in Britain. Thus knowledges of black redstarts began to assume a greater practical relevance, as a means of enabling conservationists to both better understand the situation and how it was affecting the birds, and to challenge development proposals.

The changing legal status of black redstarts is also an important factor in how the relations within which these knowledges are situated have altered, and also shows the effects of producing knowledges in certain ways. Black redstarts now have the highest level of protection afforded to wild birds in the U.K. and the species is listed within Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), which protects the birds, their eggs and nestlings from killing, injury, and damage or destruction to the nest. Parts of this legislation were strengthened by The Countryside and Rights of Way Act 2000 (CROW) which added that "'reckless' disturbance of birds (including those listed on Schedule 1) during the breeding season is now subject to prosecution under the law" (Frith, 1998). The black redstart is also a Red Data Book species, and is in Appendix II of the Bonn Convention on the Conservation of Migratory Species of Wild Animals. This status as a highly protected species is now an influential factor in human-black redstart relations, and thus in how knowledges are situated within those relations – yet certain knowledges also affected the creation of this status itself. Stefan, an ecologist at Birmingham City Council, contends that that the high level of protection afforded to black redstarts in the U.K. is in part a product of how the knowledge processes surrounding the formulation of the Wildlife and Countryside Act 1981 were organized and assessed:

> "On their U.K. status, which is how the original lists were drawn up for the 1981 Wildlife and Countryside Act, they are a rare breeding bird in the U.K., an extremely rare breeding bird, you know, classified on that basis, and I think in those days no-one realised the implications of classifying them in that way, I think if it had been the situation now, and they were looking at reclassification maybe they wouldn't have".

Thus the focus on breeding bird numbers purely within U.K national borders – and the omission of the large number of black redstarts in continental Europe from this classificatory process - helped to produce a classification of black redstarts as being a very

rare bird. Stefan suggests that perhaps a more nuanced approach would now be taken with the population at a Europe-wide level being given more consideration in assessing the conservation status of black redstarts. He also mentions that "classifying them this way" had "implications" - referring to how, thanks in part to their status, black redstarts have ended up having such an impact on the planning process in urban areas.

Classifications, as in this instance, can have various, sometimes unforeseen effects - Waterton (2002), discussing the effects of classifications of vegetation communities, notes that such effects are often unpredictable as situations change and when a classification "travels from one context to another" (p195). The status of black redstarts can be seen to have 'travelled' from a species protection legislation decision to a more recent context of planning amidst increasing urban redevelopment / regeneration, with the result that black redstarts have become an issue for planners and their status has also been utilized by conservationists to get habitat mitigation/creation measures (such as green roofs) considered within developments (see 7.3.2). What is important here is how knowledge processes, involved in the production of an 'official' importance and status for black redstarts, are then themselves situated within changing relations.

6.3.3 Looking for black redstarts – who, why and how?

I will now examine the production of knowledges about black redstarts, and will refer primarily to the account given by 'Rob' (used here as a pseudonym), a local birdwatcher / conservationist who has been researching black redstarts in Birmingham for many years, though the accounts of others involved in black redstart research and conservation (and research involving other birds) will also be referred to.

In Birmingham and the Black Country knowledge and knowledge gathering about black redstarts has been collated and coordinated (on and off) for some years by the Black Redstart Research Group. Rob describes its beginnings:

"The Black Redstart Research Group originated in Sandwell Valley in the mid 1980s, it was a response to the redevelopment, the then planned redevelopment of Birmingham. At the time the bird was almost unique to Birmingham… the core population was Birmingham, the West Midlands, or the Black Country,

and London. We set up the group called the Birmingham and Black Country Black Redstart Research Group, and the survey lasted for 5 years, from 1986 to 1991".

As Rob describes it, the impetus for this more focused and organized approach to producing knowledge about black redstarts came from the 'first phase' of the redevelopment of Birmingham that began in the mid–1980s, and the perceived threats that this posed to the area's black redstarts – favouring as they did the derelict urban landscapes that were the target of such redevelopment. Considered relationally (e.g Whatmore, 2002; Law, 2004a), the requirements for this knowledge can be said to have been produced by the situated interplay of the birds, the ideas about them, the urban landscape of Birmingham and the Black Country, the ideas and material outcomes of redevelopment, and the birdwatchers and conservationists who were concerned about the fate of the black redstarts.

Yet it was the birdwatchers and conservationists specifically who, because of their awareness of and concern for the birds, defined the issue of black redstarts being threatened *as* an issue, and thus also tried to address the demands for this knowledge. That the initial 5 year survey was pioneered by the West Midland Bird Club shows that this (outwardly expressed) demand arose from those locally who were interested and concerned, not from government agencies. Of course in the mid-1980s black restarts had the (recently designated) high level of protection as Schedule 1 birds, though legislation in itself was not (and is not) a guarantee of protection in practice – black redstarts were not yet politically 'on the map' (in the way they are now – interview with Dusty, black redstart/green roof campaigner), suggesting that bird enthusiasts were ahead of (actively enforced) legislative requirements in gathering knowledge that would later support their implementation.

Action by local groups occurs in other examples of urban human-wildlife relations, and reflects the point made in chapter 3 about the importance of local and grassroots elements in urban nature conservation (Baines, 1986; Marren, 2002). This local action can pave the way for, and in some cases be superceded by, the involvement of larger NGOs and Government agencies, where the engagements with certain birds often become more formalized. More recently, requirements for knowledge about black redstarts have in some instances become formalized within Species Action Plans (as part of Biodiversity Action

Plans), though the reasons behind such requirements are similar to those in the 1980s and early 1990s – that continued regeneration of urban areas is seen to pose threats to the survival of black redstarts.

In addition to this, the need for knowledges within habitat mitigation efforts has also become more recognised. Paul, an ecologist with British Waterways in the West Midlands, explains that

> "As a Biodiversity Action Plan species we needed to know how many [black redstarts] we were dealing with and where we were dealing with them…there's a lot of regeneration going on in the area, so it's critical that we find out more information, and we need it as soon as possible really, not just when the regeneration's happening, we need to know long prior in advance so as we can start to, I hate the word mitigate but obviously you have to accommodate the species during and after developments, so it's critical we have a good picture of what's going on".

The Biodiversity Action Plan process, and the processes of regeneration, are key factors in helping to create, or rather in continuing to recreate, the demand for knowledge about black redstarts. These processes are though themselves relationally the products of other processes and indeed other knowledges. Earlier knowledge and ideas about black redstarts played its part in decisions to make them a Biodiversity Action Plan species, just as the requirements of Species Action Plans call for new knowledge creation.

Within the Black Redstart Species Action Plan for Birmingham and the Black Country (BAPBBC, 2000), the initial objectives were to maintain/increase the existing breeding population and range, establish population trends and conservation status, and to raise public awareness of the species. To achieve these objectives, they would need to identify breeding and foraging areas, identify and monitor the breeding population, ensure that surveys for black redstarts and their habitat accompany planning applications for sites where they may occur, and make advice and information available to planners and the public. Surveys accompanying planning applications became a requirement of Planning and Policy Statement 9 – PPS9, formally PPG9 – and were reiterated in the Species Action Plan

(BAPBBC, 2000). For the action plan to therefore do work in human-bird relations, it demanded certain kinds of knowledge about black redstarts.

The knowledges required include the basic, quantitative data of conservation species assessment – numbers of birds, numbers of breeding pairs, populations – along with somewhat more qualitative knowledge regarding habitats and behaviours, i.e. what the birds do and where. The practice of representing the birds and their lives as a collection of numbers, records and observations can be understood as the translation of them into inscriptions (Latour, 1999a). These inscriptions are always partial and altered encapsulations of what is being studied, that lose much specific detail and nuance in the translation process. Yet they take forms that are more easily used by people, and that are more compatible and can work more easily with other knowledges and practices, such as those dealing in money (see Robertson, 2006) or building materials. Such inscriptions therefore travel more easily (if incompletely) through relations and spaces. If black redstarts are to be considered in conservation discourse - and beyond into the realms of planning and development - then they will figure more strongly in these worlds if they are represented in 'usable' forms such as numbers, points on maps and other observations.

In particular, whether or not the birds are *present* (or absent) in a particular place, and/or whether they are *recorded* as being present or absent, is important to the form of – and the success of - these knowledges. However as Hinchliffe (2008) has noted, producing knowledges of presence of black redstarts (and making them present within politics) is far from easy - the practical issues involved in, and which problematise, black redstart research will now be considered.

6.3.4 Looking for black redstarts – out in the field

> "Nobody's got any real idea of what the true population is within Birmingham
> and the Black Country".

The above quote comes from Rob again. On one level it gives a fairly pessimistic assessment of knowledge about black redstarts, yet read in another way it acknowledges the necessary patchiness of knowledge about the world (Haraway, 1991). Rob was referring to

the difficulties of carrying out black redstart surveys, and Paul gives some reasons for these:

> "In Birmingham there are many issues regarding surveying, you know: anti-social behaviour, security, noise levels, complexity of sites and having access to sites, the height of the buildings, and of course the anti-social hours that you'd have to work usually, as well as everything else".

It seems then that trying to find things out about black redstarts in urban areas, and make them 'present' in usable forms of knowledge, is not easy. What then are the key issues and contingencies involved in finding, counting and observing birds in urban areas, and how do researchers attempt to negotiate them?

Visibility, audibility and access
In order to record the presence and numbers of birds, and observe behaviour, researchers have to be able to see and hear the birds, and thus need to be within the visual and audible range of the birds if they are to mark a *definitive* presence. Urban areas can be difficult environments in which to find, watch and listen to birds – particularly small, uncommon birds such as black redstarts. The problems here relate to questions of visibility, audibility and access, amongst the complex array of noises, physical structures and site ownerships found in diverse urban landscapes, as Rob makes clear when discussing attempts to observe black redstarts:

> "They're up on high points, you can't see them, the elevation is too high up, too high or the angle is too steep, you can't see the birds, and unless they're calling you're not going to pick up on the fact they're there, plus the fact that they're going from rooftop to rooftop to rooftop… a lot of sites where these birds are present you can't get access to them, [because of] railway viaducts, railway lines".

He adds that being able to hear the birds is a particularly important aspect of surveying, and this can be hampered by the noise levels of urban areas (indeed, some other bird species themselves are reported to have altered their songs as an adaptation to high noise levels in

towns and cities – Brumm, 2006). Difficult sight lines, background noise and a lack of physical and legal access to some areas of towns and cities restrict the abilities of researchers to follow and observe the birds. This is of course down to the actions of the birds themselves as much as it is about particular places. As Hinchliffe (2008, p90-91) points out in his own account of accompanying black redstart researchers at work in Birmingham, the abilities of the birds to occupy and move through landscapes in differing ways to people highlights the different spaces that are "inhabited and mapped by humans and different species". Those involved in research have to try and negotiate these divergent mappings of urban space as best they can – Rob gives an example:

> "Another way to assist recording - you'll probably laugh at this, but it's true, because you've got such a spread out wide area, and you've got to be using your ears, going around in a car is counter-productive, partly because you need somewhere to park, partly because a lot of it's one way, largely because you're not going to hear anything anyway - a lot of my survey work I do on a mountain bike, along the canals, and then you can go back, you can revisit a site several times, plus the fact nobody's suspicious of what you're doing if you're on a mountain bike."

As well as being able to physically and legally get at different sites, access also entails other issues, as Rob explains in reference to the 1980s survey:

> "One of our researchers was a police officer based at Digbeth so we were able to get police clearance, which was important because we were going round areas like the Jewellery Quarter with binoculars. We also needed clearance from the BTO, the British Trust for Ornithology, because we were dealing with Schedule 1 birds, that involved ringing birds, and photographing birds on the nest. We also needed to talk to, whenever necessary, talk to landowners, people like British Rail or whatever they were, I think they were British Rail then, and on the whole it started from that".

In addition to negotiating access with landowners, there is here the notion of 'access' to certain places in another sense that required an understanding between different people (in

this case the surveyors and the police) because of what it was the researchers would be *doing* as much as where they were going. The act of walking around with binoculars in urban areas, especially in an area sensitive to unusual activity such as the Jewellery Quarter, was seen to be divergent enough from normal, accepted behaviour in city streets (see 7.2.4 for other notions of urban 'order') that it warranted police approval for it to occur. Rob also relates a similar example involving a pair of peregrines at Birmingham University, and how efforts to try to establish whether they were breeding were hampered by the nature of the site, because if "you're seen walking around halls of residence with binoculars you're going to get your collar felt". This highlights a general issue of birdwatching in populous urban areas, that although it is the black redstarts and peregrines and other birds that the birdwatchers are interested in, other people, perhaps non-birdwatchers, might misconstrue their intentions.

There was also the issue of access being 'approved' by the relevant organisations because the Schedule 1 status of the birds prohibits their disturbance. There is then the need for a negotiation between one thing that is produced to protect species (legislation) and another (the knowledge to be used for conservation efforts): once the 'access' has been approved, the production of knowledge can legally continue.

'Timing' of research

Being able to get 'near' to the birds in order to see and hear them can be conceived of spatially – as above – and also temporally. This relates both to the timing/seasonality of research - the need to find and observe birds during the breeding season when the birds are most active - and to the duration of surveys themselves, which will affect the likelihood of researchers finding birds. Rob emphasizes the importance of the duration of surveys:

> "One of the problems you have with surveys… is people go out a couple of times, don't see anything, don't hear anything, and assume that there's no birds there, and that's not the case, a lot of man hours has to be put in for these birds"

Ideas of what is the correct timing and duration of surveys for black redstarts were a key point arising from interviews. Rob is very specific on the correct timing of surveys:

"If you're going to survey, it needs to be done from the end of March to basically the middle of April, late April, it needs to be done early morning, dawn chorus, it also needs to be done a couple of hours before dusk, because birds will often sing towards the evening... and then you need to revisit the survey site around the 3rd, 4th, 5th, 6th of June, up till about the 10th of June, and that will give you, and if birds are singing again, then it suggests they're on a second brood... the fact you've had 2 sustained periods of song, and a sustained period of silence, would suggest that there is breeding present, so you really need to do the surveys, any survey undertaken outside those periods is pointless, it's just a waste of time, it's false science".

Timing and duration of research are thus seen as key factors within good research, and in Rob's account allow for behaviour to be assessed with some confidence – as science (not false science). Hence, the intersection of human and bird trajectories in both time and space is necessary for successful knowledge co-production (Hinchliffe, 2008). Yet this rarely occurs without effort, especially at dawn, so human researchers need to adapt to the birds' rhythms (see Lorimer, 2007) in order to succeed.

Different conceptions of space

In addition to the contingent spatial and temporal issues of visibility, audibility and access, the ways in which human and bird spaces are conceived of within the research methodology is also important. Rob describes the implementation of the original Black Redstart Research Group survey in the late 1980s:

"Each of us was given an area to survey… All black redstart records were taken from the West Midland Bird Club database and also from BTO records… We had a phenomenal number of records but a lot of those were duplicates, in as much that it didn't take into account that a bird singing for example at Moor Street Station and Digbeth Police Station could be actually the same bird, because of the proximity; they were seen as, because they were recorded as separate sites, it was initially thought it was separate birds, but research proved to the contrary."

There are some points here that highlight the interactions of the birds, people, space and scientific method as co-producers of knowledge. The way in which the research area was physically divided up and initially treated as separate compartments – the survey's conception of space – seems to have been at odds with how the (physically same) space was used by the birds, who were able to move between or appear at the borders of these separate survey spaces, thereby leading to the 'duplicate' records and the illusion of there being two birds where there was only one. The researchers were quick to realize the distorting effect this was having on the knowledge that was being created, and became more aware of the need to keep this issue in mind when surveying and subsequently analyzing data. Space could still be divided up – if for no other reason than to ensure coverage of all areas and to allocate surveyors to them – though the early, perhaps naïve assumptions that separate compartments meant separate birds were abandoned. Despite this better awareness of how to conceptualise space (and the birds within it) there remain difficulties regarding the birds' use of space and how far it is possible for people to measure and understand this when attempting to carry out accurate surveys – as Stefan (Birmingham City Council ecologist) explains:

> "They're both under recorded because they're difficult to find, difficult to see, and they're also, can be over recorded because the males can move such big distances, when they're foraging and when they're finding mates. They are hard [to survey] [laughs], that's the easiest way of describing it."

Different conceptions of behaviour

What is observed, and how it is interpreted, also relates to the ways in which humans conceive of bird behaviours, and this too affects the knowledges produced. Rob again relates an example from the original Black Redstart Research Group survey:

> "The first year's survey… we identified the key sites, we did a preliminary survey first, just going around literally looking at all the sites… The first year we, I think our records indicated there were 15 breeding pairs in Birmingham and the Black Country… we thought that was too optimistic a figure, too high a figure, we were assuming because birds were hanging around a particular area therefore they were breeding, and we started to refine the research, and [the

second year] we categorised them thus: definitely breeding, probable breeding, possible breeding – and it was based on the amount of times birds were singing, whether the female was seen at site, if young were seen at site obviously that confirmed breeding, if the female was resident that again indicated breeding, if there was only a male bird seen throughout, then again we assumed possible breeding only or probable breeding."

How the birds' behaviour is conceived of and assessed involves dealing with uncertainties, and has been subject to some revision. The original assumption that if birds were 'hanging around' a particular area meant they were breeding was critiqued by the researchers themselves, due to the overly 'optimistic' number of breeding pairs that this approach recorded, and a more nuanced approach was adopted that could classify birds as definitely, probably or possibly breeding. The criteria for classification involved assessing evidence about what birds were seen and what they were doing, with the observed presence of different 'types' of black redstarts having different levels of importance in the judgement made about breeding – young birds 'obviously' indicated breeding, females meant it was likely, males meant it was possible. These were not then definitive decisions about whether birds were breeding at particular sites that could be marked as either yes or no; rather they involved qualitative assessments based on existing knowledges and experience. Such qualitative assessments are a common feature of 'scientific' knowledges of wildlife as Hinchliffe *et al* (2005) have noted, involving "a knowing around rather than a knowing of", and the authors emphasise that the practices of science can be much more messy and subjective than norms of 'objectivity' suggest. Qualitative assessments form an important part of not only black redstart knowledge practices but also other areas of human-black restart relations, such as where planning decisions are made (see 7.3.2).

Quantity and quality of researchers

As well as forms of assessment, the forms of researchers themselves are also important in producing knowledges about black redstarts (and other birds). Rob makes reference to the people who get involved in surveying and research, in terms of their numbers and types:

"Like most surveys you get a rush of volunteers, but at the end of it there's just, you know, a hardcore of enthusiasts".

Ideas of there being various types of people involved in knowledge production, such as the 'hardcore of enthusiasts', and what they varyingly do or don't bring to the knowledge production process (and why this may be), is suggestive of notions of lay or expert knowledge. The boundaries between lay/expert or amateur/professional, as explored by Ellis and Waterton (2005), do not tend to figure in my interviewees' accounts of knowledge production in the simplistic way that one might expect, though ideas of expertise will be picked up on shortly. Of perhaps more pressing concern for many involved in black redstart research is the number of people they are able to enrol into the knowledge production process. As Dusty, one of the key figures in black redstart conservation, puts it;

> "We haven't got a clue [about the number of black redstarts in London].... It's difficult to monitor the population because there's not enough people go out and look for black redstarts."

Not only then are black redstarts difficult to find and observe because of the complexities of the urban landscape, but the potential for observing them and making them *present* (Hinchliffe, 2008) in records and usable forms of knowledge is hampered by the limited number of observers who struggle to cover a wide and complex area effectively. The chances of there being the encounters between birds and people - their 'intersecting trajectories' as Hinchliffe puts it - required for knowledge production in the form of records of positive sightings is then perhaps as limited by the rarity of observers as it is by the rarity of the birds themselves and the complex landscapes within which they operate. There are occasions when concerted efforts are made to bring more people into the knowledge creation process to try and address these issues. Stefan describes one such attempt:

> "It very much depends on the number of recorders that you have out, the number of records you get, so 2003 we had a big launch of a survey which I organized, and we had loads and loads of recorders there, and we had loads of records, a surprising number of records."

Rob makes reference to a similar initiative and the effect it had on the knowledge that was produced, and also to times when there are fewer surveyors:

"Why the sudden increase in population [that was recorded]? I would say it was down to the increased numbers of observers… I would say that there were more, we targeted more sites, and we were able to get more people out, and monitor the population on a more, monitor these sites on a more regular basis… Now, as you can see, the [recorded] population fluctuates enormously, so it could be that there's less observers around, that, it certainly when surveys have been undertaken there's been a significant increased number of birds recorded, so obviously that's a key feature."

The involvement of people beyond the 'hardcore of enthusiasts' and 'experts' is necessary if surveys are going to cover a wide urban area effectively. Ellis and Waterton (2005) discuss the place of 'amateurs' (the word has shifting meanings) in biodiversity research and note that there is a "deficit of actors within a contemporary knowing-nature network" (p674), thus necessitating their enrolment by experts to assist in knowledge production. However, as Stefan points out, keeping a large number of such people involved is difficult:

"Since then [the survey launch] we haven't been able to do that, it's difficult to maintain that sort of interest"

Paul suggests one reason why this might be, echoing the earlier comments about timing:

"The periods when you're surveying you're looking at early morning or possibly late evening as well, and you know it's very difficult for people to fit it in to their day to day schedules."

However, Paul also contends that keeping people involved is also a matter of what kind of person one is talking about:

"You can train them up… and you can provide them with the skills to go and do further research, but the chances are unless they've got that passion, or there's something inside them that, they'll just disappear into what they were doing before and you've wasted that resource in a sense… I've had that interest

135

as a kid and I always will, but the amount of times I've worked with people and trained people up or, with a wide variety of species, and then they just disappear or you lose them or they meet a partner that's perhaps not interested or takes, you know, they haven't got the time all of a sudden, it's, you know, there's very few people out there with that drive in them, or perhaps they've just been lost, they are out there but they've just been lost at some stage."

As noted earlier, it is not just a question of the number of researchers, but also the type of person involved. Paul distinguishes between those people, like himself, who have 'that passion… that interest', and those who do not, and the importance this has for someone's dedication to the processes of finding out about black redstarts (and indeed wildlife generally). It is 'that passion' that keeps someone involved despite the issues and contingencies that can put other people off. The 'type' of person also relates to their 'quality', their expertise, as Rob explains:

"One of the problems I've found with surveying, is the quality of the surveyor.… Now, I was talking to somebody a couple of years ago… this girl was quite a good botanist… she said 'I've come across your name', this person said, 'I read a report of yours on black redstarts in Eastside, I surveyed Eastside for black redstarts, I didn't find any', and I'm not being disrespectful, but this person wasn't a birdwatcher, and that's why, if I was to do, there's no way I could do a botany survey, I would not know where to start, and putting non-birdwatchers out to do a birdwatching survey, especially something as specialist as black redstarts, where even experienced observers sometimes make mistakes with regards the song… With respect, someone who's inexperienced, who has no awareness of urban ecology, is not going to pick up birds."

McCaffrey (2005) discusses the Tucson Bird Count in Arizona as an example of the use of amateurs or 'citizen scientists' in bird monitoring projects. Involvement in the count is not open to anyone – volunteers must be 'knowledgeable birders' who can identify the 25 most common local species - though concerns remain about the effects of variable skill levels and bias in volunteers. That a project that focuses on 'common' birds can have issues

regarding volunteers' skill levels emphasises the problems that Rob talks about in relation to less visible and more 'specialist' birds like black redstarts.

These ideas of experience and expert knowledge relate back to the 'hardcore enthusiasts' mentioned earlier and the notion that, in order to find out and understand something very specific about black redstarts, such as the finer details of its song, it is necessary to spend a lot of time in the field finding and observing the birds. This process of gaining experience over time and becoming more knowledgeable has been described as a process of becoming attuned to the creature being studied, where attempts are made to "achieve a form of ecological proximity with and corporeal understanding of" the "target organism" (Lorimer, 2007, p7). An 'expert' on black redstarts has (with time and effort) become 'closer' to black redstarts, and has become or is becoming 'more' black redstart then they were before. Such a position as an expert (and what it enables within knowledge production) does not then appear open to anyone – be they 'amateur' *or* 'professional'.

In my interviews, the 'quality' of surveys done by 'professionals' such as environmental consultants (such as those carried out as a part of the conditions for planning permission on developments) was sometimes called into question. Dusty relates an example from London:

> "Just south of Canary Wharf estate was a building which got the last IRA bomb, it was 1997… Since 1998, a pair of black redstarts nested on that site, yet an ecologist went there in 2002, walked round it for half an hour and said that that site had no ecological value. But in half an hour you're not going to find a pair of black redstarts, and it's so easy for an ecological consultancy to nip to a site and say didn't see anything, and then argue that they don't have to put a green roof up, and to be quite frank the quality of ecological consultancies in urban areas is absolutely, is appalling."

Rob is aware of similar instances in Birmingham, where surveys were undertaken by consultancies outside of the breeding season when most of the birds are not around to be observed. Some interviewees felt that some surveys were perhaps being done in this less than satisfactory fashion (by consultancies contracted by developers) in order to *not* find black redstarts (or indeed other species of concern), and to thus give the developers the

answers they wanted and allow them to continue with a development unimpeded. Whatever the truth of this may be in particular cases, there is another point about the quality of researchers here – that as well as having the expertise and ability required to carry out quality research for black redstarts, they should also be conscientious enough about the research they carry out in order to practice it to that high standard. These human-bird relations in knowledge production are not merely about expertise and skills, but about intent and care (Milton, 2002; Hinchliffe, 2007, p180) for the birds (rather than for money or other rewards).

The place of experts and expertise cannot then be just taken to be analogous with 'professionals', and nor can expertise be denied in 'amateurs'. Rather, expertise is more readily ascribed to people of whatever type who have the experience and awareness that comes from becoming more attuned to black redstarts, as well as the conscience to do a good job. This kind of expertise, along with a reflexive use of existing knowledges that are already circulating, enables people to feel confident in making qualitative assessments about the birds within the knowledge production process. So expertise is necessary, especially where assessments of birds in urban areas are qualitative and/or uncertain, as the case of black redstarts particularly highlights.

6.3.5 Knowledges of black redstarts and how they circulate

Knowledges of black redstarts (and other birds more generally) are thus produced amidst a situated set of relations and contingencies, with the knowledges being affected in particular by the reasons for their production, the type and attributes of the actors involved (the researchers, the birds, and others) and certain spatial and temporal factors (including ones particular to urban areas). They are also affected by the ways in which the research was conducted (including how researchers negotiated contingencies) and how it conceptualised the urban space-times and behaviours of the birds. The knowledges produced take different forms, and are (at the simplest level) records of presence in particular locations, with other information - such as gender of the bird, singing heard, other behaviour observed, breeding suspected or proven – being added where it could be established with sufficient confidence by the researchers.

Producing knowledges of black redstarts can thus be difficult, especially knowledges such as definitive records of presence and breeding that can be translated into simple numerical 'inscriptions' (Latour, 1999a) that circulate more easily through networks of ecologists, bird clubs and wildlife trusts and beyond to government bodies and others who require quantitative measurements and reductionist accounts of things in order for these things to figure within politics. The knowledges and bird records that are produced are collected in the archives of bird organisations such as the West Midland Bird Club (see www.westmidlandbirdclub.com, and Harrison and Harrison, 2005). In more recent years, they have been collated by ecological record centres such as EcoRecord ("the ecological database for the Black Country and Birmingham"), which is run in conjunction with the local Wildlife Trust and local authorities, in part to enable these (and other) organisations to use and have easier access to ecological data (EcoRecord, 2000).

However, even producing simplified and quantified knowledges of black redstart presence and breeding does not mean that all such records circulate effectively through databases, archives and networks. For example, as noted earlier, records about breeding in the 1920s and 30s at the Palace of Engineering in London did not become wider knowledge until the 1940s (Fitter, 1945; Hart-Davis, 1964, p251). Also, some people do not choose to share their records with others, and thus they do not become part of the knowledge network. Graham, the Biodiversity Manager for Greater Manchester, relates how a large amount of historical records of black redstarts within the city are not available due to some animosity between researchers, and issues of record 'ownership'. In the Black Redstart Action Plan for Greater Manchester (GMBP, 2008) Graham refers to these records as being 'lost', yet;

> "For the sake of politics I just kind of had to put that in here really, I have no idea whether they were lost or not. I just knew that when I was writing the history of the Black Redstart in Manchester and I was talking about when they breed, and because there was this gaping hole… [I made] a polite reference to that some records may have been lost… There's been politics about ownership of records and who's going to have a record and all of this, which is a quagmire"

6.3.6 Summary

This section has outlined the difficulties and contingencies involved in producing knowledge about black redstarts (and other birds more generally), especially knowledge that definitively records their presence in urban areas. Even rather 'basic' ecological knowledges – such as counting and mapping a bird species – are shown to be very relationally contingent, co-produced by the shape of the urban environment but also by the diverse behaviours of the birds and their human researchers. Human and bird trajectories often do not easily intersect in space-time, meaning that researchers must adapt their own movements and behaviours and also recruit more people to collect the knowledges they need. Yet that recruitment brings its own problems of judging expertise and 'quality', which also influences how successfully the knowledge is validated and, later, used to support management actions and persuade others (see 7.3).

The next section looks at the production of knowledges about birds in urban areas through the practices of bird ringing; practices which aim to provide more detailed knowledges of behaviours and movements, and that also involve closer, more physically embodied bird-human encounters than those involved in recording presence and observing birds by sight and sound at a relative distance.

6.4 Marking and following birds

6.4.1 Introduction

Where birds go (and where they are) is an important aspect of bird research, but (as has just been discussed) observing and counting birds within urban landscapes is not easy, and following birds is also a less than straightforward activity for people. Across the world the movements of various animals are tracked through both coordinated observations and by the use of an assortment of tags, marks and transmitters - in the case of birds the majority of such research is done by ringing. This section will consider why and how certain birds are ringed in urban areas, how different birds, people and knowledges are involved, what knowledges are produced, and how the knowledge claims arising from bird ringing influence relations between birds, people and urban landscapes. This section concentrates upon gulls, which have been the subject of some specific research projects (using ringing practices) in British urban areas in recent years, but will also consider the ringing of peregrines. The consequences of ideas arising from ringing – alongside other knowledge practices – will be returned to in Chapters 7 and 8.

6.4.2 Why do people ring birds?

Many fields of bird research concern themselves with finding out about where birds go and what particular birds do, yet amongst a multitude of similar or identical looking birds it is extremely difficult to reliably identify and monitor an individual bird (or group of birds), and thus be able to confidently claim that a particular bird has moved from one point in space-time to another, or has performed a particular action. John, an amateur ornithologist involved in peregrine projects and bird research, and a member of the Bristol Ornithologists Club (BOC), has his own reservations about being able to pick out particular birds:

> "It's quite difficult to know one bird from the other, although some of the watch [peregrine watchpoint in Bristol] reckon they can identify the individual birds, I've never been that confident, but perhaps their eyesight is better than mine, but I'm a little bit suspicious of people that say they know individual peregrines, but then I'm cynical".

In order to try and reduce these difficulties, bird researchers have for over a hundred years marked birds by the practice of ringing (Moss, 2004), which is the attachment of numbered and/or coloured rings to the legs of the birds. This practice effectively gives a particular bird an individual identity in a form that is discernable and understandable to those involved in bird research across the world (BTO, 2006), or if not marked individually then at least indicates the time and place where the bird was ringed. By marking birds with rings, researchers feel able to make claims about the movements of particular birds, and also (depending on the type of ring) about their behaviours and life histories. Bird ringing was originally (and is still) used to understand bird migrations, though now also informs work on monitoring, population dynamics, evolutionary and behavioural studies and conservation planning, the latter often using ringing data regarding migration routes and breeding, stopover and wintering sites to identify environmental factors in specific, sometimes far distant locations that may be affecting certain birds (BTO, 2006). Recently there has been increased interest from Government in ringing data regarding bird movements, in light of concerns about the spread of avian influenza (Greenwood, 2007).

6.4.3 Bird ringing – background and organisation

The ringing of birds in a form similar to that practiced today is generally thought to have begun in 1899, when Christian Mortensen, a Danish ornithologist, attached numbered rings to the legs of birds in order to study bird migrations. In the early 20th century researchers in various countries followed Mortensen's lead in the use of numbered rings. In England the work of Harry Witherby later became the official British scheme and is still coordinated by the British Trust for Ornithology (Moss, 2004; Greenwood, 2009). Coordination of ringing work is necessary to ensure that ringing is carried out in a manner that is meaningful and useful in different places. This involves trying to impose a certain level of standardization of practice (Bowker and Star, 1999), and to ensure that records of ringed birds and subsequent observations are able to find their way back to the organizing body, which can be seen here as a "centre of calculation" (Latour, 1987), so that they can be subsequently collated and analysed. Indeed, although the BTO is responsible for this coordination within Britain and Ireland, the reporting networks have to be, as Greenwood (2007) puts it, like the birds, in that they are able to cross spatial and political boundaries. For example, at the 'continental or flyway' scale in Europe and Africa, the organisation EURING coordinates ringing work and promotes cooperation between ringing centres and schemes in different

countries (such as the BTO and their equivalents elsewhere) and the standardization of methods in bird ringing and data recording and analysis (EURING, 2007). Such coordination and standardization can be seen as creating boundary objects to enable different actors to contribute towards a particular goal (Star and Griesemer, 1989) and to operate across different space-times, and so make the networks of bird ringing able to function and produce the knowledge that is required from them.

Although ringing is overseen by organisations like BTO and EURING, and ringing records are collated and analysed by professionals employed by them, practical bird ringing activity is mostly undertaken by amateurs or volunteers who do the work purely because of their interest in and enthusiasm for it, rather than because they are paid to do it. Greenwood (2007) acknowledges the enormous importance of amateurs to the practice of bird ringing (as well as other aspects of bird research), as their numbers and spatial distribution allow much more work to be done than could be achieved by resource limited professionals. In Britain there are many local ringing groups of amateur ornithologists who often focus their efforts on particular local sites, as well as some individuals who work on their own projects. There *are* some professionals who ring birds, these generally being either academics working on specific projects or field workers employed by field stations and observatories, though these are vastly outnumbered by the amateurs. Hence, bird ringing is for some people an important part of human-bird interactions (and has relevance to human-bird relations in urban areas more widely through the ideas it helps produce). I will now consider what type of people are involved in, and made through, such practices of knowledge production, before moving on to consider specific research activities in urban areas, and ringing itself in more practical detail.

6.4.4 Becoming a bird ringer

The involvement of mainly non-professionals does not mean that bird ringing is an open house to just anyone. As Ellis and Waterton (2005) have noted, there are different kinds of exclusions and inclusions in 'knowing-nature' networks, some of which involve the exclusion or inclusion of certain participants. This can be seen here, as there are means for ensuring that only people who meet certain standards can be involved in bird ringing networks. Regardless of a bird ringer's amateur or professional 'status' (and level of expertise), all bird ringers in Britain have to be licensed by the BTO in order to legally

carry out such work (BTO, 2006). Ringing licenses are gained through a period of training. Trainee ringers have to be supervised by an experienced bird ringer who is permitted to train others and who has the level of license commensurate with their experience. Ed, an amateur ornithologist (and museum learning officer by employment) who sometimes helps Peter (a gull researcher and urban gull expert) ring gulls, outlines his own position within the licensing hierarchy:

> "I'm a trainee at the moment, I should hopefully get my 'C' permit this autumn, and then I do the gull ringing - I ring normally down at Chew Valley Lake where my trainer is, but then…under a trainee permit basically you're allowed to then ring with other 'A' licenses, like Pete Rock, he's got an A license, so I can go out gull ringing with him in the city as well".

The different levels of license, training and experience allow a ringer to do different types of work: the higher the level of license the fewer restrictions there are on a ringer's legal access to birds, locations and practices. Trainee ringers can only ring under supervision, 'C' license ringers can ring alone but with remote supervision by their trainer, and 'A' license ringers can work completely independently and can train others (BTO, 2006). Training involves learning different methods of capturing birds, the safe handling of birds, the use of equipment, and identification and measurement skills (EURING, 2007). As with counting (6.3), access has to be authorised by particular organisations who work within (and seek to ensure compliance with) bird legislation. The period of training can be seen as a process of 'becoming' a bird ringer, in the sense of starting to belong to and be acknowledged by a particular knowledge community, which gives a person greater access to the networks of bird ringing as well as to different birds and locations. Sibley (1995) discusses the boundaries that social groups attempt to maintain around themselves and certain spaces; in this light bird ringers can be seen to 'fence off' particular places, practices and networks and exclude non bird ringers – this being seen as necessary for the welfare of birds and ringers, and the good of science – though non ringers can cross the 'border' if they undergo the training to become ringers.

6.4.5 Which birds are ringed in urban areas, and why?

All of the case study bird species focused on in this thesis have been ringed in urban areas at some point, though the number of birds involved and the intensity of focus on a particular species varies over time and space. That bird ringing takes place in urban areas at all may be surprising to some, and it is perhaps true that it is a less common occurrence than ringing at bird observatories, certain nature reserves and other 'rural' sites. This is probably more to do with the fact that such places have the space, the large numbers of birds, the range of species and the established infrastructure required to ring a lot of birds effectively, rather than with any lack of interest in urban areas per se. Due to the nature of bird ringing organisation, any data arising from the ringing of birds can potentially be used (by different actors) for general monitoring and other research interests on a wide scale across both urban and rural areas. Yet the reasons to ring the (case study) birds in urban areas often relates to demands for specific knowledges in an applied or more local fashion. I will briefly review the ringing practices in relation to the three types of bird examined in this thesis, before concentrating upon gulls in particular.

Black redstarts

Within my research interviews, ringing of black redstarts in urban areas was only discussed in one instance, in relation to the knowledge requirements expressed and addressed by the Black Redstart Research Group in Birmingham (6.3). In Birmingham, ringing enabled researchers to feel more confident in asserting that particular birds were present in, and behaving in certain ways in, particular locations. Rob (black redstart researcher) refers to the 'discovery' that some black redstarts were overwintering in Birmingham, which changed the Birmingham researchers' understandings of the birds - they had previously thought that all the black redstarts who spent the breeding season in the city overwintered at the coast or abroad. The infrequent occurrence of the ringing of black redstarts in urban areas in Britain could relate to a number of issues, including the scarcity of the birds and the difficulties in locating and ringing them in a complex urban landscape, as well as the relatively lower priority given to ringing knowledges within black redstart conservation (compared to the higher priority given to records of presence).

Peregrines

Peregrines are ringed in urban areas to support research and species conservation efforts generally, not to address any *particular* applied issue or threat to the birds (as they are, despite what many people may still believe, no longer a *high* conservation priority for conservationists). The fact that they are seen as charismatic and fascinating by many people (see 6.2) also perhaps ensures that they continually receive research interest, though researchers also point to the importance of monitoring and understanding peregrines' in the context of their 'comeback' (their recovery from population decline) and their movement into new territories. For some researchers and conservationists, ringing peregrines in urban areas is important in terms of addressing a perceived lack of research in Britain on 'urban' peregrines, especially when compared to other places such as North America where research on peregrines and other raptors in urban areas is more advanced (Bird, Varland and Negro, 1996), and is also seen as important in terms of providing information about how far certain peregrines have become (or are becoming) 'urban' in their movements and habits. Pete M (from Natural England, key contact for London's peregrine action plan) expands on this latter point:

> "It would be nice to ring birds because one thing we're not clear about is when the young birds fledge, whether they actually stay in London or whether they disperse to a wide area, I mean the thought is they probably do disperse quite widely, most peregrines probably do, but if those birds disperse and head off to the coast or wherever for the first year or two, do they then come back to London, you know, or when they disperse when they reach breeding condition do they then select an urban location to breed, which we suspect but there's no proof because we haven't been able to ring tag the birds to prove that either the young birds are coming back to London to breed or if they're breeding elsewhere they're breeding in an urban location rather than a coastal or a quarry site".

Ideas of peregrines becoming 'urban' in some way also apply to peoples' thinking about other birds as well, and will be returned to at the end of this section (and in chapter 8).

Gulls

Gulls have been and are being ringed in towns and cities in Britain as part of research into the movements and habits of gulls in urban areas – much of this research has been conducted and/or coordinated by Peter (urban gull expert and researcher). An overview of the context of gull ringing in urban areas can be given by considering Peter's own experience of researching and ringing gulls. This began in 1980 after he had gained his senior license for bird ringing, as there was (and is) an expectation that one would take on a research project in order to 'repay' all of the training that had been given, as well as to contribute towards the knowledge of Britain's birds. He chose to study the gulls in Bristol as at the time they were fairly small in number, and it would be as he puts it "a fairly tidy little project to do…by individually colour ringing them, I could easily monitor the population of a hundred pairs". The context of such knowledges has since changed now that populations of gulls have risen, and gulls have become more of an 'issue' in urban areas. Peter relates however that although the numbers of gulls nesting in urban areas have grown exponentially since he began, interest taken in 'urban' gulls from a research perspective has remained small, effectively making him a key player:

> "So at that time [1980] there were a hundred pairs nesting in Bristol… Of course things have changed since then, in 2004 when I assessed the colony for Bristol City Council there were almost 2000 pairs, so in that time, everything's grown up… when I started doing this ringing all of my bird ringing friends were pulling my leg about why have I bothered with seagulls, they're only bloody seagulls, so for me that was enough excuse to carry on with this, so that's what I did, and in the absence of anybody else taking any interest at all in urban gulls, by default, I find myself the national expert on the subject".

The large increase in numbers of gulls nesting in urban areas, and the associated issues of noise, mess, damage and aggression from birds that can result where people and gulls live in the same places, has meant that many local authorities demand knowledge about gulls and how they can be controlled (see also 7.2 and 7.3). Peter takes the view that it is only by studying gulls at regional and wider levels through the use of 'good' science that sensible management strategies can be formulated. Meyrick (a planning officer at Gloucester City Council) takes a similar line to Peter, and stresses that more "ecologically discipline" is

needed to manage gulls effectively. The importance of making sure that policy is backed up by sound science has long been argued, although the actual, situated 'interface' between science and policy – in this case and many others – does not necessarily work in the simple way that many of those involved would like (see chapter 3, chapter 7.2, and Evans, 2006).

The research that Peter sees as being necessary (see Rock, 2003a) involves determining the numbers and demographics of local gull populations, what the specific dynamics of urban breeding are, and what food sources the gulls use (see 6.5). Peter wants to understand the breeding dynamics and movements of gulls within local and regional populations – not just in terms of how far and where they go to feed, but how individual gulls can move between and are 'recruited' by other colonies, and also how control methods affect such movements. To try and find these things out Peter needs to be able to identify individual gulls in the field, and ringing the gulls confers a discernible identity on a particular bird.

I will now consider the actual practice of bird ringing in this and other cases, before then considering the claims researchers make about birds and bird ringing.

6.4.6 Bird ringing in practice

The knowledges produced by bird ringing, as well as the direct and indirect impacts that ringing has on humans and birds, are influenced in part by the specific ways in which ringing is practised. This section will examine these practices.

Bringing birds and people 'together'

The way in which a bird is ringed depends partly on the age and type of bird, as well as on the particular project or scheme being researched. Ringing first requires that a ringer is able to physically handle the bird to be ringed, therefore the bird needs to brought into close proximity with the ringer – a more intense and physical example of the 'intersecting trajectories' (Hinchliffe, 2008) of organisms that research can require (than those seen in section 6.3). Most birds have to be caught to allow the ringers to handle them. Small birds can be caught in fine mist nets set up between poles, and larger birds can be caught using baited traps and cages. Once caught the birds are usually placed in a soft cotton bag (if small) or a box (if larger) to keep them calm and quiet before the ringers are ready to ring and examine them (EURING, 2007).

Some birds however are ringed as chicks on the nest, which is useful as the exact age and origin of the birds is recorded (BTO, 2006), and it is relatively easy because bird chicks are generally inactive enough to allow a ringer to pick them up from the nest, ring them, and put them back again. Nick B (Derbyshire Wildlife Trust) refers to this in the case of ringing peregrine chicks on Derby Cathedral:

> "You need to get them at exactly the right age, if they get too big they get a bit feisty and stroppy, and they object a lot, but if you get them at the right age they just sit docilely as you approach the nest, the female flies round but they just sit docilely in the nest and you can ring them with ease, which is what we did last year, so weather permitting that's planned for about the end of the month".

This is the approach generally adopted in urban areas for peregrines and gulls, as knowing the place of origin of a bird is important to research such as Peter's, and it is a lot easier to ring a quiet chick than attempt to catch, handle and ring a fully grown gull or peregrine without the risk of stressing and harming the bird (or indeed the ringer). To what degree the chicks themselves tolerate this, or whether they are simply not developed enough to react in the manner they would otherwise do so, is unclear, and perhaps impossible to ascertain.

Being able to bring people and birds into close proximity in an 'easier' way by choosing to ring chicks is not necessarily as simple as it may sound. Complex landscapes, particularly those in urban areas, can sometimes restrict access and often tend to keep people and birds in different spaces (see 6.3). This can affect decisions about whether or not to ring birds at all, despite the fact that that there is a desire for the knowledge that ringing would help produce, as Pete M explains:

> "There hasn't been any ringing [of peregrines] in London yet because most of the nest sites are just inaccessible. There's a guy who's a licensed ringer, who would like to ring them but all the nest sites to date have been completely inaccessible, except by, if you got guys in with ropes and stuff, so we've taken the view that, well the reason they haven't been rung is that you could get to those sites if you use ropes and harnesses but… we don't want to give the building managers an excuse not to have the birds on their buildings … to get

ringers on a roof you'd have to go through all the health and safety procedures, it would just take you, it would add another element of, you know, problems for the building manager, and they might think well actually is this worth the hassle?"

For those people who do endeavour to ring birds in urban areas, and bring themselves into close proximity with the birds, it is not without its hazards. The issues of access already noted in 6.3 become even more problematic here because human researchers need to physically reach (not merely be able to see) places that are more usually 'bird spaces' than 'human spaces' - such as towers and high ledges. The birds themselves may resist ringing and react aggressively to the close proximity with people that ringing requires, such as by attacking the ringers, although Ed contends that it is not *as* dangerous as some people think:

"I actually go up onto roofs and actually hold their chicks… I don't get particularly attacked, and you'll get the odd individual that's got it in for you, and they might poo on you and you know, they'll come down and almost touch you, but I.. question a lot of the public's perception, I mean a lot of it is the fact that they say they're being attacked when in fact they're being threatened… when we went up on the roof on the ice rink you know the other week or what have you, you know, we caused a huge amount of commotion, I mean we had probably 2 or 3 hundred gulls swarming above us causing a lot of noise, but out of all of those there was only one that was really threatening us, and even then he didn't actually physically touch either me or Pete, despite the fact that we were picking up their chicks… you might be a bit whitewashed here and there but you know you're alright, and the occasional aggressive gull you just put your hand above your head".

Although Ed and Peter don't generally get attacked in a severe way, the gulls still react to their proximity in a way that is taken to express discomfort at that proximity, with most of the (adult) gulls taking to the air and keeping away from the ringers, and the occasional gull actually attacking the researchers. That the place where this occurs is not just a rooftop but also a gull breeding colony - where a gull's sensitivity to disturbance is understood to be more acute than elsewhere - also means that the gulls are reacting not just to the presence of

people but are doing so in the context of a 'gull space' that is being contested by people. Getting certain organisms to share space closely, and share particular types of space, is clearly then difficult and involves various kinds of continual 'negotiations' (Massey, 2005). Ringing can involve a lot of work and 'negotiations' from researchers to produce the proximity to birds that is needed.

Rings and Observations

Once caught or picked up from the nest, the process then involves ringing the birds and identifying, ageing, sexing, weighing, measuring and assessing them before they are released. The types of ring used vary, with some forms developed to allow easier observation and recording. The 'standard' ring used by the BTO is a metal ring engraved with a unique (usually seven digit) number, as well as the name and address of the organisation that supplied the rings and is in charge of the scheme, and to whom records of any future recoveries must be sent. Metal rings come in a range of sizes designed to fit the legs of different bird species: the BTO *Ringers' Manual* (see BTO 2006) has codes for different ring sizes, and gives a list of bird species alongside the size code appropriate to that species (with associated notes about any different codes and actions needed for birds that are not fully grown, known as 'pullus'). For example, black redstarts are given a ring size code of 'A', whereas herring gulls are given the larger 'G' size.

In order to be able to subsequently record a bird ringed with (just) a BTO metal ring and so produce a meaningful record of that bird's activities, the number and address on the ring must be accurately read. So ringing is not just a problematic task in itself to initially perform, but it also creates further problems for identifying and counting birds at a distance (with some similar issues to those discussed earlier - see 6.3). Peter, in a report for Gloucestershire Gull Action Group (Rock, 2004) states that "BTO metal rings… are small, grey and difficult to locate and read in the field". This means that the bird must be caught again by researchers, or found – usually dead. Only around 2% of birds fitted with these standard metal rings are ever 'recovered' (the term for catching or finding a ringed bird) (Clark *et al*, 2003, in Rock, 2004), and the information gained from a recovered bird is often limited to the time and place of ringing and the time and place of recovery. Though such information is (and has been) of great importance and use, it is limited in terms of learning about bird biographies.

For Peter's research on gulls, relying on the occasional records from dead or caught birds would be insufficient. Therefore he (along with many other ringers) uses plastic colour rings, which are brighter and generally larger than metal rings and which have larger, simpler codes on them. This means they can be seen and read more easily from a distance by an observer with a telescope, thus dispensing with the need for bird and researcher to come into such close contact. Colour rings can also be spotted from a distance; this can improve the recovery rate for ringed birds, such as those found dead, as the colour helps attract people's attention, whereas a grey metal ring might go unnoticed (Sheddon *et al*, 1985). Colour ringing is a relatively recent practice, but its use does not mean that metal rings have been abandoned – metal rings and colour rings are generally used side by side, with metal rings being the 'standard' type that most ringed birds have, and colour rings being used in addition for specific projects and/or types of birds where recapture is problematic. The colours of the rings can varyingly signify the place or the year where the bird was ringed, and the types of codes and where the different rings are placed on the birds legs also varies from one project and place to another. Peter gives gulls a metal ring on the left leg and a colour ring on the tarsus of the right leg. The colour ring is large, 37mm tall, with a 2 letter code, and the colour and code change each year (Raes, 2008).

In other projects, the colour of the rings signifies the place of ringing, rather than the year - Nick B (Derbyshire Wildlife Trust) explains that this is the case for peregrines in Derby, and how ringing them marks them as 'Derbyshire birds':

> "The adults aren't ringed but we ringed the 3 youngsters last year just with metal numbered rings, this year we've got colour rings which will be a unique Derbyshire colour, so the colour, you just see the colour and that will tell you it's a Derbyshire bird, so they'll get the one [metal] ring with the number on, as last year but they'll also get a coloured ring with a number on, which will, if you can read the number, uniquely identify it visually, and the colour itself will identify it as a Derbyshire bird, and those rings are going to be used on peregrines in the county, not just at the cathedral but on other sites around the place wherever the abseillers can get to them, so we might ring 10 to 20 youngsters this year in Derbyshire, and then if they're seen elsewhere, we'll know they're at least Derbyshire birds and if we can read the number, if it's 2

or 3 numbers I forget, but quite big numbers so with a telescope you stand a reasonable chance of reading the number, and that would identify the bird [as an] individual"

Once ringed, measured and otherwise assessed, a bird is released or (if a chick) placed back in the nest. As has already been noted, it is then by no means a certainty, but a possibility, that a particular bird will once more at some point in space-time come into proximity with certain people who will observe or find the bird and its ring and report that finding, and thus produce a piece of data within the knowledge networks of bird ringing.

Rings thus give a bird an identity that humans can see and record, and colour rings enable that identity to be discerned in an easier way than metal rings, which alters the possibilities for knowledge gained from bird research. Yet less is said on how ringing potentially affects and changes the birds themselves, beyond that they are now recognizable to (certain) people as individuals. From a relational perspective, the ringed birds could be conceptualized as an animal-technology hybrid (see Whatmore, 2002; Haraway, 2008, p249-263): once ringed they are a type of bird different to other birds, they can be identified in different ways (at least by humans), and have a physical feature that other birds do not. This means they can operate and have agency within certain knowledge networks through being 'standardised' by/within bird ringing networks of practice - although different standards and coding are used by different organisations. Ringed birds can be seen as co-participants in the research process, with the act of ringing enrolling them (at least partially) into bird ringing networks and a knowledge producing collective. Yet at the same time the power relations in such networks could be said to be skewed in people's favour (see Hovorka, 2008; Hobson, 2007), as the birds can be caught, handled and ringed against the bird's 'will' and without the bird's 'consent'.

There is disagreement expressed over whether ringing affects birds in other ways (or indeed any way). The BTO (2006) maintain that ringing does not affect birds, as it is carried out by skilled practitioners, and that the rings weigh no more to a bird than a wristwatch would to a person (which anthropomorphises birds using a technological metaphor with which humans are very familiar and comfortable but birds are not). They also claim that it is important that ringing does not affect the birds unduly, as if it did affect bird behaviour then

it would compromise the validity and objectivity of their science that seeks to understand 'normal' bird behaviour. However, Beckoff (2006) contends that ringing can affect birds and their interactions with the world: he gives an example of zebra finches (p183) where the choice of mate is influenced by the colour of the rings on its legs – black ringed females and red ringed males had better reproductive success than birds with other ring colours, blue and green rings being particularly unattractive. Here, not only does ringing affect how humans perceive birds, but seemingly also how birds perceive birds, emphasising the sometimes unintentional effects of human-bird interactions on longer term ecologies and relations, and bird subjectivities (see Holloway, 2007).

6.4.7 Knowledge claims from ringing

As noted above, the information that is produced by ringing birds is more widely collated and analysed by organisations like BTO and bird clubs. In the case of specific research projects, the analysis relevant to the project is carried out primarily by those conducting the research – such as Peter in his ringing study of birds in urban areas. I will conclude this section by considering the consequences of this process and the claims that arise from it (which are altering ideas of birds and urban areas, and which feed into management practices – see chapter 7 – with varying degrees of success).

One consequence of ringing is that researchers have challenged existing wisdom and beliefs about bird behaviour, especially bird movement. Peter refers to the ringing research he has conducted in order to suggest that the migration patterns of gulls ringed in urban areas are changing:

> "So what I've uncovered by ringing, I don't know something like 6,000 birds with a post-fledging record database of something like 45,000, something like that, they've provided quite a lot of information, germane to the urban gull issue but also on how their migrations have changed in the last few years".

He also makes claims about the gulls' patterns of regular movement across urban (and rural) space:

"Which I am now able to demonstrate is much, much wider than was ever thought, probably as much as a hundred kilometres in any direction, and the birds are capable of flying at 60 miles an hour as recorded by radar at Gloucestershire Airport".

Here, more knowledge both validates the interviewees' claims to expertise when working with others (planners, councils, the public) in urban areas but also potentially shapes how other humans think about birds and how to manage them.

Peter contends that the potential effects of management are not yet understood scientifically, so people are acting to control gulls in urban areas without really knowing what they are doing. To illustrate that human actions can have unforeseen effects on gull movements and behaviours, he gives the example of a warehouse near Bristol being knocked down in 1997, and how the 130 gull pairs living there (including 40 birds which he had ringed) had to relocate – and some started a new colony elsewhere:

"60% of those [gulls] more or less recruited into the near vicinity or into the larger, the wider Bristol colony, having been displaced because the building got knocked down, the remaining 40% … I couldn't find them in the breeding colony… it wasn't until 2003 that I found the first of these disappeared birds, and it was in Chippenham, that's 32 kilometres away. Now if that bird had relocated [19]97 – 98, it would have been one of the very first roof nesters in Chippenham. I mean it's only a small colony, 50 odd pairs, but it would have been one of the first, so that possibly resulted, that demolition possibly resulted in the establishment of a new colony, so we're moving without knowing what we're doing."

Yet researchers often feel that knowledge produced through practices such as ringing is not taken seriously enough by those in charge of implementing management. So practices of knowing birds and practices of managing birds - being two modes of enacting naturecultures - can come into conflict, or put another way they 'interfere' with each other (Law, 2004a). There is not a straightforward research-informing-action relationship: rather, the attempts to produce knowledge about gulls are situated in a complex network where

155

claims for the validity and importance of such knowledge have to vie for attention amongst the ideas and/or practices of the gulls themselves, pest controllers, council officers, residents, other researchers, conservationists, the media and so on. However, local authorities differ in attitude towards gull research, and the tension between the need to spend time, effort and money on doing such research and the need to take action regarding gulls (see Chapter 7) plays out differently in different cases.

Peter related an incident that illustrates the tension between researching gulls and controlling gulls. A local authority was carrying out control of gulls by substituting gull eggs with dummy eggs (to prevent the gull eggs from hatching and to keep the adult birds quiet - see 7.2.4). Peter had requested that a particular roof be left out of this control effort so he could ring the chicks once they had hatched for the purposes of his research – yet egg replacement was still carried out there. In his view, his research had been damaged by those who did not understand the importance of the research he was doing, even though his results might improve the council's approach and help provide some solutions to their gull problem. This highlights the tensions between 'knowledge' and 'action' in certain contexts. Some interviewees (including not just bird researchers but also others such as council officers) were of the opinion that research and researchers need to be taken more seriously by those who wish to address the perceived issues surrounding urban gulls. Ed, (a bird researcher and museum learning officer) who assists Peter in ringing gulls, describes it as a need for people to pay more attention to science:

> "I think that councils could take a lot more responsibility, and I think rather than knee jerking people could take a lot more responsibility, they could listen to the scientists more, you know, rather than listening to pest control managers who don't know, from my experience or from what I hear, you know a lot of these people working in pest control are not scientists, they don't understand science that well, and yet they're the ones often advising the councillors…I think that there needs to be a lot more councillors listening to the scientists, listening to the people that know science, that understand the science and researchers, so that money can be spent more strategically".

This incident also illustrates how the places and bodies of birds can be contested by different practices. The pest controllers, by going up onto the roof and substituting the gull eggs with dummy eggs, are stopping the lives of yet unhatched gulls at the egg stage to prevent the potential presence of those gulls in the future. The researchers, by going up onto the roof to ring chicks, are enrolling live gulls into the knowledge production process and altering their form so that they can 'work' more easily. The gulls themselves are varyingly able to contest such practices (see 6.4.6 above, and also 7.2), albeit perhaps with limited results.

A second consequence of ringing practices, and of perhaps even more significance for this thesis, is how the knowledge gathered about where gulls move to and reproduce is used to shape how researchers classify and divide bird populations. In particular, knowledge from ringing is used to argue that gulls are becoming 'urban', in the sense that gulls growing up in urban areas become 'associated' with such areas, and learn to recognise urban areas (even in different cities) as suitable gull spaces – these birds are thus likely to return to urban areas to breed, as Peter explains:

> "The period from hatching to fledging is about 6 weeks, and thereafter as they kind of get used to their wings, they hang around in the colony for 2 or 3 weeks, making short flights to begin with and longer and longer flights and then they come back and roost at the nest site, so it may be a period of kind of 8 or 9 weeks that the birds are associated with a gull colony, and the gull colony looks like town, so they have a kind of postcard in their mind about what the gull colony looks like for when they're old enough to breed, and that's what they're going back to."

Peter (and others) further argue that this increases differentiation within gull species, so that a subspecies – a population of 'urban' gulls – is slowly being created through these interactions with humans and human built environments, a subspecies that will continue to reproduce amongst its own members and thus increase this (possibly small) initial difference over time (although the extent to which such differentiation occurs is contested - Calladine, *et al*, 2006 - and is reported as being variable in different parts of Britain -

RSPB, 2009d). This possible differentiation emphasises diverse nonhuman and natural agencies in changing ecologies (contrast Lulka, 2004) and the co-evolution of urban areas and urban animals. Peter states:

"Urban gulls are different, from the ringing that I've been doing it's quite clear that really they don't recruit back into wild, less than 0.5% of my birds recruit back into wild colonies, yep? So what we're talking about is urban gulls, gulls hatched in town recruit back into town once they're old enough to breed…once upon a time it was all wild gulls recruiting into urban, nowadays we see very, very few wild gulls recruiting into urban [areas], so in essence urban gulls are discrete and eventually will turn into a different species, but it'll take about 10,000 years [laughs]. So yes they're very different".

6.4.8 Summary

This section has shown how (different) perceived needs to understand where birds go, both within and beyond urban areas, and to understand what particular birds do during their lives, has led some researchers to try to address these needs for knowledge by ringing birds. These practices, as with those discussed in 6.3, are situated and contingent, being easier to enact in some cases than others. Here however, the research practices involve, if but for a brief time, a much closer and more intense meeting of human and bird trajectories - and this produces practical and ethical issues, that are partly addressed by the need for people to 'become' bird ringers through a process of training (and thus gain 'access' to the birds and knowledge networks). The need for particular kinds of knowledges has led to a move towards the use of coloured rings (in addition to small metal rings), these specific things enabling knowledge practices to operate in easier ways, and birds to have relational agency within these networks. The issue of how rings might change the subjectivities of birds does not however receive much consideration from practitioners.

What emerges from these ringing practices are insights into how birds, people and urban areas might be affecting each other and how birds may be changing over time, as well as a sense that such knowledges (and the need for their practices) do not always circulate successfully and struggle to enrol others, emphasising the tension that can be produced in science-policy relations between the need to know and the need to act. The notion that birds

may be 'becoming urban' is of particular interest – as a way of understanding and defining birds (that may have effects), as much as it is a reflection of potentially changing ontologies – and will be returned to in Chapter 8.

6.5 Finding out what, where and when birds eat

6.5.1 Food and human-bird relations

Finally, in addition to knowledges of presence, numbers, breeding and movement, knowledge about (the case study) birds also includes knowledges of what they eat. Food can be understood as a particularly potent "vector of inter-corporeality" (Whatmore, 2002, p120), which connects and affects different humans and nonhumans in a complex variety of ways. What birds eat (or are perceived to) and how they get their food can bring birds and people into conflict, be it over food resources - such as birds feeding on grain stores - or because of other implications that those foods have - such as the proliferation of 'pest' birds or the transmission of disease. Sometimes food can also enable more agreeable relations, such as people feeding garden birds. Hence, knowledge about birds' feeding habits and needs can inform control strategies and conservation measures, and can also influence wider perceptions people have about different birds.

This section will consider research undertaken by people about what food birds in urban areas eat, how and where they find it, and what implications it may have. I will focus primarily on research that examines what peregrines in urban areas eat, as (of the case study birds) more research in urban areas specifically concerning food and feeding has been conducted regarding peregrines, though I will first outline the (less extensive) research into the other two case study birds.

6.5.2 Finding out what gulls and black redstarts eat

Many people see landfill sites and other waste sites with organic matter as important food sources for gulls (see Belant *et al*, 1998; Belant, 1997; Kilpi and Öst, 1998), with efforts to deter gulls and other birds a regular part of the operational routine of many such sites. Food waste in the form of litter within urban areas is also seen as another important food source, with the more widespread general wastefulness and untidiness of modern urban 'throwaway' society being talked of as a key factor in helping produce the urban gull 'issue'. Food is thus seen by some as key in how gulls in urban areas are managed (see 7.3.3).

Anecdotal evidence for what gulls eat is sometimes collected during ringing activities (see 6.5). Ed (ornithologist and museum learning officer) explains that, whilst on rooftops carrying out gull ringing, he and Peter (urban gull expert) are able to look at the diverse food remains and food pellets left by the birds:

> "We find a huge number of chicken bones, which suggests that they're feeding on a lot of scraps from what's around towns and cities... they are also feeding on a lot of natural prey, you know often the regurgitations from chicks contain a lot of earthworms for example, and… you do find the wings and feathers of small birds like blackbirds and starlings and sparrows".

Similarly, Peter notes that, although there will be a progressive reduction in the amount of organic matter allowed into landfill sites in Europe and the U.K. (under the terms of the EC Landfill Directive (99/31/EC)), and that this may subsequently have an impact on the birds (landfills being considered at least locally important to some populations), gulls are very adaptable and mobile, can make use of diverse food sources, and are able to do well without landfills (Rock, 2004; Kilpi and Öst, 1998).

Yet existing knowledge about food sources is seen by Peter as insufficient to produce scientifically informed management strategies and he is therefore reluctant to make any definitive claims about what proportions of which food sources are important, and has stressed the need for more research in presentations to councils and other groups (see Rock, 2003b, and RSPB Cornwall, 2007) and in press (Rock, 2005, 2003a), as well as in interview. He points to his ringing research to demonstrate that gulls are able to range much further in the search for food than was previously thought, and that not all gulls are using the same food sources, with some appearing to make use of less obvious or less acknowledged food resources. Peter would like to expand this research, and utilise satellite tracking amongst other methods, though is dubious about the chances of getting such research funded any time in the near future: councils do not have the money and DEFRA is (in Peter's words) "strapped for cash…even though, bizarrely, they've coughed up 2 million quid to support the eradication of ruddy ducks", this latter point highlighting the different "matters of concern" (Latour, 2004b) that Government does or doesn't give priority to. Bath MP Don Foster (who is calling for more gull research) was told by a

Government whip during a debate that "there was no need for further research into gulls – and that current laws were strong enough to deal with problems" (Bath Chronicle, 2009). Nigel (Head of Projects at the BTO) contends that Government does not fund large projects such as this in the way that it used to;

> "In the past when there was big concern about the increase in Canada geese in Britain, the Department of Environment, as it was then, which is now part of DEFRA, funded a big study on looking at Canada goose populations, to try and understand how much more they were likely to increase, and what impacts they would have. Government doesn't tend to do that sort of thing anymore, and one could argue that they could but it's the way that Government has moved, and it becomes more and more difficult to get those sorts of things funded".

In the case of black redstarts in urban areas in Britain, there is currently no particular drive to research what they eat, this not being *in itself* considered an issue. The accepted knowledge of black redstart feeding habits is that they primarily forage and hunt for invertebrates, with fruit and seeds making up a smaller proportion of their diets (Cramp, 1988, cited in GMBP, 2008; Nicholson, 1951), and it is the provision of bird habitat that is afforded much greater importance within conservation work (see chapter 7.3) than the question of what exactly they do eat, because it is assumed that habitat can supply feeding opportunities. Some research does attempt to find out what kinds of green roof are better for invertebrate diversity, and thus can be thought to *indirectly* concern food sources (see 7.3).

There is then (for different reasons) not a great deal of specific, active research into, or policy interest in, finding out what gulls and black redstarts eat in urban areas – in spite of, in the case of gulls, calls for such research to be conducted (interviews with Peter and Ed; Bath Chronicle 2009; also RSPB, 2009d). By comparison there has been more active research interest and activity regarding what peregrines in urban areas eat, and the following sections will thus concentrate on this.

6.5.3 Finding out what peregrines eat

Attempts to produce knowledges about what peregrines eat in urban areas have been driven by two factors. First, there has been a desire to address a specific issue – this being that the increase in numbers of peregrines in urban areas in recent years has triggered concern from pigeon fanciers/racers about peregrines (and other raptors) preying on domestic pigeons. Providing definitive answers to questions regarding the extent to which peregrines prey on domestic pigeons is seen as important for addressing this concern. Second, there is a desire to increase knowledge and understanding generally, arising from the perception that there is a paucity of research on the feeding habits of peregrines in urban areas in Britain (see Drewitt and Dixon, 2008), particularly compared to such research on peregrines in rural areas, or in urban areas in other countries, notably in Continental Europe and North America (see Bird, Varland and Negro, 1996).

These two research needs can be seen to reflect the (rough) division between more applied 'regulatory' and more general 'research' approaches to science discussed by Dierig *et al* (2003) in reference to Jasanoff (1990). I will firstly give a summary of the applied research into peregrines and domestic pigeons (this was not the main focus of - and predated - the interviews/field visits I conducted for this thesis), before considering in more detail research into the composition of peregrines' diets in urban areas.

6.5.4 What peregrines eat 1: impact of peregrines on domestic pigeons

Research into the effects of peregrine (and sparrowhawk) predation on domestic pigeons formed a part of a wider study by the UK Raptor Working Group. This group was formed in 1995 by the then Department of the Environment (DoE, now DEFRA) in order to investigate the implications of the growth in raptor populations for game birds, moorland management and racing pigeons. The results of this research were published in the *Report of the UK Raptor Working Group* (JNCC, 2000). There have also been subsequent studies of the effects of birds of prey on racing pigeons focusing on Wales (Dixon, *et al*, 2003) and Scotland (Henderson, Parrott and Moore, 2004).

In regard to peregrines in urban areas, this research involved trying to ascertain the reasons for pigeons failing to return to their lofts, subsequently establishing what proportion of these birds had been taken by birds of prey, and establishing how this compared to the

proportion of pigeons lost due to other reasons. The researchers claimed that, give or take regional variations, approximately 7.5% of racing pigeons are lost to raptors (primarily peregrines and sparrowhawks) every year, with overall losses due to all causes (including straying, exhaustion, collisions, going feral) being about 52% (JNCC, 2000). Of those pigeons that are lost, the major reasons are straying and exhaustion (36%) and collisions (34%) (RSPB, 2008a), not predation. These specific claims, and the ways in which they were produced, have been contested by the Royal Pigeon Racing Association (RPRA), a representative of pigeon interests involved with the Working Group (JNCC, 2000).

Nick D (an ornithologist and peregrine researcher from Exeter) was involved with this research, and (in interview) contended that "the findings [of the research] fairly mirrored what Ratcliffe [1993] had estimated, that they [peregrines] would probably have an impact on about 3% of racing pigeons… it was negligible".

The knowledges produced have been disseminated within the projects' reports, and attempts have also been made to circulate these knowledges amongst a wider public through the production of leaflets by the RSPB and other groups concerned with bird of prey issues (RSPB, 2008a). Such leaflets use the knowledges from this research as scientific proof that peregrines have only a minor impact on domestic pigeons, and this message is also promoted to the public (via the leaflets and by personnel) at such events as public engagement activities (see chapter 7.4 for more on this). The pigeon-keeping community however made accusations of biased research and flawed methods and results, in spite of being involved with the Working Group, as Nick D recalls:

> "We worked with the racing pigeon unions, they weren't very happy about that [the results], but you know we had access to a lot of peregrine information, that, you know, had a university been awarded that contract maybe it wouldn't have been as openly given, I mean because the Hawk and Owl Trust, one of their remits is the conservation of British birds of prey, they felt that we'd be biased, but you know it was a question that has long been needing proper research, and we did it as objectively as we could".

Thus conservation organisations use such knowledges, contested though they are by some, to try and influence human-bird relations in certain ways (as with human-animal relations elsewhere – e.g. McGregor, 2005; Lulka, 2004).

6.5.5 What peregrines eat 2: the composition of peregrines' diets in urban areas

In contrast to the research considered above that was driven by a specific applied problem, the research that will now be considered has arisen from a perceived need to increase understandings of peregrines in urban areas in Britain more generally, and from the particular interests of the researchers involved, and is concerned with the composition of peregrines' diets in urban areas. This research was (and continues to be) largely carried out by Nick D and Ed (the museum learning officer and ornithologist also involved in gull ringing - see 6.4, and 6.5.2) who have been conducting a specific research project focussed primarily on Bristol, Bath and Exeter, and which is the main focus here. Other associated smaller studies, conducted by other people in the same and other locations (e.g. at Derby Cathedral) are also of importance (and prey remains from these other places and projects are also examined by Nick and Ed).

The research primarily involves the collection and analysis of prey remains from around sites that peregrines use, such as nesting and roosting sites and food caches, along with some observations of peregrines around these sites. Over time the research has produced a set of data regarding what prey species were present in the peregrines' diets, how many individuals of each species had been found at particular sites and in general, and percentage calculations of the extent to which each species comprised a part of the peregrine's diet (again at particular sites, and in general). From the knowledges that have been produced of what species peregrines were preying on, and to what degree, people are making some tentative claims about not only what and how peregrines are hunting, but also about the behaviours of other birds as well. This will be returned to shortly – first I will discuss who is involved, and how the research is conducted.

Who is involved?

In terms of personnel, it is not just ornithologists (such as Nick D and Ed) who are involved in the research. People are needed to collect prey remains, and although at many of the sites it is the researchers themselves who do this, at some sites they enrolled others to help

out, such as in the research conducted by John (from the BOC) - "in the big office block it was, down in Bristol, it actually had 24 hour porterage, and we chatted up the porters to actually collect remains, which they did". Such enrolments increases the heterogeneous assemblage (Ellis and Waterton, 2005) of people involved in "knowing nature networks" (p674). The research can thus be said to have involved 'amateurs', which John's assessment of his own place within such research seems to confirm:

> "I did do some sort of research work with a small r into what they [peregrines] were eating particularly in the breeding season and also later on in the non breeding season… The research was published in the local Avon Bird Report, Bristol Ornithology which is sort of, if you like, local research, it wasn't published in a meaningful scientific journal because it probably wasn't quality research, you know, in the sense that it was a bumbling amateur's research but, yeah, a lot of work went into it in various ways and I was helped by various people".

However, being more generally able to categorise people involved in the research as either 'amateur' or 'professional' is problematic. On the one hand, this research did not constitute paid employment and was carried out by and large in the researchers' own time. On the other hand, some of the research was "partially" funded by Bristol Zoo/National Lottery Millennium Awards Scheme and the Hawk and Owl Trust (Drewitt and Dixon, 2008), and one of the researchers worked, at least some of the time, as an ornithological researcher and consultant, that is, in a related professional role. Of course, 'amateur' or 'professional' are unstable categories, and as Ellis and Waterton (2005) have noted producing knowledge about 'nature' involves a heterogeneous assemblage of amateur and professional naturalists with different levels and kinds of expertise. As was discussed in 6.3, the type or level of expertise a person has is not necessarily denoted by the tag amateur or professional.

Collecting the remains

In order to collect the remains of peregrines' prey, researchers have to visit the main sites – nest sites, roost sites, food caches - where such remains will generally be found. Prey remains have been collected from these different research sites at regular daily, weekly or monthly intervals (Drewitt and Dixon, 2008), this temporal variation of research activity

depending on factors such as the seasonal level of peregrine activity at each site, and the ability and availability of researchers to get to the sites. Many sites are on or around ecclesiastical buildings, office blocks and buildings such as the university tower in Bristol. That these buildings are in some way public, and/or access to them is fairly easy to negotiate for these research purposes, combined with the fact that they are in mainly central urban locations, means that access to them is relatively straightforward. Part of John's own study was on the university tower, where he "used to go up about once a fortnight and collect all the prey remains and then analyse them… it was quite easy for that". This ease of access compares favourably with accessing peregrine sites in rural locations, as Ed explains:

 "There's a lot of information out there, a reasonable amount of information about rural peregrines, and also the way in which people collect the data you can only collect much less, so for example people often go down to an eyrie, a peregrine eyrie, maybe during the breeding season under license to ring the chicks and they'll often retrieve prey then, and maybe visit again in the winter time, but you only get a relatively small cross section of what's been eaten, whereas with the urban ones they can be studied on a daily or weekly basis 'cos you can find their prey daily, because obviously, you know, unlike going down a cliff to an eyrie, which below probably has trees and leaves and you know everything gets lost, of course in an urban setting like above a church or a cathedral, the prey falls on to the ground so it's much easier to find, so urban birds are much easier to study in terms of their prey".

Researchers claim then that more research of this kind is possible in urban areas, as a greater number of remains can be collected and more detailed knowledge can be built up. Unlike in other areas of bird research (see 6.3) where aspects of urban areas can often be seen as a hindrance, here urban areas assist the production of knowledge, a point also made by Dierig, *et al* (2003) regarding the many ways in which urban areas have enabled the pursuit of science. The use of field sites that are easily accessible to researchers' is a notion discussed by Lachmund (2003, 2007) in a somewhat different scenario – that of botanical fieldwork on bombsites and other areas within post-war West Berlin. For ecologists living in this enclosed city with no access to the countryside beyond, the availability of and ease

of access of urban bombsites was an important driving factor in the development of urban ecology. Certainly Lachmund's 'walled in' botanists had rather less choice available to them regarding field sites than the present day peregrine researchers, though his account does illustrate how knowledge producing practices can in some cases be influenced by the availability of and ease of access to certain sites where knowledge could be produced. Constraints on researchers are it should be noted not just physical – they may also be social (work and other commitments) – so that researchers look closer to home for sites to conduct research.

Despite relative ease of access in terms of getting *to* the sites, getting around the sites themselves can present more challenges to the researchers' endeavours to find and collect remains, due to the micro-geographies of these sites (and how peregrines and human interact with them). On a field visit to a research site in Exeter (St Michael's Church) where peregrines nested, I accompanied Nick D as he walked round the church looking for prey remains. He commented on how it was easier to find remains when the church personnel used to cut the grass, but now they are leaving it long (ironically as a little 'wildlife' area) it makes it more difficult to find things. We also had to scramble over a couple of fences to get to the back of the church, and though the church personnel accepted him going there to look for prey remains, this added another obstacle to the research process. Hence, town and city sites can still be messy and difficult places for fieldwork, even if in some ways they may be less messy and difficult than 'rural' sites.

Micro-geographies of these sites can be important then not just in terms of the layout of the sites (e.g. fences), but also in terms of the structures and textures (see Gibson, 1986) encountered (e.g. the long grass). Site composition and layout can affect the dispersal of, and access to, prey remains. Peregrines themselves can be obstacles - they often 'cache' food and then eat it over a period of time (Drewitt and Dixon, 2008). Once dropped or discarded by peregrines, prey remains may end up on the ground (where finding them may be more or less of a challenge) but could also end up lodged in nooks and crannies on buildings, or fall into gutters. At St Michael's Church in Exeter the weekly collection of prey remains is supplemented once a year by the annual clearance of gulleys, gutters and drainpipes in November, which partially overcomes the problems of prey remain

availability caused by this site's microgeographies (interview with Nick D; Drewitt and Dixon, 2008).

Another issue of importance is the researchers themselves, and how they are able to negotiate these micro-geographies. This relates to embodied skills (Ingold, 2000) in two senses – firstly the physical ability to negotiate obstacles such as fences (which Nick seemed more adept at than I was), and secondly (and perhaps more importantly) the ability to notice prey remains within the environment. Nick certainly 'had his eye in' much more than I did, as he knew to an extent what he was looking for, and was experienced in looking for remains. He was able to see things that I would pass over, being able to pick out (visually and physically) indiscriminate pellets of crumpled bird remains, small bones etc, amongst the grass and detritus. In this sense, knowing birds in urban areas is partly through an embodied performance of ecological identification and classification (e.g. Waterton, 2003).

The micro-geographies of the sites, the practices of birds, researchers and others all influence how the research is conducted and what knowledge can be subsequently produced. This is acknowledged by Nick D and Ed: in their published research as well as in interview they note that the height and arrangement of buildings, the effects of weather, street cleaning and scavenging, plus the use of other unknown or less frequented sites by the peregrines, means that some prey remains are never collected. Therefore the results of the research probably underestimate the (as Ed says) "real amount of material taken", but could also "overestimate certain species, particularly larger birds" (Drewitt and Dixon, 2008) as the remains of larger birds are more likely to be found. Knowledges of birds are thus patchy and shaped relationally by the form and practice of the built environment and the ways that birds and humans interact with it.

Analysing the remains

Once prey remains have been collected by Ed and Nick, or sent to them by others, the remains are dried in preparation for analysis. There is then the task of trying to identify what species the remains belong to, and how many individuals of each species there are, as Ed explains:

"For each day or week the remains are separated out into bags. I empty a bag at a time onto newspaper and spread the feathers and other remains out. The first thing I do is see how many individual pigeons I have by sorting the primary wing feathers (mainly) into type. I also keep in mind feathers taken the day before and after to avoid duplication. I sort other bird species feathers into their species group and then work out whether one or more has been taken - often by looking for duplicates of the same feather, certain wear and tear in some feathers, feathers from different gender". (E-mail communication from Ed).

Pigeon remains are picked out first as they tend to form the majority of the remains found (although only a small proportion of pigeons are taken by peregrines - as noted above - those pigeons are a large proportion of a peregrine's diet). Other species are then identified from what is left. The point Ed makes about trying to avoid duplication refers to the fact that the remains from a particular bag, or that were collected on a particular day, will not necessarily contain all the remains from a particular individual bird. The remains of an individual bird can get dispersed over time and space, meaning they (may) get collected at different points in time and space. Thus the researchers, whilst trying to establish how many birds the collected remains represent in total, have to bear in mind what has turned up previously and how many 'complete' (or as good as) birds can be pieced together over a period of time. As mentioned earlier, the micro-geographies of the sites and the feeding actions of the peregrines have an influence here, affecting how remains are dispersed over time and space, and also affecting how remains are collected (if at all).

Identifying bird species from remains, like identifying live birds by sight or rings (6.3 and 6.4), is also a skill, one which Ed in particular is adept at:

"I've been interested in wildlife since I was very young and particularly from 8 onwards I would always be finding feathers and skulls. I started to make a collection of all my feathers, wings and skulls so by the time I left home to go to University I already had a good idea of identifying things" (E-mail communication from Ed).

He is thus able, after years of practice, to identify many species quickly himself, although he and Nick also use some standard reference works in this identification process (mainly Jenni & Winkler, 1994, and Brown, *et al*, 2003). However, some (rarer) remains can prove to be more difficult to identify, such as corncrakes. Ed states that "I usually know what they are not and by using reference collections (my own or museums') I can deduce what they are from". Identifying difficult remains involves then a process of trial and error and elimination, and makes reference to standardized forms found within museums and other collections, in addition to the other kinds of classifications of birds found within the reference books that the researchers use more generally. Identification is thus practiced through and in relation to a heterogeneous assemblage of embodied skills (Ingold, 2000), standardized classifications (Bowker and Star, 1999; Waterton 2003; Robertson 2006 - that act as circulating references, Latour, 1999a), bits of birds and other animals, site geographies and conditions, and the actions of birds and people.

The first stage of translation (Latour, 1999a) in this knowledge producing process can be seen to have taken place once the prey remains have been identified and confirmed as belonging to particular species, and the "minimum number" (Drewitt and Dixon, 2008) of individuals of each species (from within the prey remains) has been established. This moves from the relatively 'messy' and disorded field sites to the relative comfort and order of indoor sites where messy remains are dried out and which are more suitable locations for the practice of 'sorting things out' (Bowker and Star, 1999) and accessing reference materials. They are then recorded in further acts act of translation as figures within spreadsheets and calculated further, as Ed explains:

> "The data is put into a monthly and an annual spreadsheet. The totals for each species are summarised by the percentage of the diet they comprise by frequency and by weight of the bird. This then allows me to produce pie charts showing the proportion of species or groups of species taken. Further chi-square analysis may also be taken to look at differences between seasons and months. Other stats may be required to look at differences in diversity of prey taken between sites and years e.g. comparing prey in Bath when the pair reared 4 chicks in one year and 2 chicks in the following year". (E-mail communication from Ed).

Unlike other areas of bird research (6.3 and 6.4), or animal research, it is not the presences/absences of *live* animals that are being recorded and translated into knowledges and statistics (e.g. Bear, 2006). Rather, *dead* animals, in the form of often dismembered and decayed body parts, are being recorded. Translation has to produce types and numbers of animals from a messy, mixed up collection of remains before these (partial) animals can then get translated further into numbers and statistics (thus an additional, initial stage of translation is required in this research). Through this 'reassembling', the things of interest in this research – the animals that have been preyed upon by the peregrines – then themselves become literal (though incomplete) assemblages of components that are produced through and form part of the wider heterogeneous assemblage (Hinchliffe, 2008) involved in the reflexive process of identification and the production of knowledges. These assemblages (or 'virtual' animals) are then subsequently treated as if they effectively *are* individual animals when they later become the numbers, graphs and pie charts within the calculations and representations (the further translations) of this research.

Of course, there are other areas of research where knowing animals takes place indirectly, as some animals are difficult to 'know' directly (in terms of presences or habits), and they have to be 'pieced together' in order to try and produce knowledge about them. For instance, the presence, habits, and co-presence of water voles and brown rats are discussed by Hinchliffe *et al* (2005), where insights into the animals are gained through an open, looser, experimental, indirect process of "knowing around" rather than a direct "knowledge of" (p653). Such a process of indirectly knowing around animals is perhaps necessary as some animals are not 'self evident' or are less self evident than others. From the varying presence of different species and the varying difficulties of identifying prey remains in this peregrine research, it also seems the case then that, as with different live birds (compare the relative visibility of gulls, large in size and number, to the smaller, darker and rarer black redstarts), the 'ability' of different species to be present within the research varies, due to the form of their remains, the environmental conditions and microgeographies of the research sites, the actions of prey birds and peregrines, and the embodied skills of the researchers.

What knowledge is produced?

From the knowledge produced by the practices discussed above, the researchers made (provisional) claims about the composition of peregrines' diets within urban areas. As the researchers suspected, pigeons formed much of the peregrines' diets, but they were surprised by the wide range of other species that peregrines had caught (either above or near to urban areas). Ed (in interview) outlines some of the results:

> "We're finding that obviously a lot of their prey is pigeons which is to be expected, it's usually between 40 and 60% pigeon, that's by weight, and well, it's by weight and also by numbers, that sort of fluctuation, and that varies throughout the year, with maximum number of pigeons kind of being taken in the middle of the year when they've got chicks. But the other thing we're finding is that they're taking a lot of other birds as well, so that other sort of 40 – 60% is other birds, and it's other species, not just things like starlings and blackbirds that you might expect in the city, but lots of different sorts of finches, pipits and larks, wading birds, gulls…things like woodcock, little grebe, water rail, moorhen".

The wide range of prey species is seen as surprising and interesting as there had been (as Ed and others noted) a general assumption amongst many people that peregrines in urban areas preyed almost entirely on pigeons and starlings. Nick B (from Derbyshire Wildlife Trust) points out that it is "not an urban habit of feeding on a wide range of prey, it seems to happen in the wild as well". Leaving aside for the time being debates of what counts as 'wild', I would contend that it is not so much the idea of diverse peregrine diets being somehow uniquely urban that has been the surprising aspect for researchers, but rather that until this research had examined what peregrines in urban areas were preying on there was previously a rather more 'species poor' idea of what might be present in, and/or passing over/through, urban areas. This is then, in a small way, changing the idea of what urban can mean in terms of wildlife and its relations, thereby shifting the ontology of 'urban' and 'wildlife' amongst these networks of researchers and conservationists.

What other claims are being made about peregrines and other birds?

These research findings have led researchers to make provisional claims about the habits of the peregrines and their prey. Existing knowledge assumes that species such as woodcock, little grebe and water rail are fairly shy and secretive during the daytime, and that they are more likely to move at night. That peregrines are understood to be catching these species is therefore taken to be evidence that peregrines are hunting at night, described by some as the birds adopting new 'urban' habits in time as well as space. Although interviewees (at the time of interview) discussed it as being probable rather than 'conclusively' proven, anecdotal observations in Britain, and research from other countries (DeCandido and Allen, 2006; Wendt, Septon and Moline, 1991) is used to claim that peregrines make use of artificial lighting within urban areas in Britain to enable them to hunt at night. Nick and Ed's research is seen to reinforce these ideas, as Ed explains:

> "We're... finding that they're taking a lot of birds that are normally quite secretive, quite shy, and very difficult for humans to see, and also probably for peregrines to find during the daytime, but what they all have in common, these particular species, is that they migrate at night, and so we think that the peregrine falcon is catching these birds as they're migrating over cities at night, and we know from evidence in New York, Taiwan, Hong Kong, and also in various cities in Europe such as Germany, Warsaw in Poland, the Netherlands and France that peregrines have been observed catching prey at night, using the street lamps and using artificial lighting to see their prey... so the biggest thing really is the discovery and the supporting material from other research in other parts of the world that peregrine falcons are actually behaving and hunting at night, which is fantastic".

Nick B (Derbyshire Wildlife Trust) has observed the peregrines in Derby being active at night, though he sees such observations as being anecdotal and supportive of the idea of nocturnal hunting rather than being conclusive evidence;

"I've seen the peregrines after dark, I've been down after dark in the winter, and I've seen them active. I've seen them roosting, head tucked into the stonework clearly asleep, but I've also seen them sitting up on the gargoyles or up on the very top pinnacles of the

cathedral after dark looking out for prey as it were, very active, and I've seen them fly away from the tower. To prove this [nocturnal hunting] you would need to have them coming back to the tower with live prey, because they do stash food in various places and they might well have stashed food, so just seeing a bird go out empty footed and then come back with prey in its feet would not be sufficient proof that it had caught that prey during darkness".

In October 2009, on the Derby peregrines website (derbyperegrines.blogspot.com) Nick B discussed "nocturnal migrants" in prey remains, and referred to "this predator's habit of nocturnal feeding", suggesting those involved in the research have enough confidence in the 'indirect' evidence provided by the presence of nocturnal migrants in prey remains, along with the supporting evidence from elsewhere, to discuss hunting at night as if it were a 'proven' fact – albeit sometimes with the addition of phrases such as "most likely" as caveats (Drewitt and Dixon, 2008). This confidence in the 'indirect' evidence involves both an acceptance of the fact that these species are migrating at night, and an acceptance that the prey remains once identified represent these species – highlighting the importance of circulating references (Latour, 1999a) in the form of other knowledges and processes here and the gradual stabilisation of facts about nocturnal hunting. Nocturnal hunting has subsequently been reported as 'proven' in Derby on the Derby peregrines website after evidence was caught on video (Derby Peregrines, 2010).

Prey remains also provide information about the numbers, habits and movements of the prey species themselves, as Ed points out:

> "For example in Bath… at least 30 woodcock were taken last November and December, but there's no way you ever get that many records of woodcock by people, so it's revealing to us that populations of birds are probably far higher than we actually recognise, and you tend to find that birdwatchers and bird people recording birds tend to be quite cynical sometimes about bird numbers and they tend to be on the cautious side, and yet I think the peregrine is showing us that maybe we can actually be more on the optimistic side really".

The death of birds by peregrine predation is making them more visible to humans, although it is perhaps the case with some species that peregrine predation was also made more possible (in that prey became more visible) by human lighting technologies. This again illustrates the complex relations that can emerge amongst heterogeneous arrays of humans, birds and technologies. Ed also discusses birds such as dunnocks turning up in prey remains in large quantities in autumn, and contends that this is suggestive of migratory movements that were previously unknown or poorly understood - dunnocks being fairly shy birds that spend a lot of time skulking about in undergrowth. For Ed then "the study is allowing us to find out…..that there's a lot more going on with our birds than we realize". Nick B also reports that unknown bird activity is being revealed by this research and that peregrines are active agents in producing this knowledge:

"We've had, more extraordinarily perhaps, birds that we don't get in Derbyshire at all in the winter, like bar tailed godwit and knot and turnstone right in the middle of winter when they are not even migrating, you know, most of the other waders we've had have been at migration time, the ones that aren't resident. So it looks as if the peregrines are showing up for us a nocturnal movement of waders in mid winter".

The capture of certain birds by peregrines helps to make these birds visible to science, and allows researchers to mark their presence at certain times and places, and infer movements and behaviours. From a relational perspective, birds can be seen as actors and agents (in different senses) in all the knowledge producing practices considered in this chapter. In the case of prey remains, peregrines appear to have an admittedly 'accidental' yet more literal role in the research process, as they themselves are (partly) responsible for collecting the research 'samples' in the form of their prey (in a way that the researchers could not), which then varyingly become available for the researchers to collect.

Whatmore (2002) describes (what becomes) "wildlife" as a "relational and fluid achievement" (p15), which involves, and could equally be applied to, knowledges about animals. This sense of a relational "achievement" would be true for all such knowledges, in that they are products of relations, yet the term seems particularly suggestive of what is

occurring here, with both peregrines and people being active, key players in the (relational) research process that is producing new insights into a range of other birds – with the 'role' of peregrines being acknowledged to an extent by the researchers themselves.

Nick and Ed, and indeed the other researchers and personnel involved with this research, have disseminated the knowledges produced in a variety of ways. Nick and Ed have published an academic paper in *British Birds* (Drewitt and Dixon, 2008), and John has published an article (as he mentioned above) in the Avon Bird Report (not, as he mentioned, a "meaningful scientific journal"). These papers and articles have circulated the knowledges amongst a limited and more specialist audience. However, the knowledges have also been disseminated to a wider and more general audience – Ed has appeared on the BBC Radio 4 programme *Nature* (Monday 16th May – BBC, 2005), as well as being cited within newspaper articles about urban peregrines that highlight their nocturnal hunting habits - for example, 'City lights turn peregrines into night hawks' (McCarthy, 2008) and 'Peregrine falcon adapting to urban lifestyle' (Unwin, 2008). The Derby Peregrines website (http://derbyperegrines.blogspot.com/) regularly discusses prey remains found beneath Derby Cathedral and has mentioned findings from other sites (Ed and Nick D themselves being frequently referred to in their capacity as experts).

6.5.6 Summary

This section has shown how the issue of what birds eat can be both contentious – and of particular importance for how certain human-bird relations are constituted, and how birds are managed – and can also allow for new understandings of birds to emerge. Food within human-bird relations is a complicated issue - certain knowledges of what birds eat may remain contested by some, and the availability of food for different birds remains in some cases a difficult issue for those involved in the management of birds/people//urban areas. Yet food also figures here as a 'vector' (in a differing though related sense to that used by Whatmore, 2002, p120) that allows people to gain a greater sense of aspects of bird movements and behaviour that are otherwise difficult or impossible to apprehend (and can thus be seen as a way of 'knowing around' birds – see Hinchliffe, et al, 2005). In particular, the role of peregrines as unwitting 'collectors' of 'samples' enables researchers to make claims not just about the peregrines themselves but about some of the bird species that the peregrines have preyed upon.

177

The implications for knowledges of food for wider management are, as has already been seen, dependent to an extent on the abilities of knowledges to circulate, and on the capacities for their proponents to enrol others: this appears relatively more difficult in the case of gulls than that of peregrines, with the former involving more contentious and complex relations.

6.6 Summary of chapter

This chapter has reviewed the diverse ideas and knowledges about the three case study birds, and has also examined in more detail the practices involved in generating and judging knowledges about these birds in urban areas, especially through counting birds, ringing birds and studying prey remains. Several points are worth summarising briefly in conclusion, although these will returned to in Chapter 8.

First, the human-bird relations examined here are differentiated by bird species *and* by intraspecies variation between individuals. Reactions and attitudes, and attributions of characteristics, qualities and status, are to an extent informed by ideas 'already' in circulation, and which can – particularly in the case of more formal designations – tend to differentiate birds along species lines. Yet 'lived' experiences and interactions are also important here, and these perhaps allow more room for the 'lively' presence of others (Whatmore, 2002; Philo and Wilbert, 2000) to influence ideas and for birds to be differentiated as individuals. Certainly, some broad generalisations can be made – gulls are often perceived as noisy and messy, peregrines are seen as charismatic, etc – yet these are not fixed ideas, or representative of all human-bird relations in urban areas, but are contingent and situated.

Second, getting to know birds in urban areas in even rather 'basic' ways – such as counting and mapping a bird species – can be a complex process, contingent on and co-produced by physical/legal/political aspects of the urban landscape and the diverse forms and behaviours of the birds and their human researchers. Human and bird trajectories do not easily mesh in space-time – birds on tall buildings are difficult to see and bird behaviour at dawn does not fit well with normal patterns of human behaviour. Researchers must adapt their own behaviours and movements and recruit others (humans, birds, things) to collect data and

enable certain knowledges practices. Yet that recruitment can bring its own problems of judging expertise and 'quality', especially where volunteers without 'scientific' or 'professional' attributes become important in knowledge gathering. The birds may (understood relationally) also 'resist' (gulls) or 'collude' (peregrines) with knowledge production in different ways.

Third, throughout these practices, the sense of both space and birds being (or becoming) 'urban' is important. Urban areas shape how knowledges can be gathered or not, but also they shape how birds and human behave. Ed and Nick D thought that peregrines were adapting to urban lighting, and peregrines hunting at night has been discussed as an 'urban' habit elsewhere (see McCarthy, 2008; Unwin, 2008), although they point out that nocturnal hunting has also been reported in non-urban habitats (Drewitt and Dixon, 2008) - though it is not clear to what extent this relies on 'artificial' lighting. Similarly, gulls are thought to be adapting their movements and behaviours to exploit urban areas, to the degree that Peter sees 'urban' gulls almost as a subspecies, different from other groups of gulls. As "wildlife" is a "relational and fluid achievement" (Whatmore 2002, p15), so wildlife in urban areas is also relational and shifting in terms of not only patterns and habits, but potentially even the DNA of animal groups shaped (partly) by/through urban forms and processes. These knowledges (and their patchiness) are also important as they may influence how urban areas are managed (this being currently more likely in some networks, and less likely in others) - be it through choices about different methods of gull control or what kinds of habitat to provide for rare species. The next chapter considers the management practices involved in human-bird relations in urban areas – practices that have varying relations with these knowledges.

Chapter 7: Managing birds in urban areas - practices of nonhuman and human management

7.1. Introduction

This chapter now turns to the management practices of human-bird relationships in my research. Section 7.2 deals with practices of killing and protecting from killing, and is primarily about managing birds through direct bodily interventions. Such practices have proved controversial in terms of effects and ethics (Lulka, 2004; Robbins, 2006; Graham, 1975), and here highlight the changing ways in which killing itself, and the differing means of carrying it out, are seen as legitimate or illegitimate in relation to different birds, people and places.

Section 7.3 deals with more indirect approaches, and examines how, rather than directly managing the bodies of birds, the *lifespaces* of the birds are managed. This includes providing nesting structures and foraging habitat, preventing disturbance, deterring birds from using particular urban spaces, and restricting food availability. Such practices illustrate the problems (and opportunities) that emerge when humans live alongside nonhumans - especially in urban areas crowded with both birds and people - and the technological and ecological adjustments that can result from these relations (Hovorka, 2008).

Section 7.4 looks more specifically at the management of humans in terms of public engagement with birds in urban areas, to show that the performance of human-bird relations is not merely the performance of humans on birds but also takes/shapes other relational forms, including humans performing other humans

Across these sections, I consider which humans and nonhumans have power/agency in these relations, and how is it relationally produced (Allen, 2003; Murdoch, 1997; and see chapter 4.2 and 4.6). I particularly emphasise the complexity and differentiation of human-bird relationality in urban areas, which is shaped not merely by human-nonhuman differences but also by differences between birds (both as species and as individuals), by differences between humans, by technologies and by space-time configurations.

7.2 Practices of killing, practices of protection

7.2.1 Introduction

This first section will focus on management practices that seek to intentionally kill birds or to protect them from specific threats. It will also consider the related killing and protecting practices of the birds themselves, as these too are a part of human-bird relations. Practices of deliberately killing birds in urban areas are particular, visceral expressions of people's relations with birds, and of their ideas about which animals are or are not considered acceptable in towns and cities (or rather in particular urban spaces) and should be included or excluded (Philo, 1998). Animals seen as problematic for various reasons (in some cases because they themselves kill other, valued animals) in certain places and at certain times have historically often been dealt with by killing them, either to exterminate them or at least control their numbers (see Lovegrove, 2007; Winston, 1997; Hampton, 1997; Knight, 2000). Such practices of killing have been viewed by other people with varying levels of acceptance - depending partly on timing and location as well as on the animals in question – and efforts have sometimes been made to try and prevent them (see Milton, 2002, p110-128; Hampton, 1997).

I will firstly examine ideas of what constitutes 'legitimate' or 'illegitimate' killing (Marvin, 2000) in terms of which animals, by whom, and in which places and situations. I will then move on to examine the culling of gulls, the practices of egg oiling and egg replacement as forms of killing, and measures taken to protect peregrines. Black redstarts will be notable by their absence in this section – aside from one reference made by an interviewee to egg collecting (which could perhaps be very loosely defined as killing, even though that is presumably not the primary intention of the egg collector) there is no mention of direct attempts to kill black redstarts (although the actions of some developers and others in the past – through destroying habitat - could be seen by some to effectively have done so in a wider and 'unintentional' sense). Of the case study birds in urban areas it is primarily gulls, and sometimes peregrines, that different people have attempted to kill.

7.2.2 Legitimate and illegitimate killing

In his discussion of foxhunting in the English countryside, Marvin (2000) employs the concepts of "legitimate" and "illegitimate" killing to examine particular human-animal relations and how different people perceive the killing of foxes (and that done by foxes). Marvin contends that for many rural dwellers the fox is an illegitimate killer (in that it kills animals kept by and for people) and so "becomes an object of legitimate killing" (p208), with foxhunting seen as the correct and legitimate means of carrying out this killing in rural space. By contrast, many other people ("especially in urban Britain", p208) see the fox "as a victim of an immoral practice" and foxhunting as illegitimate killing. Similar ideas of different kinds of killing (of animals) being seen as legitimate or otherwise, with particular emphasis on their relationship to place and landscape, have been explored by Matless *et al* (2005) in relation to ideas of acceptable and unacceptable behaviours of animals and humans in particular places (see also Philo, 1998; Sibley, 1995). In considering my own research, I also wish to highlight different notions of legitimacy and validity in relation to practices of killing different birds (carried out by people *and* birds). These notions are similarly connected to place, and are also connected to who is killing what, and whether such practices are seen as official or unofficial.

So why have some people sought to kill gulls, and kill peregrines in urban areas? Different actions of the birds are seen by some people as unacceptable and transgressive because of the negative effects such actions have on those people. This notion of animals transgressing is a key theme in recent geographical and social science work on animals (Philo and Wilbert, 2000, p5; see chapter 4) and these perceived transgressions can often lead to animals being deliberately killed by people (Brownlow, 2000, Milton, 2002). Gulls (see chapters 5.2 and 6.3) are perceived to be a pest in a number of urban areas by some people, who find the noise, mess, and damage to property the birds cause, and their sometimes aggressive behaviour, to be unacceptable. Culling them has been seen as a way of controlling their numbers and their negative effects. Peregrines are thought by some people (see chapters 5.2 and 6.4) to predate on domestic pigeons, and killing peregrines can be seen as a way of trying to prevent this in future. Killing is thus partly produced by the relational agency (Murdoch, 1997; Callon and Law, 1995) of the birds as "active subjects" (Whatmore, 2002, p14), partly by how people perceive and represent the effects of the

birds' agency, and also partly by the responses of certain people to these effects, people who see killing the birds as valid, legitimate, acceptable and effective, as I shall show.

But these relations involving killing are enacted differently for different species/groups of birds. Firstly, the legal situation relating to gulls and peregrines differs. In theory at least, all 'wild' birds are protected by law under the terms of the Wildlife and Countryside Act 1981 (as amended). However, the level of legal protection afforded to different species of bird actually varies considerably (JNCC, 2009). Some bird species - including herring and lesser black back gulls – are regarded (by official experts and lawmakers) as potentially problematic, and under the terms of general licences issued by DEFRA (now administered through Natural England) it is permissible for property owners or their agents to take or kill such birds and destroy their eggs or nests if the actions of these birds could cause serious damage or disease or constitutes a threat to public health and safety or air safety, and if those relying on such licences are "satisfied that appropriate non-lethal methods of resolving the problem......are either ineffective or impractical" (Natural England, 2008). By contrast, certain other bird species, including peregrines (and black redstarts), are regarded as vulnerable and threatened, and as such are listed on Schedule 1 of the Wildlife and Countryside Act. Schedule 1 birds are protected by special penalties at all times (OPSI, 2008). In this sense the killing of peregrines is illegitimate, but the killing of gulls – as long as the terms of the general licence are followed – is technically legitimate in particular circumstances.

Secondly, those who kill peregrines in urban areas are regarded (by many interviewees, and by the RSPB – see RSPB, 2009c) as a 'rogue minority' of pigeon fanciers who are acting not only illegally but also unofficially, whereas many of those who kill gulls are generally pest controllers working for councils or companies and thus acting in some sense 'officially'. Thus legitimacy/illegitimacy of the killing comes from who is carrying out the killing and in what circumstances – indeed, where gulls have been killed by people not considered to be official or acting in an official (and legal) capacity (see for example Alford, 2007; Abrams, 2005; de Bruxelles, 2006), the killers and the killing can be seen as illegitimate.

Thirdly, the 'minority' of pigeon fanciers are acting only on behalf of themselves, whereas the pest controllers can be seen to be working on behalf of other people, such as local residents or tourists. Thus the networks of practice concerned with gull control enrol more actors and make greater claims for legitimacy.

Having said that, the legitimacy of killing gulls has become increasingly contested – just as (though for different reasons) the historical acceptability of killing birds of prey such as peregrines came to be contested during the 20th century (Lovegrove, 2007; Bildstein, 2001). The majority of 'direct' control measures now 'officially' employed against gulls in urban areas have shifted from deliberately killing them to egg oiling/replacement, with killing a last resort. The following account of gull control by Scarborough Borough Council illustrates this, based on an interview with Gary, an Environmental Health Officer with the authority, and on various documents.

7.2.3 Culling gulls

Scarborough and Whitby were among the first towns in Britain where large populations of roof nesting gulls (primarily herring gulls) emerged – by 1977 Scarborough had 366 roof nesting gulls and Whitby had 800 (estimated numbers) (SBC, 2005). In the 1970s Scarborough Borough Council received growing numbers of complaints about gulls relating to noise, disturbance, damage to property and occasional attacks on people and in 1977 initiated trials of methods of control (Reynolds, 1994). Culling by shooting was thought to be ineffective as once one gull is shot the others will take to the air - in this regard gulls are seen to contrast with pigeons, as Gary explains:

> "If you had a line of pigeons on that sill there you shoot the first one and the others will just stop there and let you shoot them, gulls it won't happen if you shoot one they're all up, distress calls, and they've gone, couple of days later they're all back".

Instead, the gulls were culled using narcotic bait followed by lethal injection, and the eggs and nests were subsequently removed – these methods were used continually from 1977 until 1991. Before a cull, a survey was conducted to identify the number and location of nesting sites, and the permission of each property owner would be sought to carry out the

control work on their premises (as only property owners – or their *agents* – are allowed to take action against the gulls under the terms of the general license). Culling the gulls using narcotic bait also required the local authority to annually obtain a specific licence from the Ministry of Agriculture, Fisheries and Food (MAFF, as it was then – now DEFRA) allowing them to use this method. This licence, which "authorises acts which would otherwise be prohibited by…the Wildlife and Countryside Act 1981" (Reynolds, 1994), was very particular about the manner in which the culling operation should be conducted and the type of baits that could be used.

The narcotic baits were prepared by mixing set amounts of alpha-chloralose and seconal (quinalbarbitone sodium) with margarine, spreading this mixture onto a piece of bread, laying another piece of bread on top (to create a sort of narcotic sandwich), and cutting this into 2" squares – each square counted as one bait. One bait would be placed in each gull nest, and to do this the council employed roofing contractors or others who were used to working at height (the 'embodied skill' (Ingold, 2000) of others being here enrolled into the network of culling). The long terraces of buildings in Scarborough meant that contractors could work their way along and bait a number of nests with relative ease. As with knowledge practices (chapter 6), negotiating 'access' (of varying kinds, to different birds and different space-times – see again Hinchliffe, 2008) is a recurring theme in many control practices, and can partly determine what kinds of control are implemented, and where.

After baiting the nests in the morning, the team would return 2 – 3 hours later to recover the stupefied birds, which would be placed in black sacks and taken to a van placed in a quiet, central point where they would be injected with Euthasol to kill them. The nests and eggs would also be cleared away after the stupefied birds had been collected, and as a condition of the licence a report would be made about the culling operation. According to the licence, if other species of birds were accidentally narcotised they had to be placed in a box or cage until they recovered and could be released, unless they were a species on the general licence (such as crows, magpies and feral pigeons) in which case it was permissible to also kill these birds (Reynolds, 1994).

Scarborough Borough Council (Reynolds 1994, and Gary in interview) saw this culling operation as being very successful; in 1991 it ceased culling, as the numbers of nesting

herring gulls had dropped to the point where it was seen to no longer make sense in terms of finances, resources and effort to continue. Instead the local authority focussed on removing eggs and nests from rooftops and supplying 'seagull spikes' to the public to be attached to chimney stacks to prevent gulls from nesting. However, once culling ceased, the nesting population was seen to rise again, and SBC obtained a licence to cull again in 1994; however, licence applications submitted in 1995, 1996 and 1997 were not granted because, Gary suggested, "pressure had been applied by...a limited number of people who were totally against it" (culling) and because of the efforts of a "determined and articulate lobby pressurising the council" (Rock, 2005, p349). No culling has been performed since 1994, and culling using narcotic bait is now no longer possible as DEFRA withdrew the use of seconal in 2002 (Rock, 2005, p349), and had earlier stopped issuing licences to cull gulls using narcotics in the UK because of concerns regarding people's health and safety and the potential for adverse effects to non-target organisms (BNESC, 2001).

Scarborough Borough Council also stopped carrying out clearance of eggs and nests in 2004/05 due to budget cuts. Since then, their work regarding gulls has diminished to an advisory and monitoring role along with continuing to supply proofing materials to the public. The gull populations in Scarborough, Whitby and nearby towns are now much higher than they were in the 1970s when the large number of complaints first prompted culling (estimates of roof nesting gull numbers for 2005 were 1608 in Scarborough and 1112 in Whitby). However, Gary expresses surprise at the fact that they now receive fewer complaints than they did in the 1970s despite increased gull numbers, and is unsure as to why this should be. I would speculate here that reasons for this could well include - that a certain tolerance to the gulls has built up over time; that people feel less confident in the abilities of local authorities to tackle such issues and/or see little point in complaining if the council are unable/unwilling to implement lethal measures, and perhaps instead engage private pest control operatives, or take matters into their own hands (with lethal methods or otherwise).

The Scarborough case study thus shows how the character and context of gull control as a network of practice has changed over time, enrolling a range of humans and nonhumans in the 1970s onwards in order to stabilise. From the 1990s onwards however the network began to destabilise, as its ability to enrol and retain actors was compromised by the refusal

of certain actors to be enrolled or remain within the network (their "dissidence" - Callon, 1986), and by the actions of other networks, such as licensing or campaigns against culling. Such interactions of networks emphasise the performativity (Law, 2004a) of human-nonhuman practices in enacting naturecultures.

The use of culling as a method of control in urban areas is now generally much more difficult for local authorities to pursue (if not indeed impossible) than in the past, with Peter (an urban gull expert) stating (in interview) that "the lethal methods are actually out of the question now". My interviewees generally did not see culling as viable, at least as a primary from of control, with moving away from culling towards other methods seen as an essential part of bringing a more 'ecological' or scientifically informed approach to gull control:

> "There's a lot of as I say rubbish uttered about culls and as I say one of the things that's motivated me is to try and get a bit of ecological discipline, so actually you know look at the life cycle of gulls, see what they do, see what they respond to, rather than just thinking you should go along and shoot a load to solve the problem". Meyrick (a planning officer at Gloucester City Council).

Peter is of the opinion that large numbers of gulls would have to be killed for culling to work, yet poisoning or narcotising the birds is now illegal, and the alternative – shooting – is on a large scale unacceptable and unfeasible:

> "We're talking about 12000 birds [in total in Bristol], now in order to shoot that lot we'd need an army of marksmen, and can you imagine how interested the world's media might be if anybody decided to launch into this thing? Out of that army of marksmen some of them are not even going to be less able than they thought, some of them are going to be completely useless, so we're going to see a lot of what we call collateral damage to buildings. Now just imagine what would happen if somebody got hit, that would be too much fun for the world's media wouldn't it, and any council organising an exercise like that might be well advised to think again because the wisdom of such a move would be short of the mark".

187

Even if such a large operation could be mounted Peter contends it would have to be sustained for several years in order to be effective, due to the mobility and opportunism of the birds – as he notes, "if you make a hole in a niche, somebody else will fill it" (Rock, 2003a). The past experience and perspective of Scarborough Borough Council contrasts somewhat with this view, though the culling they carried used a method other than shooting, and was different in a number of other respects – spatially/physically, temporally, legally, organisationally, and also particularly in regard to the changing agency and behaviour of the gulls, who have moved into, adapted to and increased in number in many more urban areas since Scarborough's period of culling from the 1970s to the early 1990s, and who have also changed in terms of their wider movements and population dynamics (this accounting in part for Peter's view).

Despite the destabilising of culling networks, the killing of gulls is still carried out, not by local authorities but, in some cases, by pest control companies, and in other cases by individuals acting for themselves (RSPB, 2008c). These networks of practices are not necessarily 'officially' endorsed or based on public (and publicly accountable) policy, and the killing is generally more hidden from the public and less exposed to scrutiny;

> "I mean there's a certain number of birds which are culled in Gloucester at the moment, most people probably don't know that, but private companies have their gulls culled, and you know adult birds just bugger off and they just go round and mop up all the chicks, which means you know it's not a very pleasant sight in the first place, and you know you have a whole load of adult birds squawking around with nothing to do apart from annoy people, for 2 or 3 months until they bugger off again, so you know you're not really achieving much, but of course you know their customers see you know dead gulls and their customers think they've done the job". (Meyrick, Gloucester City Council).

The legitimacy of this kind of culling carried out by smaller and/or less accountable networks is questioned by some. For example, PiCAS (the Pigeon Control Advisory Service, who consult on and promote humane, non-lethal bird control methods) reported on their website in 2008 (PiCAS, 2008) a case of gull chicks being culled by a private pest

control company at Gloucestershire Royal Hospital. PiCAS criticised this culling as being "unnecessary and potentially illegal", in that it would be illegal if the hospital or pest controllers did not have a special license for culling, if all other non-lethal methods had been attempted and seen to fail (which PiCAS seemed to doubt), and/or if the hospital could not prove that the gulls were a serious risk to public health. PiCAS suggested that egg-oiling – a "non-lethal" method - should have been used instead to prevent chicks from hatching (this is considered in a moment).

Some people, including some private pest controllers, see the culling of gulls as only being justifiable as a last resort. David, the manager of a private pest control company, sees culling as only being appropriate in specific situations and where carried out by people with skill and experience:

"We occasionally, very occasionally shoot gulls - this usually happens where we've got maybe one pair nesting perhaps on a particular feature of a building, so its not a colony, it could be the start of a colony perhaps, and they've been problematic. There's certain things we have to look at to see whether its going to be suitable to do that…but its something we try not to do very often, its not a, its something that should never be done by somebody inexperienced, put it that way".

Nigel (Head of Projects at the BTO) has a similar view that with individual 'problem' gulls culling is perhaps the only course of action:

"So there are some that even when they start forming territories are already dive bombing people and causing a real issue. Ultimately [with] those sort of individuals the only probable solution is take them out if you can".

Summary
It can be seen from these examples that different gulls receive differing kinds of treatment, depending on where they are, who they are interacting with (and how they interact), and who is given the task of managing them, and that also there is an informal and unofficial division of labour (as well as of gulls and of spaces) in the different networks of gull

management and culling. Large scale control of gulls in urban areas (which focuses on particular sets of properties, and urban areas more widely) is generally the remit of local authorities, and these authorities have increasingly found that culling is not an option that can be considered. Smaller scale control targeted on individual premises (which broadly speaking is focussed on a different set of properties, and a different 'set' of gulls) is to a large extent conducted by private pest control companies, and some of these companies have been able to employ culling as a control method with a greater degree of freedom (their practices being smaller, more hidden, and less subject to public scrutiny – though questions remain as to whether their actions always meet the criteria of the general licenses). Then there are the individual 'problem' birds – again culled by private pest controllers, but who represent in a sense another set of birds, spaces and practices - which are culled not as a part of population control as such, but as a 'last resort', because either their behaviour is considered to be particularly objectionable, and/or because they are seen to represent the start of a bigger problem. As noted in 6.2 and 6.6, as well as being differentiated along species lines, and (as seen above) along spatial lines, gulls act as individuals (see Lulka, 2009) and can become individualised (by people) (see Milton, 2002) through their interactions with people and spaces, though this can occur in a negative way and can mark them out for control (see especially Vuorisalo, *et al*, 2003, p84; and also see Lulka, 2004; Knight, 2000).

7.2.4 Egg oiling and egg replacement

Whilst culling has become increasingly difficult to enact - at least for local authorities and others operating 'within' the law (which is admittedly vague in some regards, as represented within general licences) – the practices of egg oiling and egg replacement have by contrast become more prevalent in recent years as a means of controlling gulls in urban areas. Egg oiling is the practice of coating eggs in mineral oil (usually liquid paraffin) to seal the egg and stop the embryo from developing – effectively suffocating it. Egg replacement involves removing live eggs and replacing them with 'dummy' eggs (often plastic eggs filled with sand). Both methods fool the adult birds into thinking there are still 'viable' eggs in the nest, so that none hatch but the adults do not lay more (though oiled eggs can go off and be rejected by the adult birds, sometimes leading to new eggs being laid). Although these practices involve the sterilisation or removal of developing chicks, and constitute the ending of a life – albeit an arguably basic and less developed one at the

foetal stage - they are not often referred to as methods of 'culling', and are perceived very differently from the kinds of culling discussed earlier. I will firstly consider why this is so, and then examine the practices in more detail - who is involved, where and how are they practiced, and what are the reasons given for using them (or indeed critiquing their usage).

Is egg oiling/replacement killing?

Egg oiling/replacement are occasionally explicitly referred to as methods of culling – generally speaking however they are not, and appear to be more acceptable practices than culling (in the form of killing live birds and chicks). This acceptability is technically speaking contingent on the practices being carried out in the 'correct' manner – if this is done, then they are considered to be 'humane' methods of bird control, and are promoted as such by PiCAS (Pigeon Control Advisory Service):

> "Egg-oiling is a humane and effective method of controlling the breeding of certain species of birds. It works by depriving the fertilised egg of oxygen, thus preventing it from developing and hatching. Egg-oiling is a relatively straightforward procedure which, if carried out correctly, causes no harm or distress to the adult bird or embryo. Birds will continue to sit on the eggs completely unaware that the egg has been interfered with…It is important that egg-oiling is carried out at the correct time of year and nesting sites should be monitored for at least 3-4 weeks prior to the start of the breeding season…Once laying has started all nests should be monitored on a regular basis to ensure that the whole clutch is oiled as soon as possible after the last egg has been laid". (PiCAS, 2010).

Egg oiling/replacement and culling all involve the termination of lives, yet the increase of gull egg oiling and replacement, and the decrease of culling suggests that the killing of foetal bird life within eggs is more acceptable and/or less contentious to enact than the killing of lifeforms that have hatched from eggs. Birds-in-eggs are thus different animals from birds-outside-eggs in terms of management practice. This situation is influenced in part by the law, where culling gulls by narcotising (followed by lethal injection), and (as of 2010) culling herring gulls by any method (except for air safety concerns), is no longer licensed, whereas egg control is permissible under the terms of general licenses (Natural

England, 2010) It is also influenced by different kinds of ethical status afforded to birds-outside-eggs compared to birds-in-eggs, reflected in different attitudes to egg treatment and culling – birds-in-eggs, at least in the early stages of development, are not yet (explicitly or implicitly) granted a form of 'personhood' (Milton, 2002), and are not afforded the same level of ethical consideration as birds-outside-eggs. It is influenced yet further influenced by practical differences, in that egg oiling is quieter and more discreet than culling - birds-in-eggs are less able to resist control practices (and resist loudly) than birds-outside-eggs, and shooting, though technically permissible in some circumstances, is (as seen earlier) difficult to pursue in urban areas.

> "Egg oiling is quite discreet, quite subtle, you know nothing's hatched out it's quite muted, whereas culling adult birds with guns in the open is altogether a lot messier". (Clive S, Cheltenham Borough Council)

The moral geographies and legitimacy/illegitimacy of killing animals (Marvin, 2000) vary according to the different 'animal landscapes' (Matless, *et al*, 2005; see chapter 4) of egg oiling/replacement and culling. Firstly, the moral geographies of the urban landscape partly reflect 'public opinion' in what practices are considered acceptable in spaces shared by humans and birds. Secondly, these moral geographies are influenced by the differing relations with birds and landscapes – culling gulls involves live, active birds and is (like otter hunting in Matless *et al*'s paper) more visceral, messy, direct and intense, whereas egg oiling/replacement is indirect and 'cleaner', for humans if not for birds. Culling is 'out in the open', whereas egg oiling/replacement involves killing lifeforms that are not yet in this wider landscape; their 'landscape' is inside the egg, hidden from human (and other birds') view.

This simplistic inside/outside moral geography is however complicated by the advice given by PiCAS and others to treat eggs as soon as possible after laying. It is considered 'humane' and acceptable to kill gull embryos in the early stages of development, but killing them later, especially if they are close to hatching into birds would be considered less acceptable.

Who carries out egg oiling/replacement?

Unlike culling, gull egg oiling and egg replacement are mainly carried out by local authorities, and generally not by pest control companies. I would surmise that this is because egg oiling and egg replacement take a certain amount of time for the 'benefits' to be seen, and require access to a number of properties in order to be seen as an effective part of a wider gull control effort – and are thus more suited to the management goals and working methods/abilities of local authorities. Private pest control companies are generally contracted to deal with gulls on individual buildings and properties, and have to offer guarantees of reasonably rapid success, and as such egg oiling/replacement is less suited to these companies goals and working methods.

Where is egg oiling/replacement carried out?

The spaces in which egg oiling and egg replacement are practised also vary – some towns and cities with gull 'issues' use these practices, some don't, and within those that do they are enacted in some places and not others. These differences are varyingly contingent on the knowledge and attitudes of the personnel within a local authority, input from other people and organisations, available resources, the forms and practices of urban landscapes, and the perceived severity of their 'problem' with gulls.

For example, in Cardiff the egg oiling/replacement service (for which a fee is charged) is only offered to business premises – there is no service (of any kind) offered to domestic premises beyond giving out advice. Clive B (a pest control officer with Cardiff council) explains that this is because of access and resources: they don't have the manpower or the expertise to go "climbing about on roofs and chimneys" and "trying to get cherry pickers and that sort of thing down people's streets, up on the pavement....it would cause massive disruption". Other authorities also tend to focus egg oiling/replacement on commercial and industrial buildings, due varyingly to access, organisational and resource concerns and a desire to treat the largest amount of eggs for the smallest outlay. Clive S, the Environmental Protection Officer at Cheltenham Borough Council explains:

> "We've mainly focused on the commercial ones because they are relatively
> straightforward to treat, there's an industrial estate...we've gone there because
> again we've got limited resources, we can treat a maximum number of eggs, it's

open...whereas if you go up to sort of Lansdowne which is the area about half a mile north of here where most of the complaints are, the buildings are tall, 3 or 4 storeys, ok we can get up there because the trucks got a 34 metre lift, but there are parked cars, telephone lines, trees and issues about access, so it slows the whole thing down, and when its £650 a day for the truck we're trying to get as much done as we can"

It is a similar picture with other Local Authorities, although Gloucester City Council do additionally supply dummy eggs to the public for use on domestic properties. The differing geographies of egg oiling and replacement both between and within different urban areas do not then simply tie in with the geographies of gulls, but are co-produced in complex ways by different people, birds, money, the form and use of different places, complaints, machinery, and the circulation of different ideas (reflecting notions of relationality, agency and complexity - Latour, 2000; Murdoch, 1997; Law and Mol, 2003).

Visiting nest sites

The issue of 'accessing' the gulls' eggs is not just a question of getting onto roofspaces, but is important in other ways, and affects how the practices are enacted. Oiling or replacing eggs requires pest controllers to go up onto roofs where the nests of gulls are located, find the nests and physically handle the gulls' eggs. This parallels the ringing of gull chicks on roofs discussed in chapter 6.4 which required a 'bringing together' of gulls and people into direct contact. Practices of knowledge production, and practices of control, both require this broad intersection of human and gull space-times and trajectories (Hinchliffe, 2008), the difference being that here it is the (immobile but transient?) eggs rather than chicks that are sought out by people. As these practices are often performed on large flat-roofed commercial buildings, physically gaining access to roofs is not that problematic, but dealing with the gulls' own protection practices can be. The gulls can react to the presence of people in their nesting site, understood as the gulls' territory, with alarm and aggression:

"I've never been hit by one, but…[a particular gull] did make a low pass. The idea is to have two people in the basket [of the cherry picker], one's doing the egg and the other one's standing above, and we were advised get a brolly or a broom or something so the bird goes for that. Yeah, they'll certainly make a

low pass and the hen will, that's what you call the female one, will swoop over you and she will shout a distress call and all the other ones start flying around as well, so there's a stack of thirty kind of wheeling overhead, so I've been swooped on and crapped on a bit but that's about as bad as it got". (Clive S, Cheltenham Borough Council)

Through becoming hybrid (Whatmore, 2002), albeit in this simple, temporary fashion, the pest control operatives can be seen to increase their (relational) agency and capacities in their dealings with the gulls. The gulls make an obvious, embodied display of relational agency (partly historically constituted in their bodies and physical abilities – see Holloway, 2007) through dive-bombing, defecating on and striking people – acts that people can varyingly find irritating or frightening. This can be seen to reflect more widely the agency and abilities of gulls to occupy certain urban spaces and act in ways that some people find unpleasant and unacceptable – which is a part of how human-gull relations are co-produced and constituted. These specific and wider engagements between gulls, people and things fit in with theoretical notions (Murdoch 1997; Whatmore 2002; see chapter 4.2 and 4.6) that agency and power do not solely belong to humans, nor indeed are they 'possessed' by humans, but that they emerge from relations, and through the mobilisation of hybrids, and thus can be attributed to certain relationally situated humans, nonhumans and assemblages.

Why are egg oiling/replacement practices undertaken?

Beyond the broad aim of dealing with the 'problems' of gulls in urban areas, egg oiling/replacement practices are carried out for three identifiable reasons. Two of these tend to be discussed explicitly by local authorities themselves and others – these are firstly, to control populations, and secondly, to alter gull behaviour by keeping the birds relatively quiet (no chicks to protect means less noise, mess, and aggression to each other and to humans). I shall discuss each of these in turn in a moment. The third reason I will deal with more briefly here, and is less explicitly discussed, though was mentioned by some interviewees and does crop up in debates about gull management. This is that such practices are undertaken by local authorities - at least in part - because they need to be seen to be doing *something* about gull issues, due to pressure from outside complainants, and subsequent internal pressure from others within authorities. From this perspective, egg oiling/replacement (and indeed other practices) are a way for local authorities to keep

195

people happy and show they are taking action, whatever the actual effectiveness of the practices might be. Ideas of 'actual' effectiveness are sometimes contentious, as will now be seen when considering the two main explicit reasons given for egg oiling/replacement – population control and behavioural modification.

Cardiff is a good example to consider here because it has one of the highest urban breeding gull populations in the country – (in 2003 it was estimated to be 2727 pairs – Rock, 2003c) – and therefore the council receives complaints relating to noise, mess and aggression, in particular during the breeding season after the chicks have hatched and the adult birds become increasingly protective of their offspring. In January 2004 the local authority decided to begin a 'gull egg sterilisation service' to help control the gulls (Cardiff Council, 2004a) that initially involved egg oiling and more recently (from 2007) has moved towards egg replacement (interview with Clive B, pest control officer with Cardiff council). This decision was called in for review in February 2004 by the Environmental Scrutiny Committee, due to concerns the Committee had about the decision making process, ambiguities about the precise aims of the service and its organisation, and legal issues in terms of complying with the general licence (in Cardiff issued through The National Assembly for Wales), with questions being asked as to whether the service was "designed to control the gulls or please complainants", reduce gull numbers or deal with gull 'nuisance' (Cardiff Council, 2004b). In response to the Committee's questions, the Principal Officer in Pollution Control stated that "the proposal is not to reduce the gull population, this was never the intention", and the Deputy Leader (Environment) stated that "it is more to deal with nuisance effecting health and well being" (Cardiff Council, 2004b). In interview, Clive B supported both reasons, illustrating the confusion in Cardiff (and more widely) about the intentions and achievements of oiling/replacing eggs:

> "They [the gulls]...sat on those plastic eggs...right the way through the season, and that meant no aggression, no young."
>
> "I suppose you can say we've eliminated 700 new gulls, now over a period of time...it'll reduce the population by whatever".

Elsewhere, Clive S (Cheltenham Borough Council) claimed that "the idea of the oiling is to reduce population growth but also to quieten the birds", again invoking multiple reasons.

However, in terms of population control at least, there are other people who contend that such control practices will have limited or negligible effects on gull populations in urban areas. These people are generally bird experts and researchers who make claims with reference to scientific understandings and specialist knowledges, such as urban gull expert Peter:

> "So, some people think, some local authorities think that this is, you know, the universal panacea, and they believe that by preventing birds hatching that means in a few years time those birds won't be here. Well of course that's true, but that fails to understand what's really going on in the situation".

'What's really going on' relates to particular scientific understandings about how gull populations work. Nigel (from the BTO) sees egg oiling and replacement as having a very slow effect on populations, whilst possibly being of some help in moving gulls away from treated areas (and so may be more of a spatial than a numerical fix):

> "In terms of reducing populations, by using either dummy eggs, egg oiling or various other things to kill the eggs, they work in that they stop young being produced, but you have to go on for very long periods of time before there is any significant effect on the population. The survival rate of gulls is well over 90 percent, adult gulls a year, it's nearer 95 percent, so therefore at that sort of level if there were no young produced the population would only halve in 10 years, so that is an extremely slow way of trying to reduce populations. On the bonus side, if gulls are unsuccessful on a site they are more likely to move to another site next year, so you can say well there is some advantage in doing that, but you have to be realistic that it's a slow process not a solution".

Peter is even more doubtful about effects on population: in interview he contended that out of one hundred (normal, untreated) eggs, 20% will fail to hatch anyway, then of the hatched birds only about 45% will survive to breeding age (leaving about 36 birds), then the female birds (about half the birds that are left) will emigrate to other colonies, which leaves 18 birds coming back to breed in the colony of their birth. In addition to this 18% return on the control effort, gulls have a long breeding life and move around into other colonies, so Peter

is dismissive of the effectiveness of egg oiling and replacement in controlling populations, adding that though these control methods may have the effect of moving some gulls on, this is only "moving the problem from the treated area into another area" (so the spatial fix is limited), and also contends that such methods enable local authorities to give the impression they are taking action (as mentioned earlier) to control populations, rather than the methods actually having any real effect in that way.

> "So what they're doing is intervening in the fervent belief that this is going to make a difference, it is only going to make some difference in public perception, providing of course the spin is correctly played, it doesn't address the problem".

This situation reflects the points made in chapter 6.4.7 about the division between science/experts and politics/councils. Whilst this perceived split between scientists on the one hand and councils on the other is to an extent an issue, involving difficulties in communication and differences of purpose, things are not quite so simplistic. Some pest controllers and council officials *are* cautious about the usefulness of egg oiling and egg replacement for population control, sometimes referring (on web pages, leaflets etc) to such practices as 'experimental' or 'trials' and pointing out that they 'may' have a gradual effect on populations and 'slowly disperse the colony' (Gloucester City Council webpage, 2008).

In contrast to the variable and somewhat confused range of opinions regarding the usefulness of these techniques as a means of population control, there appears to be more agreement about their usefulness in modifying gull behaviour. When eggs are oiled or replaced, gulls are understood to spend a longer period of time sitting on the eggs, and of course no chicks hatch from these 'eggs' – chicks which would otherwise require feeding and protecting. These effects are seen to reduce the severity of the kinds of gull behaviour – such as noise, mess and aggression – that are deemed to be unacceptable by some people in some places.

The ability to modify gull behaviour with egg oiling/replacement increases the appeal of these methods to local authorities with gull issues. They are described as being useful for managing gulls and "keeping a lid on things" in what Peter calls "problem areas". Such

areas are more likely to be residential and commercial sites, where the 'wild' behaviour of the gulls is deemed particularly incompatible with people and their expectations of what particular urban places (homes, gardens, shopping streets etc) should be like and how they should be ordered – i.e. relatively clean and safe (especially in the day) and quiet (especially at night and in the early hours of the morning). If 'getting rid' of the gulls in these areas is not easy for various reasons, then changing gull behaviour to make it more compatible with these areas and with people's sense of order would appear to those involved in management as the next best option.

Summary

This section has discussed how egg oiling and egg replacement are emerging as a set of practices increasingly employed by local authorities (in particular) as a means of controlling gulls in urban areas. These methods are widely deemed to be more acceptable than practices of culling, being defined and perceived in different ways – in part due to the different 'animal landscapes' (Matless, *et al*, 2005) involved – though their effectiveness is contested and their enaction is patchy, due to complex urban landscapes and human/nonhuman agencies, different understandings of birds, and the political contingencies of councils as coordinating actors. This shows that the ways in which human-bird relations are constituted and enacted are not simply determined by certain ideas, but are complicated by a range of other contingencies.

The less contested use of egg oiling and egg replacement as behavioural modification highlights the importance of notions of order (and thus also disorder) in how relations are constituted. The idea of 'problem areas' in particular reveals that certain senses of order are important in particular places at particular times – space-times where 'disorder' can be felt keenly. Such sites of 'disorder' are produced relationally, partly through the agency of the gulls, partly by the ideas and expectations people have about certain places and types of space, and partly by the structure, practices and affordances of these places. Where and when disorder emerges as an issue, attempts are made – in this case with egg oiling/replacement - to enact different notions of order in particular urban places not just through the exclusion of undesirable organisms themselves, but also/alternatively through the exclusion of undesirable behaviours (see Sibley, 1995).

7.2.5 Protection of Peregrines

Conservationists and others are generally positive about the presence of peregrines in towns and cities, but others - primarily from the pigeon keeping/racing communities – can be less positive, perceiving peregrines to be a threat to their interests through being the perceived cause of many pigeon fatalities (see chapter 6.5). A small number of these people sometimes attempt to (or threaten to) kill peregrines (Carrell, 2009), and conservationists try and counter these threats and protect peregrines (including chicks and eggs) from being killed or harmed. A certain degree of irony can be noted in this complex mix of protection and killing, where some people wish to protect a bird from being killed by humans, who in turn wish to kill that bird because it kills other birds that they themselves wish to protect. The practices of preventing killing (of peregrines, as opposed to – in the case of gulls – pursuing it) offers a contrasting set of human-bird relations in urban areas that I will now briefly examine. These can be broadly divided into practices of secrecy, and practices of surveillance.

Practices of secrecy are enacted by conservationists and others who are 'in the know' about peregrine breeding sites. Efforts are made to try and prevent the sites becoming known to those who might kill (or cause harm to) the peregrines. Nick B (from Derbyshire Wildlife Trust) for example acknowledges that "there are other ones [sites] around but we keep fairly quiet about them, so [we are] trying to persuade people that ours are the only ones around" – "ours" referring to the peregrines on Derby Cathedral that are promoted and shown to the public. Peregrines that are promoted to the public (see 7.4 later) are those in sites considered relatively safe for the birds but inaccessible for people, whereas the other sites that are kept secret are often those considered more vulnerable to human access, as in this example Pete M (from Natural England) gives from London:

> "The only slight concern is in east London, there's a pair of peregrines [that] nest on [an anonymous site] and there's quite a large number of pigeon fanciers there, so that site has been kept relatively low profile because there's actually quite a number of pigeon lofts very close by. So there's a concern that if those guys knew there were peregrines there - most pigeon fanciers wouldn't go out and kill peregrines but there might be the odd one who would - and these birds would be quite easy to take out with an air rifle because they sit on top of this

flood barrier quite often...[although] the fact that there are peregrines in London is quite well known now, and we certainly haven't had any adverse reaction from pigeon fanciers and no-one's collared us saying this is a problem".

Though such sites are kept low profile, keeping the presence of certain peregrines completely and continually hidden from everyone bar conservationists is not seen as realistic, and so secrecy about sites is only useful up to a point, and other practices of protection are required.

Practices of surveillance are enacted to monitor peregrines and their nest sites, enabling conservationists to respond if problems arise, and which perhaps deter attacks by the presence of this monitoring being obvious and/or advertised (in a similar manner to the hoped for effects of CCTV with human-on-human crime – e.g. Armitage, 2002). These practices go beyond 'everyday' birdwatching and involve the continual watching of sites and the use of surveillance cameras, especially where there has previously been killing or harming of birds. Pete E (RSPB Showing People Birds Officer for South Wales) gives one example (and highlights how monitoring birds can blur into practices of watching birds for more positive reasons – considered in section 7.4).

> "The project in Aberdare came about through a species protection need, the peregrines up there were being persecuted year in year out, and so the camera system and the viewing, the idea of viewing the peregrines was set up initially to protect them against persecution, and as it evolved it became a brilliant opportunity to show people the birds".

A similar story occurred in Bristol, where the killing of two peregrine chicks in the Avon Gorge prompted the Bristol Ornithological Club (BOC) to start a monitoring programme, as John from the club explains:

> "In 1990…somebody climbed up to the nest and…killed two of the young that were in the nest…it was a sort of wildlife crime that was never solved, I mean, quite clearly there were two blokes seen but they weren't caught, nobody was charged…we think, that they were certainly pigeon fanciers that had a go,

because they were pretty upset about things…I mean there's graphic pictures of them, they took a sort of stick to them and sort of clubbed them to death basically".

The "outrage" that this event caused within the BOC, and the fact that the birds would probably be attempting to breed in the same site in the future, meant that "the club decided that we couldn't let rare Schedule 1 birds breed without some sort of protection…so the committee decided to have a peregrine watch", which involved watching the birds during the breeding season "from the laying of the first egg till the youngsters actually left the nest, which is about a three month period roughly so it's quite a commitment". The club was able to organise a continual watch of the peregrine nest site because as John explains there were many members who had retired early, and thus had the time to commit to running the watchpoint. These surveillance efforts are seen by John to have been successful – "since 1990 they have attempted to breed every year and they've been successful every year but two" – and the watchpoint subsequently evolved (as in the Aberdare example) into a way of showing the peregrines to the public (see 7.4).

Summary

Practices of protecting peregrines from being killed emerge from contested relations between different groups of people and different birds (compare with Bildstein, 2001). Those who wish to protect peregrines are influenced by ideas of the birds' rarity and legal status, and also by a personal sense of "outrage" at what they perceive to be illegitimate practices of killing – unlike gulls, peregrines figure here as 'special' birds deemed worthy of active protection. This protection is enacted through practices and geographies of secrecy and surveillance – yet is also increasingly being enacted through alternative practices of gaining public support for peregrines (discussed later in 7.4), which includes enabling people to 'watch' the peregrines in ways that blur with surveillance practices (and which demonstrates how the constitution of relations can change and be reworked, sometimes in opportunistic ways).

7.2.6 Practices of killing and protection - summary

This section has shown that as constituent parts of human-bird relations in urban areas, notions of legitimate and illegitimate killing, and enactions of different killing and

protection practices, vary between different human-bird, and indeed bird-bird, relations – and are contingent on the different people, birds, space-times, ideas and practices involved. The killing of peregrines by (a small number of) humans in urban areas is seen by many as illegitimate and illegal – peregrines being seen by many as rare, protected and special birds - and can lead in turn to practices of protection being enacted. The killing of gulls in urban areas is more complex, with more people in urban areas being affected by the actions of gulls, people's attitudes towards gulls being more variable, and control of gulls in some forms being technically legitimate and legal - though such control is varyingly contested and/or restricted on grounds of ethics, welfare, health and safety, acceptability and practicality, in ways that are to an extent more particular to urban areas (compare Patterson, *et al*, 2003; Loker, *et al*, 1999; Sheail, 1991). In spite of calls from some for a cull of gulls in some urban areas (e.g. Townsend, 2003; BA, 2006, 2006b), culling is generally no longer considered a viable option by local authorities, and practices have shifted (at least in 'public' circles) from culling gulls in urban areas to egg oiling and egg replacement, reflecting changing ideas of legitimacy as well as differences in 'animal landscapes' (such as 'clean' or 'messy', 'open' or 'hidden' - Matless, *et al*, 2005). Culling is however practiced by others in less obvious, less 'public' situations, and both this culling, and egg oiling/replacement, highlight in different ways more (though not always) hidden geographies (and animal landscapes) of killing (see Emel and Wolch, 1998) in urban areas. The validity and effectiveness of different practices is varyingly contested – this being in part related to the fact that the differing enactions of practices of killing and protection can be affected by a range of contingencies.

This section has also highlighted a complexity of agencies interacting and competing in human-bird – and bird-bird - relations in urban areas, which produce differing senses of 'disorder' for both humans and nonhumans (and which elicit enactments from both to try and re-produce particular senses of order). This section has demonstrated that human-bird relations are not ones where humans hold all the power (Allen, 2003): gulls make an obvious display of agency in for instance resisting practices of killing. Yet the hybrid nature of the interactions here also signals that these agencies are relational, with differing assemblages of humans, birds and others having different kinds of and levels of agency – this chimes with various cyborg (Haraway, 1991, Tsouvalis, 2005), hybrid (Whatmore, 2002), posthuman (Castree and Nash, 2006) and poststructuralist (Murdoch, 2006) accounts

of relations. As well as producing different senses of order and disorder, differing relationally constituted agencies (and space-times) have, along with ideas of legitimacy, also influenced the choice of technologies and practices employed in attempting to manage relations through killing or protection, and the manner of their enaction. Different humans, birds and others are varyingly able to enact relations of killing in certain ways, or resist such enactions.

The next section turns from killing practices to more indirect intervention in human-bird relations, in terms of managing the lifespaces of birds.

7.3 Co-producing and managing the lifespaces of birds in urban areas

7.3.1 Introduction

This section will deal with a diverse set of practices that attempt to manage birds by managing the world around them, for reasons of either conservation or control. In terms of control, practices of killing birds (discussed earlier) are seen by many people as undesirable, ineffective and inappropriate regarding how human-bird relations in urban areas should be conducted. Some of the practices in this section that in a sense 'work around' the birds are by contrast often presented (by some) as being more humane, progressive and effective. More generally these practices also implicitly or explicitly acknowledge that the birds exist in relation to their surroundings, and what the birds experience within these surroundings is important to whether birds find certain places amenable or not. Management practices thus attempt to maintain or alter certain physical features of urban areas, and certain experiential aspects of birds' lives, in order to encourage or deter birds from certain places. In this section, I use the term 'lifespace' to denote the material and experiential worlds within which the birds exist and which people attempt to manage. In section 3.2 I will explain my use of this term, and outline some other theoretical concepts relevant here, before then moving on to consider the practices themselves.

7.3.2 Lifespaces and affordances

I have chosen to use the term 'lifespace' to denote the material and experiential world that the birds exist within, and which is the focus of the management actions considered in this section. Such a term appears similar to the phenomenological concept of 'lifeworld', and also has some parallels with Ingold's (2000) "dwelling perspective". I will firstly therefore clarify why I have chosen to use 'lifespace' and not these other terms.

The concept of the 'lifeworld' within philosophy is defined as "the world as immediately or directly experienced in the subjectivity of everyday life, as sharply distinguished from the objective "worlds" of the sciences" (Encyclopedia Britannica, 2009). In phenomenological sociology 'lifeworld' has been defined as the "everyday" or "taken for granted" world "as it

is experienced by ordinary men and women"(Abercrombie *et al*, 2006), and though this lifeworld is generally taken for granted by people, phenomenological analysis seeks to show how it is constituted. Related geographical work, such as Seamon's *The Geography of the Lifeworld* (1979), has engaged with people's everyday experiences and behaviours in order to investigate their relationship with place and environment - something Seamon refers to as "environmental and architectural phenomenology" (Seamon, 2006) – partly to provide useful insights for environmental designers and architects, particularly in cities. This aspect of such work appears potentially useful for the research interests of this thesis.

However, research such as this has overwhelmingly been focussed on human lifeworlds, and methodologically has investigated human lifeworlds through interrogating human perceptions and emotions. It has been critiqued for essentialising human experience and identity (Johnston, 2000, p449; Seamon, 2006). As my focus is on birds – and human-bird relations - I have thus considered it problematic to engage with this work to any great degree, particularly for methodological reasons, as asking birds to discuss their experiences and perceptions of their own lifeworlds is not possible (see chapter 5.4.4). Yet it is important to at least consider how birds experience their worlds to avoid excluding them from a consideration of human-nonhuman relations in urban areas.

I have instead thus chosen, when discussing the birds' surroundings and their perceptions and experiences of/within them, to use the term 'lifespace', partly to distance it from the heavily philosophical and primarily human focus of 'lifeworld', and partly as it seems to me a perhaps more appropriately prosaic and practically focussed term for discussing management practices that 'work around' the birds and seek to manage their environment. I am not claiming to know exactly what birds' experiences of/in their lifespaces are, but I am working on the premise that birds do have subjective experiences (see Wolch, 1998) of and within their lifespaces, and that experimentally and creatively considering what these experiences *might* be *is* possible, and can be useful and important. Such considerations are possible from a 'posthuman' perspective, as discussed in 4.6 and 5.4. In light of Wolch's point (1998, p122-123) regarding the importance of animals to human thought and ontology, giving experimental and creative thought to animals' experiences of their lifespaces can be a useful exercise in understanding how relations work and how they could be altered. Within the discussion in this section I also examine practitioners' ideas about

these animal experiences, as these are particularly relevant to the formulation and enactment of management practices and to the constitution of wider relations. Additionally, I consider that birds' lifespaces are not fixed or essentialised but dynamic, and do not exist as lifespaces prior to the birds but emerge through lived relations, with the lifespace of each bird being different to that of other birds.

I have chosen 'lifespace' over the perhaps broader concept of 'dwelling perspective' (Ingold, 2000) as for me lifespace better encapsulates the particular material/experiential worlds of birds and the practical management of these worlds that practitioners are involved in. Also, although animals do figure within Ingold's work, much of the analysis concerns humans specifically. However, this does not mean I have not engaged with Ingold's work here, and there are some theoretical elements of his work which I utilise within and/or that are influential on this section. Ingold, in common with Seamon (1979), draws on Heidegger's conception of 'dwelling' as organisms always already being in the world, with dwelling prefiguring building rather than the other way round. Thus for Ingold what people (or indeed animals) build arises "within the current of their involved activity, in the specific relational contexts of their practical engagement with their surroundings" (Ingold, 2000, p186), which in many respects is similar to perspectives adopted within relational geographies. A wider point of this approach relates to how environments are perceived and related to by organisms, and the dwelling perspective takes "the animal-in-its-environment rather than the self-contained individual" as the "point of departure" (p186) for analysis. This relational sense of animals and environments (lifespaces), and in particular this relational sense of buildings and the building process, is important within this section (and indeed more widely).

Ingold engages also with Gibson's (1986) ideas from environmental psychology, specifically the concept of 'affordances', which Gibson describes thus:

> "The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill…I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complimentary of the animal and the environment" (Gibson, 1986, p127).

Affordances can thus be conceived of arising from the relational interplay between environments and organisms and how those organisms perceive and interact with those environments and other organisms. The consideration in this section of how birds interact with their surroundings (which effectively 'co-produces' their lifespaces), how people think they interact, and how these interactions and lifespaces are managed, will be discussed in terms of affordances in what follows, as this concept highlights what it is that birds find attractive/useful or repellent/useless within the physical and experiential aspects of their lifespaces, and thus also highlights what it is that people seek to add to or remove from birds' lifespaces in order to manage them.

The management practices that seek to do this can be broadly divided into those concerned with changing the physical environment, those that seek to pursue or restrict disturbance, and those that seek to provide or restrict resources, though there is a certain amount of thematic crossover between these categories. I will arrange the discussion by firstly examining the types of practices used to try and encourage and assist birds, and then look at those used to try and discourage birds, before exploring notions of planning, design and the 'pre-emptive' management of human-bird relations, and then drawing conclusions.

7.3.3 Encouraging and assisting birds in urban areas

The diverse practices involved in trying to encourage and attract birds to, and assist birds in, particular places within urban areas range from simple alterations to structures to the related complex workings of different networks involved in management. What drives these practices is the feeling that urban areas or particular urban places either fail to provide something the birds require, or they deter the birds in some way - they fail to afford (in Gibson's sense - 1986) certain positive things to the birds and/or *do* have negative affordances. These affordances broadly defined include food (and places to find it), shelter and security. Management practices therefore attempt to provide sufficient habitat, adequate nesting sites, and protection from disturbance. Habitat and nesting sites will be considered in detail shortly. I will firstly very briefly say a few words regarding practices of restricting disturbance.

Protection from disturbance

Much of what is involved in protecting birds from disturbance has already been covered in 7.2.5, in the consideration of protecting birds from threats. As was seen, secrecy about sites, and surveillance of sites, were two ways in which this was approached. The only practice that needs adding here - and which is less about protecting peregrines from direct threats, and more about engendering good relations between people and peregrines – is the work of conservationists, notably Natural England and their partners in London, in liaising with owners/managers of buildings that peregrines are using. This is done to ensure that these owners/managers are aware of the legal situation concerning peregrines and disturbance, to promote the peregrines as an asset to them, and to work with them on devising ways around potential problems (such as the need to conduct building maintenance that might disturb the peregrines). These practices thus help produce more amenable lifespaces for peregrines in urban areas by attempting to reduce the possibilities for disturbance. This process of liaising with building owners/managers enables conservationists to enrol others into modes of thinking and enacting relations with peregrines, and can also involve negotiating alterations to buildings 'for' peregrines such as the addition of nesting structures (which will be considered shortly).

Habitat

I define 'habitat' as the places and environmental affordances birds are understood (by people) to require in order to find food and perform other behaviours. Habitat does broadly include nesting sites, though as management work relating to these involves its own set of practices I consider these separately later on. Practices of providing habitat in towns and cities are carried out for black redstarts, but not for gulls or peregrines, because urban areas are perceived as already providing the wider habitat necessary to sustain peregrines and gulls (with varying implications for human-bird relations). For example, peregrines in urban areas are seen to be "doing it on their own" as Pete M (from Natural England, the key contact for the London Peregrine Action Plan) puts it, explaining that "we didn't modify habitat to encourage them, they just turned up (in London)" and that "as long as you have buildings and pigeons you're going to have peregrines", the birds thus being perceived to have all the basic structures and food they need to live. Therefore this consideration of habitat provision and management will focus on efforts to alter the lifespaces of black redstarts.

Black redstarts are understood to favour rubble strewn, sparsely vegetated areas as places to search for invertebrate food – such conditions are afforded to the birds in their 'natural' habitat of alpine scree, and also in derelict, brownfield sites in urban areas (Weightman and Birkhead, 1986; Gilbert, 1989). As discussed earlier (6.3), conservationists see urban development and regeneration as having resulted in a loss of derelict, brownfield habitat for black redstarts, and a subsequent decline in black redstart numbers and breeding success. To assist the birds or encourage them back into former breeding grounds, interventions have focused primarily on the construction of green roofs (see www.blackredstarts.org.uk, www.livingroofs.org, www.sustainable-eastside.net/redstartproject.html) as a means of providing foraging habitat for black redstarts, thereby mitigating for habitat loss and/or creating new habitat (see Hinchliffe 2008; Lorimer, 2008).

Green roofs can be constructed as a part of new developments, or they can be 'retro-fitted' onto the roofs of existing buildings. The kind of green roofs that can be retro-fitted are perhaps more limited in scope, because of for example the pre-existing structural loading capacities of existing buildings. Green roofs can take many forms to provide habitat for wildlife. Many green roofs are constructed using sedum mats, which are like rolls of turf but comprised of plants of the genus sedum, a thin layer of growing medium and a base layer of polyester, hessian or porous polythene (Living Roofs, 2010). These are pre-grown on farms, then rolled up, transported to and rolled out onto (suitably prepared) roofs. Sedum is often favoured for green roofs because the plants, being succulents, are able to cope with the often harsh, dry growing conditions, and the flowers are attractive to bees and butterflies (Oberndorfer, *et al*, 2007). However, the biodiversity value of sedum roofs is questioned by some urban nature conservationists, particularly where the aim is to mitigate for loss of brownfield sites and provide habitat for black redstarts (interviews with Dusty, black redstart and green roof expert and campaigner, and Stefan, Birmingham City Council ecologist).

Hence, there has been a drive by some to promote the construction of 'brown' roofs instead of green roofs. Brown roofs are composed of crushed aggregate and similar substrates (placed on top of a suitable base lining), are sparsely vegetated and more closely resemble brownfield habitats and the foraging conditions required by black redstarts. Much of the research into such roofs (e.g. Kadas, 2006; Brenneisen, 2006) is not directly concerned with

black redstarts at all, but focuses on invertebrates and plants (a typical concern of ecology with how things work at a 'lower' trophic level). For example, Gyongver Kadas recently completed PhD research (with Dusty Gedge and Dr Alan Gange of Royal Holloway), that compared the biodiversity value of green and brown roofs. This focussed on beetles and spiders – two groups of invertebrates seen as easier to study here because of their diversity and numbers, and because they were a good indication of overall diversity. The conclusions of this research were that brown roofs were better overall for invertebrate diversity. Other research into the differing colonisation rates and biodiversity potential of different kinds of brown roof substrates is being conducted by Dr Adam Bates at Birmingham University.

Black redstarts are implicitly and indirectly, if not explicitly and directly, seen as a potential beneficiary of such research. A point that emerges here is that black redstarts are not the only organisms of concern in how green/brown roofs function as (potential or actual habitat), and in debates and experiments regarding what particular forms of roof are better for biodiversity. These other organisms are not just of interest to researchers and conservationists as ecological mechanisms for the conservation of black redstarts, but are regarded as being important in themselves. This reflects a wider point made in interview by Dusty (and by others such as Stefan) that green/brown roofs are not just 'for' black redstarts but are intended (by urban conservationists at least) as habitat for an array of organisms, as well as also being built for other environmental benefits (such as better heat and water management). For some urban conservationists, black redstarts are just one species out of many that will hopefully benefit from green roofs.

There has though been a particular focus on black redstarts in the enaction of green roofs, and these technologies remain the key practical conservation measure undertaken as a part of black redstart conservation. This interest in a wider set of organisms might seem ill served by a particular focus on black redstarts, but it has arisen in part because of the difficulties encountered by conservationists in getting developers and others to take an interest in wildlife in urban areas and in getting them to agree to the construction of green roofs. Black redstarts, because of their high level of legal protection, and because as birds they are easier (than other organisms) to engage people with, have been used as a means of persuading developers and others to construct green roofs, and have become a figurehead

representing a wider group of 'brownfield' species and other wildlife, as Antonia (a policy advisor from the Environment Agency – EA - in London) explains:.

> "We've used black redstarts in London because they're a listed species, you can use them in planning terms...a lot of planning is how you present something, at an inquiry it's how you say it, how you describe it, people understand what you're talking about when you're talking about a bird much more than if you're selling it just for invertebrates"

Black redstarts' legal protection means that they form a 'material consideration' in planning decisions (see ODPM, 2005; ODPM, DEFRA, 2005; Hinchliffe, 2008), and developers and planners are obliged to prevent or mitigate for any damage to the birds and their habitat. Black redstarts can thus be used by conservationists to get habitat mitigation (and creation) in the form of green roofs agreed to. Antonia notes the usefulness not just of black redstarts' legal protection but the fact they are birds, which Paul W (an ecologist with British Waterways) also picks up on:

> "The trouble is that because ecology is usually an additional, or it's not taken as important as other you know pillars of development, you have to take something that's attractive and fluffy, and you have to have it as a you know a steerer in something, or a pilot, you know like the water voles… or a black redstart. Once you get publics, or you know companies, organisations, interested in something that's attractive then they take it on, whereas you take say a scrubby bit of rubble, with a bit of vegetation growing on it that's important for invertebrates, that doesn't capture the imagination quite as well".

It is seen as easier to make the case for green roofs (and brownfield wildlife) with reference to black redstarts, a rare, 'iconic', and (relatively) charismatic bird, than by reference to say a rare species of beetle or spider (a point also noted by Lorimer, 2008).

However, being able to use black redstarts and the planning system to get green roofs built is not straightforward. Traditionally the planning system has relied on definitive and recent records of species being present on the sites earmarked for development to be able to

conserve those species. Yet, as was demonstrated in Chapter 6, producing such definitive records of rare birds like black redstarts is challenging, and (as Hinchliffe, 2008, also notes) the difficulties in producing records of black redstart 'presence' causes problems for getting the birds considered in the planning process. As a way around this, a looser approach to presence – often referred to as 'likely presence' - based on recent records of black redstarts and also on knowledge of habitats and behaviour, has in recent years been used by some ecologists and planners as a means of arguing for surveys for black redstarts and also for habitat mitigation on developments. Stefan (Birmingham City Council ecologist) explains how this works in Birmingham:

> "Normally what I'll do is I'll look at a planning application, I'll look at where black redstarts are known to have bred, where the known foraging areas have been over say the last 5 years, and what structures exist within that building and within associated car parks and so on for foraging, I'll make a determination based on those elements, so I use the whole lot of those rather than just say well there's been black redstarts [present]… I'll look at it and say well there's potential for black redstarts here…we require a survey".

This notion of 'potential' is key to how such an approach operates, and means that black redstart conservation in urban areas can be more about possibilities than just being about trying to defend things which are definitely present (see Hinchliffe, 2008). Stefan continues:

In Manchester a similar approach to 'likely presence' has been taken, with the designation of a 'black redstart priority area' – this is defined by a 1km radius circle on a map of the city which covers much of central Manchester (GMBP, 2008 - from Black Redstart Action Plan for Greater Manchester). Any new development in this priority area should be accompanied by a survey for black redstarts, and in interview Graham (Biodiversity Officer for Greater Manchester) made clear that mitigation for any habitat loss, or indeed the provision of any new habitat by developers, is strongly recommended. Designating central Manchester as a 'black redstart priority area' can be seen as a way of creatively engaging with urban space in order to improve certain human-bird relations – rather than just seeking to protect definite presence it foregrounds the potential of a wide area of Manchester as a

black redstart space, and seeks to realise this potential by encouraging the construction of green roofs.

In Britain, black redstart conservation and the construction of green roofs for wildlife has uneven geographies, occurring much more in some urban areas than others. This is in part to do with black redstarts inhabiting some places and not others, but is also an effect of differing degrees of success in green roofs being enacted. Green roof construction, and black redstart conservation, has to a large extent been pioneered in London, and has been more successfully enacted here than in other places. There are a range of factors at work here as to why some networks are able to do more – with aspects of the physical and political landscape, high land values, and the role of key campaigners such as Dusty (the author of the London black redstart action plan, and a key advocate of green roofs), being important parts of London's relative 'success'. In interview Dusty highlighted in particular the key role that the EA within London has had in getting many green roofs and other habitat provisions agreed to and built. Habitat enhancement is an important objective for the EA, and many brownfield and wasteland habitats in London are (or were) adjacent to water (a key remit of the EA). The EA also has influence within London as both a statutory consultee on planning applications and a licensing body for water management and environmental permits, as Antonia explains:

> "Developers will often need a license from us, which is separate from a planning permission, it's a separate process, so they are more likely to take on board what we're saying [about habitat] because they know they'll need a license from us ...we can condition [developments] for conservation reasons, and we can object for flood defence, depending what river it is, if it's [a] main river and is based on our Water Resources Act, we can object for conservation reasons"

Thus the EA's influence (within London's particular physical-political landscape) has been key in creating green roofs as part of developments in London, especially along the Thames corridor, and at key sites such as the Greenwich Peninsula which has a green roof 'masterplan'.

Other urban areas are beginning to make more headway in the provision of green roofs for black redstarts and other wildlife, such as in Birmingham, where for example the Sustainable Eastside project has initiated the construction of four green roofs as 'demonstration' projects. These roofs are being built for black redstart conservation in themselves, but are also being built as a means of generating more interest in green roofs and of trying to get other people to construct them. Rosemary (the Project Manager) explains that "without doubt showing people physical things where they can have their photos taken is really important, and [as a way] to explain some of the technologies to people" – such roofs thus serve as habitat themselves, but also as mechanisms that alter the capabilities of green roof 'networks' in Birmingham to enrol others.

Black redstarts – through conservationists' concerns for them, and through their use in the planning system – are seen to have been the catalyst for many of the existing green roofs in London. Yet the focus is now moving elsewhere, as Dusty explains;

> "To me it's now actually not so much about black redstarts, it's now saying well all these buildings ought to have these green roofs for climate change, storm water, we should be doing all these things anyway, and if we do them right they will be good for black redstarts and nature conservation, if they're done wrong they won't be…the debate's moved on…the London Biodiversity Partnership is now taking the black restart action plan off as an action plan, it's going to be a priority species but it's not going to be an action plan anymore, because it's done its job, you know".

In other cities black redstarts remain more of a focus – as a planning tool at the very least – as interest in urban biodiversity and specifically green roofs is increasing. Biodiversity managers such as Graham in Greater Manchester also see linking such concerns as sustainable building and BREEAM assessments (see www.breeam.org) with black redstart conservation and BAPs as a good means of pushing the wider green roofs agenda forward, and as a means of getting green roofs built for a range of benefits, including as habitat for black redstarts.

Summing up here, this discussion of habitat provision shows firstly that the networks which seek to provide habitat for black redstarts and other wildlife are complex and heterogeneous across space, and have to be opportunistic in using black redstarts as symbols for persuasion and enrolment (whilst also mobilising other 'sustainability' arguments for green roofs). Secondly, these networks are changing the physical fabric of urban areas and how the urban is enacted by humans and nonhumans through creating new forms of habitat using new technologies and research. This is - it should be noted - done to a large extent by exploiting places largely unseen by humans but which can become important for birds and invertebrates. The agency of black redstarts within these networks emerges not so much from their visible/audible behaviours to (most) humans, but from their potential as a flagship for urban biodiversity.

Nesting structures

This section turns to very specific form of intervention – trying to attract and 'help' birds by installing nest boxes or similar structures. There is a diverse range of such structures, designed to suit the body sizes and behaviours of different species and restrict access to their predators, and that attempt to mimic the structures the birds use/build themselves. Nesting structures in urban areas are provided for some species more than others. Gulls are given no deliberate assistance – attempts are rather made to *restrict* nesting opportunities for gulls (see 7.3.3). Nesting structures are sometimes provided for black redstarts, though the effectiveness and importance of such measures is seen as debatable. One example is the Black Redstart Nestbox Scheme run by Birmingham and the Black Country Wildlife Trust along with partner organisations, which sought to "help improve breeding success for black redstarts" across the West Midlands county (WMBC, 2008). Paul W - an ecologist with British Waterways who were involved with the nest box scheme - admits that "we haven't had any success, we've had blue tits using them and things like that but no black redstarts yet", and acknowledges that just putting up nest boxes in itself will not help the birds - there has to be enough wider habitat there for them as well. Dusty (the chief author of the London Black Redstart Action Plan) thinks providing nest boxes for black redstarts is not necessary, as there are already enough nooks and crannies within the built urban environment for them to find and use, and that provision of foraging habitat (through green roofs) is a much more important issue than providing nest boxes (which he calls "tokenistic" and a "waste of money"). The Greater Manchester Black Redstart Action Plan

(GMBP, 2008) also states it is "not essential to introduce artificial nesting sites for black redstarts". Hence, the provision of wider habitat 'for' black redstarts is afforded greater importance and given much more attention by conservationists and planners, especially in the form of green roofs (as discussed earlier).

Of the case study birds, it is peregrines that receive the most attention in terms of the provision of 'artificial' nesting structures in urban areas. Peregrines that breed in urban areas make use of tall buildings such as church towers, high rise blocks, power station towers and communications towers, choosing a ledge or other such structure on which to build their nests, which are no more than a 'scrape' in what substrate, if any, is available. Where nesting structures are installed for peregrines, they are either installed speculatively in order to try and attract peregrines to certain locations and encourage them to nest, or are installed at sites that peregrines are already showing an interest in, but which are deemed by people to be in some way inadequate for successful breeding.

I will focus attention here on the latter situation, which is interesting because it highlights how conservationists' perceptions of the 'success' of peregrines in urban areas are often discussed in terms of breeding success – i.e. the number of chicks hatched and fledged – and this in turn involves discussions of what constitutes 'suitable' or 'unsuitable' nesting sites for peregrines. People's ideas about suitability do not always tie in with what the birds actually do and the sites they choose. For example, where peregrines are already using a site for nesting, but it is deemed by people to be in some way 'unsuitable', a nesting structure may be added to 'improve' the site and alter what it affords to the birds in order to improve the peregrines' chances of successful breeding. This practice of 'improving' peregrine nest sites is a primarily urban one that focuses on buildings and other 'artificial' structures, presumably because 'natural' cliff sites are seen to afford more to the birds in terms of suitable structures and materials.

Pete M (from Natural England, the key contact for the London Peregrine Action Plan) describes this process as "letting the birds choose the building and then providing them with some additional substrate or a box or a tray to enhance their breeding success". There are some contradictions here in how people on the one hand think that peregrines are best placed to choose their own nesting sites (a point made by Pete, picked up on later), yet on

217

the other hand deem some of the choices made by peregrines to be bad ones (which paradoxically suggests that conservationists perhaps do implicitly think they know what peregrines want and need).

The sense in which peregrines are seen to have 'chosen' a building varies. In some instances peregrines have shown an interest in a building (by spending a lot of time there, and perhaps engaging in courtship behaviour) but have not commenced breeding, and people perceive that to be because the ledge/other structure is in some way inadequate or lacking. This was the case at Derby Cathedral where, as Nick B (from Derbyshire Wildlife Trust) explains:

> "We realised there were two birds and that there was the potential for them to nest, and in 2005 we watched them displaying [as part of courtship] and thought well maybe they are going to nest but when we looked at the tower closer there wasn't a flat ledge for them to nest on, so they disappeared at Easter. Through the summer we thought well maybe we should think about trying to help them to nest and put up a platform, and eventually we got it together and got a platform up the following spring, which was a year ago, and the birds took to the platform very quickly, and nested and starting laying eggs within three weeks of us putting the platform up".

In some other instances the peregrines have attempted to breed and have laid eggs, but the attempt has failed, and people again have blamed inadequate ledge and structures, where for instance the eggs have rolled off the ledge, or the ledge has flooded (interviews with Pete M, Natural England, and Matthew, RSPB People Engagement Officer).

Even on sites where peregrines are managing to breed, people propose ways that they could be improved, as Lisa from the RSPB relates:

> "Our boss went up the BT tower [in Birmingham] last year…and he gave them a bit of advice on what they could do to the BT tower to make it more peregrine friendly. One of the things they're thinking of doing, they haven't done it yet, is - the peregrines are basically nesting on ledges, and he said that they should put like a rim

along the edge of the ledge, and then backfill behind that rim with gravel so they've got something to make a scrape in, 'cos at the moment they're just nesting on nothing and that's not very easy".

Thus at sites that are deemed by people in some way unsuitable, nesting structures are often installed and sites altered by people - though even where the birds take to the structures this does not guarantee successful breeding. In other cases birds may not take to the structures provided for them at all, and may choose or stick with locations deemed unsuitable by people. Pete M relates an example from Battersea power station, where there was a need to carry out maintenance work on a part of the building used by a pair of peregrines. To avoid disturbing or hurting them, a nest box was put on a crane base nearby in the hope of getting the peregrines to move to it and thus enable the maintenance work to be carried out. In spite of the nest box being thought of as a suitable nesting structure, the peregrines completely ignored it "and it was deemed a complete failure". However, one bird from this pair subsequently disappeared (and had presumably died) and when a new bird appeared to pair up with the existing bird, they did then start to use the nestbox - individual birds (and pairs) are seen to react to structures in different ways, emphasising the differing agencies and subjectivities not just of peregrines as a group but also as individual birds (and pairs).

There is both convergence and divergence between what people think is a suitable/unsuitable nesting site (with altered sites being seen as more suitable than they were), and what sites peregrines themselves choose. Pete M acknowledges that people's ideas about what peregrines need and the sites they are likely to choose are challenged by the actions of peregrines, and claims that in a sense the peregrines know best (regarding their nest sites), yet at the same time he (as noted earlier) also contends that some of the sites they do choose *are* highly unsuitable, perhaps because the birds are inexperienced:

"The peregrines know far better than we do, you know what might be a suitable site, and even though some of the sort of early observations of peregrines, you know people think well they're nesting close to the river, they're nesting on ledges or in niches, in holes that are facing away from the prevailing wind, you know you soon find out, you know you see 3 or 4 more nest sites and all those sort of assumptions get thrown in the bin…There's 2 or 3 pairs that have nested

on ledges which *are* unsuitable, and they persist year in year out and never raise young, 'cos you know it's a stupid place to nest, but there must be a reason why they're choosing those ledges but no-one can quite figure out why, so there are no rules about why peregrines nest in certain locations"

The complex relations between people, peregrines and nesting structures can be further illustrated in a case from Birmingham, which also helps highlight certain aspects of these (and other) relations that perhaps require more attention. In Birmingham there has been increasing interest in the peregrines which now frequent and sometimes breed in the city. Peregrines had been breeding at the previously derelict Fort Dunlop site since 2002, and during its recent redevelopment two large nestboxes were installed to encourage them to continue using it. Cameras were installed (BBC, 2009) that gave views inside the nestboxes, both to monitor any birds that used them and to show the birds to the public. There was excitement in early spring 2009 when a female peregrine took up residence in one of the nestboxes and laid one egg. However, the female then laid another single egg in the other nestbox, and subsequently disappeared from the site completely.

The viewing project set up by the RSPB and the BBC was forced to close, and the BBC website (under the heading 'What went wrong?') suggested that the breeding attempt failed for two reasons; firstly that the female may have been immature and inexperienced and did not have the skills to incubate eggs successfully, or secondly that she was disturbed by human activity (BBC, 2009). However, a commentator on the Birdguides website contended that the substrate on the floor of the nestbox was inadequate – "the size of the chippings is far too big and the amount present is far too small" (Birdguides, 2009) - so the female was unable to create a scrape for the egg to sit in, leaving the eggs laid resting on the bare floor of the nestbox. This, and earlier, examples highlight a number of things - how birds' lifespaces are altered based on (sometimes contested) human knowledges and practices, how positive and negative affordances thus come to be 'provided' and produced in relation to different birds, and how many people will perhaps more readily ascribe 'success' or 'failure' to the perceived abilities of birds, or human disturbance, than to the influence of more mundane things like the size and amount of chippings in the bottom of a nestbox. Whatever the reasons for the peregrine's actions here might be, two points emerge that I wish to highlight – firstly the importance of things (as just mentioned), and secondly

the ways in which peregrines might actually perceive their lifespaces (and certain things within them).

Individual peregrines will perceive their own lifespaces in particular ways, and will perceive positive or negative affordances within their lifespaces that people may or may not be able to perceive or understand (see Wynne, 2001), and which may affect the ways in which the birds interact with certain structures. Success or failure of peregrine breeding is often discussed in terms of the birds themselves being 'experienced' or 'inexperienced', or as a consequence of external factors such as weather or disturbance. Certainly such factors, and the capabilities and agency of individual birds, will have some bearing here, yet I think such accounts, and related discussions about why birds do or don't use nesting structures provided for them, miss out potentially fuller understandings of how peregrines *may* perceive and co-constitute their lifespaces. 'Fuller' understandings would for instance involve trying to understand how peregrines perceive and react to seemingly innocuous things in their lifespaces – such efforts can be found for example in the work involving other animals by Grandin and Johnson (2005).

This is not to suggest that the efforts of people who provide or alter nesting structures for peregrines are misplaced or necessarily misinformed – indeed, many examples of peregrines nesting and raising young on buildings in urban areas can truly be seen as "relational achievements" (Whatmore, 2002), being collaborative endeavours by birds, people, structures and others. Yet the multiple, and converging or diverging, ways in which peregrines and people use, alter and perceive particular sites can be seen to highlight more widely the different ways in which birds and people perceive and interact with urban space. Attempting to better understand these other perceptions and interactions should be a key part of the search for better human-bird (and human-wildlife) relations in urban areas.

7.3.4 Discouraging and deterring birds in urban areas

Having looked at some of the practices and technologies that try to encourage birds to inhabit and breed in towns and cities, I turn now to the 'flip side': practices that try to discourage birds from urban areas or particular urban places. These practices are driven by the feeling that without management interventions the perceived 'problems' associated with these birds will remain or get worse, partly because urban areas *provide too much* for the

birds by way of positive affordances. Attempts are thus made to remove positive affordances and increase negative ones for certain birds by restricting habitat, nesting sites and food, and by causing disturbance – through physical and 'biological' approaches, and other means of management. Such management actions focus on gulls – of the case study birds it is only gulls that are seen to cause major problems for (many) people - and they will therefore be the primary focus of this section.

Physical deterrents

Part of the perceived problem with gulls (and also other birds such as pigeons) in urban areas is the ready availability of places where they can nest and roost in relative safety with limited disturbance - flat roofs, chimney stacks and similar structures are in particular used by gulls in this regard. The location of such places can bring gulls into conflict with people (due to issues of noise, mess, damage and aggression), and can become sites where certain control measures are enacted to attempt to make them (as the reverse of conservation practices) *less* suitable and amenable for gulls in order to *decrease* breeding success and reduce conflict with humans.

The main ways people try to make structures less amenable to gulls are firstly to prevent the birds having access to them, and secondly to make sitting or perching on the structures impossible or at least uncomfortable. Different spikes, wires and types of netting are used across particular features or whole roofspaces (or even whole buildings) to 'proof' a building against birds. Some pest control companies offer complete 'proofing' services (see for example www.nbcbirdandpest.co.uk/BirdProofing and www.vvenv.co.uk/bird-control/bird-control-proofing.html), whereas other companies supply the materials to anyone who wishes to 'proof' a building themselves (see for example www.deteragull.co.uk and www.gullstop.co.uk). Councils (and their pest control departments) do not generally offer such services, but some authorities such as Scarborough Borough Council do supply materials ("at cost") to the public, and many councils, via their websites or other information literature, advise people to proof buildings against gulls themselves or by using a pest control company (e.g. Cardiff Council, 2009; Barrow Borough Council, 2008; Vale of Glamorgan Council, 2010; SBC, 2004; Exeter City Council, 2010).

The effectiveness of 'proofing' is variable. In spite of the claims for the effectiveness of netting, wires, spikes and other proofing methods made by many pest control companies, effectively proofing a building against gulls is, in the view of David (the managing director of a pest control company), "not easy". Gulls are "at home on large open roof spaces", so being able to "proof an area against gulls involves a large scale proofing operation which most people are adverse to", partly because of the cost involved as well as accessing and being able to effectively proof spaces that are high up and often complex and awkward.

Notions of the quality of the work and the way in which proofing is installed are also important in discussions of effectiveness and indeed wider aspects of human-gull relations. Some councils try to advise people on the correct ways in which to proof a building, e.g. making sure enough spikes are used to fully cover and proof an area (Sunderland Council, 2006), and aligning spikes properly to prevent access (by gulls) to 'valleys' between chimney stacks and pitched roofs (which gulls like to nest in) (SBC, 2004). Nigel (Head of Projects at the British Trust for Ornithology) contends that proofing can be quite effective if done well, though the value of proofing is partly contingent on the quality of the work done by the pest control companies who install it, which can be variable:

> "There are a lot of people that call themselves experts in bird control who do a job that is only partially effective, and the result is that gulls, or other birds, still manage to nest and still manage to be a problem, and very often birds then get caught up in netting or the like and die a fairly gruesome death, which is not I think in anybody's interest.".

I observed an example of proofing that was (at best) "partially effective" myself whilst accompanying Peter (urban gull expert) on a field visit in Bristol: he pointed out a building where the roof was covered in netting, and on this roof a gull had become tangled up in this netting and died, and was now left hanging there. Peter contended that the wrong gauge of netting had been used, and later described such poor practice as "cruelty". He was also critical of the use of netting and the manner of its installation because of its negative aesthetic effects on the city. Here, indirect attempts to discourage birds by altering their lifespaces have unintentionally merged with practices of killing (section 7.2). Netting in

particular as a means of proofing has been critiqued by the RSPCA (TISD, 2009) and others as dangerous and "inhumane" (Robinson, 2009).

The ability to physically deter gulls from accessing and using roofs and other such spaces and structures using proofing materials to alter these spaces (and the lifespaces of gulls) would in principle at least appear to be widely accepted and promoted. In practice however this ability is partly dependent on contingencies relating to the specifics of the spaces being proofed, who does the work, what materials are used and how the work is done. A multiplicity of different networks of councils, pest control companies, suppliers, contractors, private individuals and businesses, buildings, machines and other actors perform the proofing of buildings, leading to a diverse range of enactions of proofing. These enactions of course come to be co-produced by the agency of the gulls, with the perceived 'success' of proofing emerging from its ability to effectively counter the embodied agency of the gulls, who can exploit any weakness in the design or practical implementation of proofing attempts and gain access to structures. Relations here are not just enacted however through 'pure' outcomes of either completely effective deterrence or gulls accessing structures. In some cases however the gulls' agency, and particular ('poor') configurations of proofing, can produce neither just access or deterrence but an alternative and often fatal outcome

Proofing as a means of bird deterrence, in spite of the claims made for it, is a contested practice, enacted in differing ways through particular human-nonhuman relations, and with diverse outcomes. Discussions surrounding it are not just concerned with its effectiveness at deterring gulls, but also invoke wider debates about how the urban is constituted and enacted – particularly regarding notions of appropriate behaviour and animal welfare, as well as aesthetics.

Biological deterrents – Disturbance
As well as altering physical structures, practices of deterrence also use disturbance techniques such as falconry (flying trained birds of prey), simulations of predators (e.g. plastic eagle owls) and other aural and visual phenomena – such as fireworks, flares and other devices – to unsettle birds and frighten them away from places where humans do not wish them to be. These are not physical barriers but *experiential* barriers, and are enacted to

try and make the birds associate certain places with danger. Although they often have some kind of physical presence, they can be regarded more as 'biological' deterrents in that it is the presumed experience of danger which is the deterrent factor.

In the case of gulls, my interviewees generally thought that such techniques are of limited use in keeping gulls away from contentious locations, as the gulls returned soon after the disturbance had stopped and/or would get used to certain disturbance techniques which would thus cease to have any effect at all. I witnessed this for myself in Bristol whilst accompanying Peter (urban gull expert) on a survey of roof nesting gulls: on one building a recording of gull distress calls was being played through a tannoy system (in an attempt to make the gulls think that there was danger nearby and thus disturb and disperse them), yet the surrounding gulls appeared to be paying it no heed at all. Gloucester City Council, in its advisory booklet on the gull issue in Gloucester (GCC, 2005), describes this and other noise based techniques as quickly habituated to and having "little effect unless changed on a frequent basis", adding that "most are not appropriate in an urban area anyway". They also describe the aforementioned plastic eagle owls and similar scaring devices as similarly quickly habituated to and "less than helpful". In spite of such criticisms of their effectiveness many such techniques and devices are still sold and used, and add different aural and visual elements to the urban landscape and to bird's lifespaces, though in a seemingly futile effort to deter gulls.

A method increasingly used to try and deter 'problem' birds in urban areas is falconry, and it is on this technique of disturbance that I will now focus, both because of its increased prevalence, and because of its interest as an area of human-bird and indeed bird-bird relations in urban areas practically and theoretically. In urban areas falconry has in the main been used for birds such as feral pigeons, starlings and sparrows, whereas its use for deterring gulls has been primarily at landfill sites, though there has been an increase in its use as a means of gull control in towns and cities, and many pest control companies now advertise falconry as a means of dealing with unwanted gulls in urban locations (e.g. NBC, 2010; Van Vynck, 2007; Hawksdrift, 2010; ECO Environmental, 2008).

I will first consider the perceived effectiveness of falconry as a means of bird control in urban areas. David is the managing director of a pest control company based near London

that specialises in bird control (especially of pigeons) using falconry. David's family have a longstanding enthusiasm for falconry, an enthusiasm which is shared by many of the pest control operatives who work for him. The company are also involved in gull control, and there has been a large increase in the number of enquiries they have received regarding this in the past five years.

David sees falconry as of less use with gulls, and more use with pigeons, because of different qualities and differing behavioural tendencies that these birds are seen to have. Firstly, gulls are bigger than pigeons, more territorial and aggressive, and more likely to defend themselves and their territories, which means that unlike pigeons they pose a potential threat to the (highly prized) birds of prey that the falconers are flying. Secondly, David contends that pigeons are very "pattern forming" in their behaviour, and through the repeated flying of trained raptors (thereby disturbing the pigeons and moving them on from being in certain locations at certain times) can be coerced into forming new patterns of behaviour, whereas by contrast he contends this is not the case with gulls, who behave differently and cannot be coerced through falconry into new behavioural routines. The relational agency of hybrid human-falcon activity is thus more influential against pigeons than against gulls (who can resist these practices in certain ways to a greater degree) , emphasising the need to pay attention to animal differences (Lulka 2009).

David states that "where you've already got a (gull) colony in place there is no place at all for falconry ...we tend to rely on nest removal as the main way of controlling gulls". For David the usefulness of falconry in controlling gulls is limited to preventing gulls from settling in new locations, or perhaps from accessing resources such as food from particular locations, such as landfill sites (though David's company does not deal with such sites). The "bird of choice" in falconry for pigeon control is the harris hawk, which David describes as being "very forgiving in a lot of ways", and able to put up with urban noise, people and traffic "far more readily and easily than most if not all other species of birds of prey". Harris hawks are perceived as very intelligent birds because of their unique habit (amongst hawks and falcons) of living in large family groups "in the wild" – other hawks and falcons, even if they mate for life, only come together during the breeding seasons, whereas harris hawks live in large groups all year round, and interact as a group, as David explains:

"Harris hawks will live in you know units of 20, 30, 40 birds, they'll have a hierarchy, they'll hunt, the older birds will teach the younger birds to hunt, they'll share in the hunt... they're very intelligent birds...Most birds of prey are incredibly stupid [laughs], and I use that term as in terms of their thought process, they don't really have a thought process which involves anything more long term than actually 'I'm going to fly incredibly quick and I'm going to catch that prey and then I'm going to eat it.'... Harris hawks are completely different, they will think about something, they will think about the best ways to achieve their objective, and for that reason they are a very good bird to use for this type of work".

David's company prefers harris hawks, especially for the control of pigeons in urban areas, but prefer to use falcons when dealing with gulls - these birds being faster than hawks and better at dealing with or even resisting gull behaviour. The enrolment of different birds of prey by humans to control other birds is thus based upon understandings of the power relations between different bird species, and of how their differing capabilities are likely to interact and produce different outcomes.

"The reason that you use [falcons] for gulls primarily is that the way they fly is more suited to avoid this aggressive behaviour of gulls. When you fly a hawk... they'll go from the fist or wherever they're sitting, and if they miss they'll land somewhere, ok, then they'll think about what they're going to do. Falcons spend much more time on the wing, when you fly a falcon it's much more adept at, you know, chasing a gull or whatever, quarry, over, you know, large distances, miles in some cases, so because of that they can avoid this behaviour which gulls rely on, which is this stooping down, this intimidating…behaviour, because they're actually on the wing".

This further emphasises the importance of, and adds another layer of complexity to, understanding animal differences – with the differing agential capacities of different birds being worked with or against by people in pursuit of particular goals. This also highlights that these pest controllers/falconers have certain kinds of knowledge of animals that

emerges from living and working closely with animals (of the kind foregrounded by Ingold, 2000; Lorimer; 2004; Johnston, 2008).

In spite of such practical, lived knowledges of birds, the practice of falconry as a means of bird control is criticised by some, and is criticised in ways that highlights differences and tensions between knowledges of animals, knowledges and ideas of how things work ecologically, and ideas of acceptable (urban) behaviour. Some of the perceived limits to the effectiveness of falconry which have been highlighted by commentators include - its relatively high cost in terms of finances, resources and time; that it has to be practiced regularly for a long period of time in order to have any lasting effect; that target birds can quickly become habituated to it and/or return quickly once the hawks and falcons are gone; that it is difficult or impossible to practice in poor visibility and bad weather; and that it often requires the use of additional control techniques to increase its effectiveness (Bishop, *et al*, 2003; Erickson, *et al*, 1990).

As well as effectiveness, the perceived cruelty or humaneness of falconry as a method of bird control is raised as an issue by some. Falconry is presented as the 'green' pest control option by some pest control companies, being described as 'humane' and 'natural' as they utilise 'natural' predator-prey relations (and do not involve 'unnatural' substances such as chemicals etc) (NBC, 2010; Hawksdrift, 2010; ECO Environmental, 2008). Critics of these practices, notably PiCAS, describe it in opposing terms – as 'cruel' and 'unnatural' (PiCAS, 2010 ; see also PCRC, 2009) because the birds of prey used are not the 'natural' predators of gulls or pigeons, and because instead of just scaring the target birds the hawks and falcons will sometimes kill and eat them (this is more of an issue with pigeons than gulls - sometimes occurring in urban areas in front of the public, with resultant bad publicity being highlighted by PiCAS as another negative aspect of falconry as urban bird control).

Here, ideas of how predator-prey relations work in 'nature' (without these deliberate practices of intervention) - along with notions of effectiveness, and in some cases implicit ideas of urban acceptability and order - are used by different people both to legitimise and illegitimise the deliberate exploitation of bird-bird relations by humans in particular ways.

This highlights the complexities involved in how human-bird, and indeed human-bird-bird, relationships in urban areas are constituted.

Biological deterrents – The restriction of food

As well as altering physical structures and using techniques of disturbance, practices of management also attempt to reduce food availability and thus discourage unwanted bird populations in urban areas. It was noted in chapter 6.5.2 that some people, including bird experts, council officers and others, see food sources as one of the key factors in the issue of gulls in urban areas. However, much of the discussion from interviewees and in text data about restricting food sources on a wider scale concerns aspirations rather than things that are actually in practice, with calls for research to be conducted in order to inform future management (6.5.2) – this section will thus comprise a brief consideration of some existing practices, and of the wider complexities involved in managing gulls' food sources. In spite of attempts to coordinate or discuss regional management strategies (such as the Gloucestershire Gull Action Group set up by Gloucester City Council with other partners – Jackson, 2005 - and the report to the Scottish Executive regarding the gull issue in Scotland – Calladine, *et al*, 2006), most management actions currently undertaken to restrict food from gulls tend to be enacted at the level of individual councils or even individual businesses and sites, and have limited effects, with gulls seen as opportunistic and wide ranging birds able to exploit a large number of different food sources over a large area.

One area of focus has been to try and prevent members of the public and businesses from deliberately or inadvertently making food available to gulls, both through trying to stop people actively feeding the birds, and by getting people to secure their refuse in containers that gulls cannot get into and/or keeping areas around businesses (such as food outlets) free of food litter. Getting the wider public to think and act in certain ways can be a challenge – regarding attempts to limit gull food sources this often involves the threat of fines and other punishments, for example the £75 fine for people who do not put bin bags in wheelie bins in Eastbourne (Scotsman, 2006), and the suggestion of using Anti-Social Behaviour Orders against people who persistently feed gulls in Scotland (Innes, 2005).

Another main area of focus, as mentioned earlier, has been to try and prevent gulls from accessing food sources at large sites such as landfills and waste transfer stations. I observed

for myself the ready availability of food in such locations (which are often urban or urban fringe), and some of the issues involved in trying to keep birds away from them, on a field visit to a waste transfer station near central Birmingham run by SITA. The site deals primarily with industrial and commercial waste, as well as some municipal waste, and waste from the council. This includes food waste as well as other types, which is delivered by lorries and sorted out at the site for recycling or transfer to landfill. The site attracts a lot of gulls and also crows and magpies, and according to Richard (the Assistant Manager and temporary Location Manager) there had been a "massive rise" over the previous two years in the number of birds, particularly gulls, at the site.

Richard describes the birds as being a nuisance rather than a major problem for the site itself, and claims that no-one who works there has ever really "come in and had a proper whinge about it", though he does acknowledge that "we know we're getting to a sort of critical point with it where we will need to do something properly, to get the numbers down", especially in light of a large student accommodation complex that at the time of the interview was being built nearby (and which has since been completed), which could increase the possibility of birds coming into conflict with residents (highlighting that urban forms and the spaces of human-bird relations can change as much as people and birds, with effects on the constitution of relations).

As a control measure the site has for a number of years had a large netting structure covering the area where the waste is dumped by the lorries to try and keep the birds off. This is only partially effective, being open on one side to let the lorries and other vehicles in, and when vehicles move off this area the birds fly in and collect food. The company have been in discussion with a pest controller, who has suggested installing a loudspeaker and playing gull distress calls, and also flying a bird of prey to as Richard says "take a few of them out…which then should send the message through and sort of scare them off". However, the issues with birds at this site may end up being dealt with by default, as the company had recently put in a planning application "to build a state of the art recycling centre here…which will be under cover", which would prevent the birds from accessing the food waste - (again, the changing form of urban areas can affect relations).

This brief section has helped illustrate that the effects of human behaviour in urban areas, and the complex geographies of food and waste management, means that urban areas often afford food sources to certain birds, with opportunities for birds to access food in various locations, sometimes in large amounts and/or with relative ease. The opportunism of the birds and their wide ranging mobility (see 6.4 and 6.5) in the search for food, and also the multiplicity and heterogeneity of human (and other) actors in urban areas and beyond who deliberately or accidentally make food available to birds, helps produce a complex set of relations in which effectively managing food sources is difficult. Management on the one hand requires a very large amount of actors to be enrolled into particular networks of thought and practice (a major task in itself), and on the other requires particular sites to be effective at deterring gulls using various methods of deterrence (which as we have seen can be limited in their effectiveness). Restricting food sources is thus a challenge for management for both of these reasons.

7.3.5 Designing birds into architecture and planning in urban areas

Practices of pre-emptive management
Many of the practices discussed in this section so far have often involved additions to the built environment. Nest trays are *added* to buildings to make them more 'suitable' for peregrines to nest. Wires, spikes and netting are *added* to buildings to make them less attractive or perhaps 'suitable' for gulls to nest and roost. Green roofs are built to provide habitat for black redstarts and other organisms, and in many instances of green roof construction they are added or 'retro-fitted' onto existing buildings. Other practices, such as the use of falconry, distress calls and plastic eagle owls, try to disturb unwanted birds and deter them from using certain areas, and can be seen as experiential additions to birds' lifespaces (and urban areas). Food sources are also a key concern, with a perceived lack of foraging habitat for black redstarts being partly addressed through (the addition of) green roofs and related measures, and a perceived surplus of food for gulls proving to be a complex issue to address.

The notion of 'retro-fitting' can be applied more widely to describe many of these practices, in that many of them are performed as reactions to events and situations already in process, where birds and human-bird relations have been secondary considerations - or

as Emma (Manager of PiCAS) put it, "afterthoughts" - that have only received attention once issues have arisen. urban areas/buildings. There are however some practitioners who wish to promote alternative approaches to the management of birds in urban areas, which do not just treat birds as an afterthought. Such approaches seek to 'pre-empt' issues before they develop, and in effect produce different potential lifespaces *in advance* of birds actually inhabiting and relating to them.

These approaches do not exist independently - for example, green roofs can be both retrofitted and be part of a new building's design, with one not necessarily being more valid than the other. However, I contend that this 'pre-emptive' approach does represent something different in how human-bird relationships are constituted. Instead of 'adding to' and 'dealing with' as a reaction to human-bird issues, this approach can be seen more as an attempt enact the 'urban' differently – in its planning, its form, and its practice - and to do so *deliberately* with birds at least partly in people's minds. Such an approach gives the potential presence of birds consideration at the design stage, and when producing buildings or larger built up areas tries to either design birds 'in' or design them 'out'. Using Gibson's (1986) concept of affordances again, designing birds 'in' can be seen as trying to deliberately produce built environments that afford certain positive things and do not afford negative things to birds that are wanted, whereas designing birds 'out' deliberately tries to produce built environments that do not afford certain positive things and will afford negative things to unwanted birds.

Designing birds (and other organisms) 'in' to the built environment allows greater flexibility in terms of what can be constructed. In the case of green roofs, a new building has greater scope for different types of roof, and can be built to contend with different weights of roof, whereas existing buildings are constrained by their construction and the current structural loading capacity that their roof can take (Sustainable Eastside, 2007). It was noted by Alan (academic and researcher from Royal Holloway) in interview that this limit on which buildings can have green roofs retrofitted is more of an issue in Britain, as, unlike in continental Europe, the roofs of buildings are not built to withstand the weight of heavy snows (this being perhaps a factor in why Germany and Switzerland are far ahead in terms of green roof construction).

Some interviewees highlighted a wish for more to be done to consider birds and their requirements in modern building design and operation. Graham (Biodiversity Manager for Greater Manchester) contended that "modern buildings aren't very good for birds", and that "an awful lot of urban birds that are declining are declining because buildings aren't being designed for them...or people simply don't want them in their roofs any more". Modern buildings are not seen as 'good' for birds because they are more impervious to outside elements (more airtight and 'efficient' and less 'messy' for humans), which means those buildings afford less to birds. Species such as house sparrows, swallows, house martins and starlings are thought to be suffering in part because of the lack of places afforded to them by modern buildings. Efforts are being made to counter this and get birds considered when the built environment is designed, planned and constructed, through, for example, Habitat Action Plans (HAPs) and Species Action Plans (SAPs) that focus on urban areas (e.g. BAPBBC, 2000b; MBG, 2008; SLBAP, 2002, 2010; LBP, 2007).

Designing birds 'out' of the built environment is in some ways a more difficult practice. Nigel, the Head of Projects at the BTO, has had extensive involvement of consulting on issues "where birds were causing a problem to man or where man was causing a problem to birds". This has involved a large amount of work at the planning stages of building projects, especially "on fairly prestigious buildings", that seeks to eliminate future bird problems. He explains;

> "We increasingly get called in at the design stage to design out conflicts between birds and people, and that I find is a really satisfying thing to do because you get in there at a point where minor changes on a building would probably have no consequence apart from meaning that people don't have a bird problem, because very often the issues are one's that to me are just extremely obvious, but if you're an architect you would never have thought about it in that light".

The BTO's involvement in such work is "increasing" – which suggests a growing interest in pre-emptive approaches, and/or an increase in perceived urban bird 'problems'! Nigel has been involved in building projects such as Wembley Stadium, Millennium Bridge, the Gherkin in London, and also a number of schools, health centres and other buildings. Nigel

advises architects on designing out birds by first examining building plans for physical details that to him seem likely to be attractive to certain kinds of birds, such as the angle or width of ledges, which can be altered to be less comfortable for birds (or even removed). He also considers a building's routines and practices, such as where and how refuse is dealt with, which also can be altered so as to not potentially give birds a food supply. Certain physical structures and maintenance routines – some of a building's 'enactments' - are more relevant to some species (such as gulls) than others:

> "It is certainly possible to design buildings so that there aren't good places for gulls to nest. Gulls ideally like to nest against a small low parapet or against a chimney or something, you know if you sort those areas out so they aren't suitable and you put wires in areas where they will obviously want to perch, you can actually make a building so it's very unlikely that many birds will nest in there… Flat roofs are clearly the biggest problem, there's quite a lot you can do to reduce them being of substantial interest to gulls, in particular having, if it's a flat roof that has very good access, ensuring that in the spring there are people up there every day putting the birds off, you know, they will then not settle in on this safe, secure location because it is not".

This approach alters both the physical and experiential dimensions of birds' lifespaces but in a pre-emptive manner. Nigel sees this approach as useful, though not perfect:

> "I would be the first to say that my advice does not stop all birds managing to nest on buildings, but you can reduce it substantially and that's the way to think about it".

In this last point and elsewhere Nigel, in common with many other bird experts, talks about 'managing' birds - as opposed to trying to eradicate them – which is seen as a more realistic approach. Nigel describes the overall aim of his work "in the long term" as being "if we can build buildings that are not interesting to the birds then we will help to shift the populations away from critical areas". A long term perspective of 'managing', unlike eradication, accepts that there are limits to what can be achieved by humans on birds not least because of the adaptability and opportunism of certain birds.

In terms of what can practically be achieved, there are more obvious limits to pre-emptive management because, as Nigel puts it, "unless you have something like the London blitz you don't have an option to rebuild a substantial portion of our housing stock". Bar some major catastrophe it is generally impossible in urban areas to 'wipe the slate clean' and start again, and designing birds out (or indeed in) is therefore necessarily a more partial and ad hoc affair, although urban regeneration could be said to have provided some opportunities in this regard – in London the Thames Gateway development for instance does covers a large area, and the redevelopment of the Greenwich Peninsula does have its own green roof 'masterplan' for many of the new buildings there (suggesting perhaps the possibility for similar 'masterplans' that seek to design out certain birds). There are also human limits to pre-emptive management, as it requires the enrolment of other humans such as architects and developers. Nigel related how pre-emptive planning depends on an "alert architect" who foresees issues with birds and who is amenable to making changes, and on Nigel's advice being subsequently recommended by word of mouth. Emma (Manager of PiCAS) - when discussing (in interview) similar consultancy work PiCAS is involved with regarding designing out bird issues - raised the point that some architects are not always amenable to making changes to their designs, particularly if it affects a certain design concept and the "point" of a building. Many buildings are thus built that do not 'pre-empt' bird issues, either because those involved do not get enrolled into pre-emptive management because they are unaware of the issues and what can be done about them, or because those involved refuse to be enrolled into particular ways of enacting buildings.

Theorising pre-emptive management

Being able to design birds into or out of urban areas, and the perceived success of these practices, is affected by three key theoretical issues.

Firstly, practices of designing birds in or out are based on human understandings of birds. Knowledges of birds, of what birds need, and what they are able to utilise, are contingent and partial (see chapter 6; Haraway, 1991), and as we have seen in this chapter, management practices do not always have their desired effects. As knowledges of birds are partial, there is potential for birds to act outside of current understandings, thereby limiting the effectiveness of pre-emptive management. This is not just an epistemological issue but an ontological issue as well - birds can potentially adapt to utilise different things that the

built environment affords, and thus birds and human-bird relations are changeable. Knowledges of birds, and practices of designing birds in or out, would in such instances also have to adapt to birds being 'different' to how they were before (or rather how they were perceived to be before) (see Law, 2004b; Hinchliffe, 2007, p18-22). Though this does not mean that all understandings of birds and management practices are necessarily invalid, it is worth bearing in mind that these factors can potentially act to limit the effectiveness of even pre-emptive management practices (where the understandings and knowledges of birds being employed may arguably be 'better' than those informing other practices).

Secondly, designs can have unintended effects, due to the dynamic complexities of relations in particular networks and ecologies (see Kwa, 2002). Specifically, attempting to design birds in or out of the built environment has the potential to relationally produce unintended as well as intended effects, just as the built environment has had different effects historically. The majority of buildings have not been built with birds in mind, and yet birds, and human-bird relations, have been affected by them. For example, the many ledges and nooks on Victorian buildings were not designed 'for' feral pigeons, but have proven attractive to them, and flat-roofed modernist buildings were not built 'for' gulls, but are now among the key sites of contention for the urban gull 'issue'. Other newer buildings are thought of as not being 'good' for birds due to the lack of places for them to nest in these buildings – a (partly) unintentional effect of modern design and building requirements. Of course they may be less scope for certain kinds of effects in buildings that have been 'thought through', though this does not cancel out the possibility of unintended effects, which may inadvertently assist or disadvantage different birds, and indeed produce other effects.

Thirdly, buildings are not finished products determined solely by an architect's vision, but are contingent (see Jones, 2009) and (of particular importance here) are always in process (Gieryn 2002; Ingold, 2000, p172-188; see also Dickinson, 2004), and are subject to continual change from human and nonhuman influences. In practice, pre-emptive approaches and 'retro-fitting' may not be as far apart as they appear. Being able to consider birds at the design stage would appear preferable, offering greater flexibility and control in what can be achieved in managing particular buildings or places. Yet new buildings – with particular forms and practices – can soon become less new, and become modified and

236

'retro-fitted' in different ways themselves (Gieryn, 2002, p65), with the potential for particular affordances to appear or disappear, and birds to affected in different ways. In addition to this is the practical point that not enough new buildings are built to be able to 'pre-emptively' enact relations in certain ways across wider urban areas. Thus, practices that retrofit or modify the 'existing' built environment as a means of management will remain important and useful in human-bird relations.

The heterogeneity and complexity of urban areas, and of human-bird relations within them, means that even pre-emptive bird management cannot offer total effectiveness or control over an issue. However, in a messier, smaller and more partial way, such an approach to the management of birds in urban areas does at least appear to offer greater potential for enacting relations in different, perhaps better ways, and is seen by some as the way forward in how human-bird relations (and conflicts) are managed and resolved.

7.3.6 Managing lifespaces - summary

This section has shown how people attempt to manage birds in urban areas by altering or maintaining certain affordances within the birds' lifespaces – this being done in order to either make these lifespaces (and certain urban places) more or less amenable for particular birds. The complexities and heterogeneity of urban areas, and the agencies of birds, humans and others, mean that it can sometimes be difficult to control lifespaces and produce particular kinds of interactions and reactions. The birds themselves participate in this process, resisting and adapting to different urban practices and forms – thereby causing human managers to change in turn, which emphasises how these interactions relationally shape birds, people and urban locations.

The interest and increase in moving management from reactive ('retro-fitting') to proactive (designing in/out) approaches is potentially is a step forward in taking birds in urban areas more seriously, though the indeterminate, shifting ontologies of birds, humans, urban areas and the relations between them would suggest that future intentional or deliberate plans may produce unintended as well as intended effects. The unintended effects of actions can sometimes have important effects on human-bird relations in urban areas: this can be observed historically. The ability to enact proactive approaches more widely also appears

limited by the aforementioned complexities of urban areas, and a certain amount of 'retro-fitting' will no doubt remain an important part of relations.

'Pre-emptive' practices raise political issues of how we might build towards 'living with' birds in better ways as part of a wider urban political collective, and the ethical and practical questions of who belongs or not in urban areas and who has the right to decide this. If pre-emptively (rather than reactively) managing birds' lifespaces does – in spite of the difficulties - help to encourage some birds, and reduce conflicts with others (by removing the opportunities for them to act in certain ways or even be present), could this be called better relations than continuing to 'firefight' or ignore issues. These points will be returned to in Chapter 8.

7.4 Getting people onside

7.4.1 Introduction

So far in this chapter we have considered practices that seek, for reasons of conservation or control, to 'manage' birds in urban areas, be it through 'direct' interventions with birds (killing, treatment of eggs, and protection *from* being killed), or though interventions that manage birds' 'lifespaces'. An additional set of practices try to 'manage' *people*, to bring people 'onside' and get them to perceive and relate to certain birds in certain ways. These practices could be seen as another way of managing birds' lifespaces– very indirectly in many cases, and yet having some kind of impact on the worlds the birds inhabit. Practices that try to get people onside are important aspects of how human-bird relations in urban areas are produced. Considered in a broader sense these can include many aspects of management practices already considered, in terms of how people are 'enrolled' into networks and are persuaded to think and enact human-bird relations in certain ways. Here I am focussing on more specific set of practices which involve conservation groups actively attempting to engage with people – through showing them peregrines and other birds – in order to bring them onside to a certain perspective and way of relating to birds. Such techniques of enrolment are distinct enough as practices to merit their own section here. I am using the phrase 'people engagement' as a catch all term for such projects, whether or not particular groups use it themselves (the RSPB in particular make use of it).

7.4.2 Showing people peregrines and other birds

Many 'people engagement' activities run by conservation groups involve showing people birds, with an information stand in a suitable location, telescopes to give people good views of a nesting or roost site, and a webcam to show people views of inside the nests. A few projects involve guided walks and even boat trips. These practices seek to bring people onside and I will first consider what they look at, and why.

People engagement projects in towns and cities in Britain overwhelmingly focus on peregrine falcons. Why? Matthew, the RSPB's People Engagement Officer for the North West, described them as the "right bird in the right place". The 'right place' refers to practical considerations such as being able to see the birds, and being able to carry out these

events (setting up telescopes, webcams etc.). The 'right bird' refers to perceived qualities of the birds. Interviewees, including RSPB and Wildlife Trust staff, often talked of peregrines having the 'wow factor', and of them being a 'sexy' species that were - in their size, appearance and behaviour – engaging, interesting and charismatic. In this they were sometimes contrasted favourably against other birds. As a potential focus for people engagement, black redstarts were considered to be a much more difficult proposition because they are (especially relative to peregrines) small, dull in colour, difficult to see and less interesting, and they are also not in the 'right place' - black redstarts hang round in 'dodgy' areas where you wouldn't want to take the general public (Interviews with Lisa and Emma, RSPB 'Birds Near You' Officers, and Stefan, Birmingham City Council Ecologist).

The use of 'charismatic' species in conservation to attract support is well documented and critiqued (see Whatmore and Thorne, 2000, p197). Lorimer (2007) describes three facets of nonhuman charisma - ecological, aesthetic and corporeal – that are important in how the concept works within conservation. Ecological charisma emerges in relation to the form of human bodies and their competencies, that frame how we make sense of the world and which 'affordances' (size, shape, movement, noise etc) of other organisms are more or less easily 'detectable' by people. Aesthetic charisma emerges in relation to a species' appearance and behaviour which produce strong emotional responses in people that can be both positive or negative. The importance of organisms' bodies and 'faces' is explored here, with the suggestion that some nonhuman organisms are more readily humanised and individualised by people than others, and the implication that such organisms are perhaps more likely to have the concern of humans 'extended' to them. Finally, corporeal charisma is something Lorimer sees as mostly restricted to and affecting those people (the specialists) who spend time out in the field studying particular organisms, as it emerges through a process of tuning in to and 'becoming' more like the organism studied. Considering peregrines in these terms, it would certainly appear the case that peregrines' 'ecological affordances' are more readily picked up on by people than those of black redstarts, and that aesthetically peregrines are perhaps more easily 'humanised' than many other species. That peregrines are in this sense 'detectable', aesthetically pleasing, and thus charismatic makes them particularly suitable for people engagement.

Birds of prey in general are considered charismatic and popular amongst much of the public, or at least well known enough to be of interest. Showing people peregrines in urban areas is thought to also be effective as many people are thought to *already* know what peregrines are (unlike black redstarts), but don't think they would ever have a chance of seeing them without going to some wild, remote locale (the sort of place with which peregrines are 'traditionally' associated), so being able to see them in a city would be considered a special experience. Another factor that is seen to add interest to peregrines is their conservation 'story' – this being the account of their historical persecution, their rapid decline since the 1950s due to pesticide use, and their subsequent recovery. Although their numbers have recovered to pre-decline levels – which is seen as one driver of their spread into urban areas – they are still widely perceived and described as being rare and threatened (see for example LPP, 2010). Some threats to peregrines do remain, though a perhaps exaggerated idea of their rarity does help to add to the idea that these are special birds.

All these things associated with peregrines – their charisma, appearance, (aspects of) behaviour, their 'story', their familiarity *and* exoticness – enable conservation groups to promote their projects in certain ways and generate public interest. The peregrines are 'sold' to the public as a 'wildlife spectacle', which is a term used increasingly by conservation organisations (RSPB, 2009b, 2008b) and indeed television wildlife programmes (BBC, 2010), particularly when trying to enthuse the public about nature. Wildlife, in the meaning suggested by such a phrase, is not something that just exists, but is something that in certain forms is special and needs to be seen and 'experienced' by people. The birds are also represented in certain ways – as interesting, iconic, special and rare (even though they're not *that* rare anymore). Particular facts about them, such as their 'accolade' of being the fastest animals on the planet, are emphasised to reinforce the idea that these are special birds, and because they are special people should take the opportunity offered by these projects to come and see – and 'experience' – them.

However, birds other than peregrines are also promoted, and some projects do draw people's attention to other birds that are around. In Cardiff the RSPB people engagement project was originally planned to look at a pair of ravens on the town hall, but when the peregrines took over the ravens' nest and saw the ravens off, it became "a full blown peregrine project" (Pete E, RSPB Showing People Birds Officer for South Wales, in

interview). Many interviewees were not adverse to the idea of focussing on other birds, and claimed that people could be interested in and engaged by all manner of different birds, even perhaps gulls, though Pete M from Natural England remarked that if you suggested to a building manager setting up a webcam on a gulls' nest they would "probably run a mile!". In spite of this potential interest in other birds, peregrines remain the focus, partly because of what they are and how they are perceived, and also (as will be seen later) because of the places they frequent.

7.4.3 Why is people engagement done?

Projects that can be gathered under the heading 'people engagement' are done for a number of reasons, all of which would be considered beneficial to 'conservation' in direct or indirect ways. Firstly and perhaps most obviously, showing peregrines to the public is seen as a good way of generating interest in and support for those birds, as many people are (or were) unaware of the presence of peregrines in urban areas. This awareness ties in with the notion of urban dwellers being able to see and enjoy peregrines within towns and cities – which is for example part of the aim of the London Peregrine Biodiversity Action Plan (see LBP, 2004). Beyond being aware of and seeing the peregrines, engendering interest in the birds and promoting the birds as an 'asset' to a town or city is also seen as important, in order to foster public support for them. As Pete E put it, there was a desire (with the Cardiff peregrines) to foster a sense of 'ownership' towards the birds amongst the public, and a sense that the birds 'belonged' to Cardiff and were something they should be proud of. Raising awareness and support for the birds themselves can be partly understood in the context of peregrines historically being under threat from people, and are reported as still being under threat today from some people within the worlds of pigeon keeping, gamekeeping and falconry (RSPB, 2009a, 2009c; BBC, 2009b). Indeed, some peregrine watchpoints, in both rural and urban fringe locations such as Aberdare and the Avon Gorge in Bristol, started out as surveillance projects solely concerned with species protection (as noted earlier in 7.2.5). Raising awareness about and support for the peregrines also involves trying to counter what are seen as misconceptions that people might have about peregrines, such as their impact on racing pigeons – here scientific evidence is also used to state a case alongside the practices of engaging people (refer back to 6.5.4 regarding research into peregrines and pigeons).

Beyond being done 'for' the birds themselves, people engagement projects involving peregrines are also done for other species and habitats. As the peregrines are seen as charismatic birds that capture people's attention, they are used as a good 'hook' (interviews with Matthew, RSPB North West, Pete E,) to raise awareness of wider conservation and environmental issues – people are drawn in by the chance to see peregrines, giving conservationists the opportunity to bring up and discuss other conservation issues with them. More widely, a focus on peregrines allows conservationists to highlight and discuss wildlife and nature conservation in urban areas with what Pete M (Natural England) calls "non-traditional audiences".

Another purpose of using peregrines as a 'hook' is as a public relations exercise for the organisations who run the projects, which raises awareness of who they are and the work they do, and enables them to solicit donations and sign up new members - the notion of getting people onside as 'enrolment' (Callon, 1986) can thus be taken literally here. The RSPB are now involved in running most of the peregrine watches in urban areas, so it is worth considering them in more detail. Historically the RSPB are not seen to have had much of a 'presence' in urban centres, instead focussing their activities on their primarily rural reserves, and on their campaign work which is often concerned with species and habitats in rural, wild or indeed foreign locales. Indeed, some interviewees relate how the possibility of running peregrine projects in some urban areas was mooted (by others) as recently as 10 to 15 years ago, but the RSPB was not particularly interested in the idea.

More recently however the RSPB have become more active in urban areas. Pete E from the RSPB claims that this is not part of some deliberate focus on urban areas but is part of a wider effort to do more "off reserve" and engage with a wider public. Pete explains that as part of "Future Directions 4, which is our sort of corporate strategy for the next 5 years… a large part of what we're trying to do is engage with people". Jo, an RSPB Events Officer in London, explains that the RSPB, as a membership based organisation, relies on the support of its members to function, and thus recruiting new members is an important activity. In the past membership recruitment was carried out via direct mail and cold calling, yet with the increase in junk mail and appeals for support from different organisations that people encounter this approach has become less effective. Thus people engagement activity, particularly face to face engagement, is now seen as a better way of getting support and

recruiting members for the RSPB, as well as being a good way of increasing awareness of wildlife and conservation issues. Birds thus become a mediator between humans through the mobilisation of their virtual if not physical forms in particular ways as a means of enrolment (see Woods, 2000, on the mobilisation of different representations of foxes, and see Whatmore's discussion of images of elephants and other animals as tools of enrolment in conservation projects, 2002, p47-57).

The RSPB's people engagement activities include the Big Garden Birdwatch, and the 'Aren't Birds Brilliant' scheme of events (now rebranded as 'Date With Nature'). Though these events do not just target urban audiences, the RSPB has increased its people engagement activity in towns and cities, as Matthew (RSPB People Engagement Officer for the North West) explains:

> "Increasingly we're very much aware that if you have a bird spectacle and a high footfall of people, that's the key ingredient, so a decent bird like a peregrine in a city centre is absolutely ideal for us to be able to reach a huge number of people".

He suggests that urban areas such as Manchester represent an "untapped potential", and an audience that has not previously been engaged with. Peregrines in towns and cities are thus seen as a means of reaching audiences that conservation groups "wouldn't normally engage with" (the 'non-traditional audiences' mentioned earlier). Peregrine watches in urban areas are thus carried out to raise awareness and support for the birds themselves, to raise awareness of other wildlife and conservation issues, and as public relations exercises for the organisations involved. The details of exactly where, when and how such activities occur are somewhat more complex, and will now be examined.

7.4.4 Where and when people engagement happens

Being able to run an event that shows people peregrines in urban areas involves a number of contingencies. Spatio-temporal factors are of particular importance in producing the kinds of conditions that are considered favourable for showing people peregrines. What the projects basically require are for the birds to be there, to be visible, and to be doing things

considered interesting. These requirements differ depending on whether the peregrine is being viewed 'directly' through a telescope, or via a webcam.

Peregrine watches in urban areas have been run in locations such as in front of Tate Modern in London (on which the peregrines roost), next to Birmingham Cathedral (giving views of the BT Tower where they nest), in Exchange Square in Manchester (that is adjacent to well used perching spots such as the Arndale Centre) and at Derby Cathedral (where they nest). These projects are in a way fortunate that peregrines in urban areas often nest, roost and/or perch on prominent and sometimes iconic buildings in or near central and *public* spaces that are relatively easy to run watchpoints from, that have a large number of people passing through, and that are relatively easy to promote (the buildings being well-known). This also often presents good opportunities for projects to work in partnership with building managers – in Cardiff, the RSPB have received assistance from the Council (as the peregrines nest on the Town Hall), and the adjacent museum provides a place for an information stand and television screen that relays CCTV images of the peregrines.

Well known and iconic buildings have perhaps other advantages for watching peregrines - people can find the locations easily in the first place and can keep track of the peregrines as they move:

> "Peregrines are quite difficult to see, unless you've got your eye in they're quite difficult to see, but if you say to someone well if you go to Tate Modern and look at the top of the chimney you will see a peregrine, whereas if you said to them there's a tower block, you know number 37 on Winchmore Street in the centre of London they'd probably never see it, and also those iconic buildings tend to be, at Battersea, Tate Modern, they're sort of stand alone buildings, there's not a lot of clutter around them, so if you're watching peregrines at Battersea, or they're flying around the chimneys at Tate Modern, you don't lose them amongst all the other cluttered skyline". (Pete M, Natural England).

However, although many peregrine nesting and roosting sites in urban centres are amenable to running watch points, some sites do not have suitable places for the public to view the peregrines *from*. Battersea power station for example has a (relatively) long history of

peregrine activity, yet there are no suitable vantage points for a public engagement project. Other sites are less suitable because of the type of building. One short lived watch point in London looked at peregrines on top of a residential building, yet perhaps understandably the residents were not very keen on having people continually looking up at their building through telescopes. In Manchester the managers of buildings where peregrines were nesting wished to remain anonymous, as there were concerns that people trying to get access to and/or see the birds would create too much disturbance. Here the project had to manage the different 'peregrine' and 'human' spaces within the city to allow people to see the peregrines without causing trouble for others, and so they showed CCTV footage of the nest as well as giving direct views of the peregrines at perching sites in less sensitive locations.

There are also urban locations where peregrines nest that are considered more vulnerable to people who might harm the birds, and efforts are made to keep the whereabouts of these sites a secret, as is the case with a particular pair of peregrines in East London (where a lot of people also keep pigeons – see 7.2.5). Setting up a watchpoint at this location would therefore be considered out of the question, yet efforts are still made in other ways to engage the wider public with these birds, with plans to show CCTV images of this nesting site at the Environment Agency's Thames Barrier Learning Centre (interview with Antonia, Environment Agency Officer).

As well as locations being important to the running of peregrine projects, timing is also an important consideration. Whether the birds are present to see and whether they are doing things of interest to people are seasonal considerations. The breeding season is the focus of peregrine watches as during this period the peregrines will be present most of the time, and also because there is much more going on with the breeding attempt and hopefully the raising of chicks. Indeed, breeding activity on new sites is often the catalyst for setting up new projects. The timing of peregrine watches is therefore also seasonal, taking place during the breeding season in spring and summer. John (from Bristol Ornithologists Club) explains that the Bristol (Avon Gorge) peregrine watch occurs on weekends in June, as it is more interesting to watch when the chicks are about the fledge, whereas beforehand it is "dead boring" when there are just eggs in the nest, or the chicks are very young. Nick B from Derbyshire Wildlife Trust concurs that there is less interest when there are just eggs,

246

and more interest when the chicks are older and big enough to see. There is "always something to see" around then, with the increased activity of the chicks, and the increased efforts of the parents to find food. The Tate Modern watchpoint runs late in the season when the chicks are most active, and doesn't start until July – when the chicks have fledged and are flying around – and runs until September. As well as matching bird behaviour, such timings also match human behaviour, because it is also perhaps more likely for lots of people to be spending time outdoors in these seasons – thereby increasing potential visitor numbers. How *often* the watches run also relates more to the availability of resources and volunteers (who are for the most part the people who staff the watchpoints).

That there are places and times where peregrines are more easily seen and more likely to be seen recalls Hinchliffe's (2008) point regarding the sighting of black redstarts requiring a crossing of human and black redstart trajectories. Being able to view peregrines also requires a crossing of human and peregrine trajectories, yet these trajectories work, and this crossing is produced, in rather different ways. Unlike with black redstarts, the urban space-times of peregrines appear somewhat easier for humans to intersect, making the viewing of them a relatively simple affair. The major points about location and timing here – birds being present *and* visible, birds doing things that are considered interesting, groups being able to run watchpoints with relative ease – influence not only where and when people engagement projects occur, but also which particular peregrines are focused on. The birds could be said to have a certain amount of (relational rather than 'deliberate') agency here, in that their behaviour and choice of nesting and perching sites helps partly determine the possibilities for running projects (though the installation of nest trays could be said to complicate this sense of agency). Being in a good location at the right time are important factors in being able to show people peregrines. However, actually being able to see them *well* requires assistance.

7.4.5 Producing 'good views' of peregrines

Being able to see these birds *well* is a particular experience that is unlikely to just happen by chance - people rarely spend time high up on tall buildings, and peregrines rarely venture close enough to the ground. The experience has to be produced. This often involves using technology to effectively shorten the sensory distance between people and birds (with telescopes and binoculars – see plate 7.7), and to enable people to see things that are

otherwise hidden (with CCTV cameras and webcams). Without these technologies the viewing of peregrines by the public would be near impossible, and this affirms the importance of these 'things' (or other kinds of nonhumans) within these human-bird relations and their effect on the 'enrolment' of people, and also reiterates that these relations are necessarily hybrid (see again Whatmore, 2002, p47-57; and also Davies' account of how different 'direct' or technological ways of viewing animals affect relations, 2000, p243-267; and Haraway's consideration of the complex relational agency of humans, animals and technology in the "Crittercam assemblage", 2008, p249-263).

The importance of telescopes in the production of a good view, and in the subsequent 'pay off' of someone being amazed and thus 'engaged', is acknowledged by Nick B (Derbyshire Wildlife Trust):

> "I think the experience you know for most of them seeing the bird through a telescope, a peregrine through a telescope was a really you know staggering thing to see, you know so clearly and so well, and such a good view of the bird that they'd read about in books but thought well I'll never see one".

CCTV and webcams offer further possibilities for getting good views of the birds, in that they not only enhance people's sight but also allow people to see things that are not directly visible. Such technologies help produce otherwise impossible (or highly unlikely) views into nests, and offer a means of working around other issues such as site secrecy. They also, because views of the peregrines are transformed (and translated) into electronic signals, allow for a wide range of means for the views to be disseminated and shown to people, including people far from the physical location of the peregrines. The human-bird trajectories (Hinchliffe, 2008) become enacted and intersected not just in 'normal' space-time but also in 'virtual' (Davies, 2000) space-time. These can include footage and stills displayed on the internet (along with commentary and blog updates), still images printed off and shown to people, DVDs produced, and footage displayed on television screens, be they small screens such as the one at Cardiff Museum, or the big screens that are now found in many urban centres. Matthew (RSPB) was enthusiastic about city centre big screens in particular:

"These big screens are fantastic, and to have, you know, beamed, the whole footage of the nest and all the comings and goings was a great way of being able to engage people".

Matthew relates how in Manchester the BBC helped the RSPB set up the cameras and relay pictures to the big screen as well as giving the RSPB copies on DVD. This partnership helped get media coverage of the project onto *Northwest Tonight* and *Springwatch* programmes, which represents another format for disseminating views of peregrines and engaging with people on a much wider scale.

It is noticeable that the means of producing good views are not possessed by the public, but are made available by the project staff and organisers. In a sense the projects are both democratising this technology - to enable people to see things - but are also controlling its use to focus people's attention on particular things for particular reasons. This has implications for human-bird relations, and indeed for how the 'urban' comes to be enacted and constituted.

7.4.6 Other practices of people engagement

Seeing peregrines 'directly' and/or as things happen, as mediated by technology, is the primary way of people engagement. Conservation groups do however employ other means of engaging with people – partly as an enhancement of the seeing experience, and partly as a necessity when directly viewing the birds is less of an option (such as at times when there is nothing much going on or nothing to see). Some watchpoints make a point of showing people a range of urban birds in addition to the peregrines to get people interested in their local wildlife more generally. As well as images of the peregrines, models of the birds are also used to give people a better sense of their size and wingspan, and even 'cuddly toy' peregrines that make realistic peregrine calls can be shown to people. Lisa (RSPB Birds Near You Officer in Birmingham) did not however think it too problematic that the peregrines are not around to see all of the time - the regular presence of the RSPB themselves, with their staffed information stand, was in itself seen as a 'social' success, as many people would come up and talk to them and make return visits to see them – the peregrines' presence was thus not always necessary for public engagement to occur.

Some peregrine projects give peregrines names chosen in a competition. This serves two purposes: to get people interested in the project by getting them to enter a competition, and to give the birds a recognisable identity by to an extent humanising and personalising them (Milton, 2002; Lorimer, 2007) thus making them easier for people to engage with.

7.4.7 What is achieved?

How successful are such public engagement projects? On one level, 'success' is measured in numbers – numbers of visitors to projects/watchpoints/websites, how much money was raised in donations, and the numbers of new members signed up to the conservation organisations and thus enrolled. Success on these terms was generally seen positively, with good numbers of visitors, donations and new members. John describes the peregrine watch in Bristol as being the "recruiting sergeant" for the Bristol Ornithologists Club - over twelve years of the watch running, membership of the club went from 400 to 700. Nick B relates that in one year of the Wildlife Trust project in Derby they had about 2,000 visitors and raised about £700, and Matthew states that the over the course of 6 weeks the RSPB watchpoint in Manchester had 5,000 visitors, raised £900 in pin badge sales and £500 in donations, and recruited over 100 new members.

On another level, success was more qualitative and measured in how those involved feel the public reacted to the peregrines and to the watchpoints. Again this was seen as mostly positive. Those involved reported that (as hoped) most people were amazed and engaged by the peregrines, and were overwhelmingly positive about both the peregrines and the projects. Although I did not interview the public directly, I was given some samples of visitor reactions recorded in visitor books and could also access public comments about the peregrines at project websites. According to Matthew all the comments recorded for the Manchester watch were positive, and included things such as:

'Falcons in Manchester? Wow!'

'Great view of Peregrine Falcon. Excellent information given'

'Brilliant to see these birds in the city'

'The falcons are ace, and the RSPB staff are too!'

'Fabulous images of the peregrines'

'Nice to chat about them. True asset to Manchester'

It is perhaps the case that anyone with negative (or even neutral) opinions might not go to the trouble of writing a comment in a visitor book. Interviewees did report that there were sometimes a few negative reactions to and opinions about the peregrines and the projects – these were seen as coming from a small minority of pigeon fanciers and others (see 7.2.5 and 6.5.4) who see the peregrines as a problem, as Matthew recalled:

> "There were a couple of incidents, one was a pigeon fancier, who wasn't very happy, and he's a known kind of campaigner of that sort of nature, and he came over to the stand one day and stayed for quite a long time, and then there was another day when a guy came up with a case that looked like a gun case and said he was going to shoot the birds, disappeared, and somebody else turned up later to say that he had. We've got CCTV and knew that nothing was wrong, but you get the odd crank who decides to try and do things like that".

These dissenting voices are not taken to represent any serious issue in the face of the 'overwhelmingly positive' reaction from the rest of the public. Those who are negative about the birds and/or the projects are described as a 'hardcore' minority, and even as 'cranks', which places them in opposition to a general consensus - partly produced by conservationists and others through enrolment - regarding the acceptance of peregrines as a part of urban areas and urban life.

7.4.8 Getting people onside - summary

To sum up this section, relations between peregrines and people in urban areas are being pushed in a positive direction by conservation groups. Beyond citing numbers and referring to people's reactions at watchpoints, it is perhaps difficult to measure quite how such efforts to enrol people and produce certain relations are successful in a wider sense, though if because of these projects people are encouraged to view the peregrines in a certain way, and also if the peregrines become a familiar, accepted and even favoured inhabitant of urban areas, then it would seem that the conditions have been produced for primarily

251

'good' relations to continue. As well as being a means for getting people onside and enrolling people into a particular set of relations, peregrine projects are themselves a performative part of those relations in that they are not just about persuading people and deploying arguments but are also about doing something – they get people to look at the birds in a certain way and present the birds positively as increasingly public and familiar parts of the urban scene.

People engagement projects in urban areas that show people peregrines thus appear to be a quite effective means of getting people onside, using technologies, careful timing and placing of events, and exploiting the 'charisma' and agency of the birds. Peregrines are mostly 'favoured' by people and thus 'favoured' in human-bird relations in urban areas and people engagement projects. People's efforts to produce and maintain a consensus in how peregrines in urban areas are thought of, along with the specific performative practices and actions this involves, can be seen as attempts to enact the urban in particular manner, where peregrines are aligned successfully with urban life in a positive way, and are a part of both the liveliness (Whatmore, 2002) and yet also the relative order of the urban (compare Philo, 1998, and 7.2.4) that people simultaneously respond to and wish to (re)produce.

7.5 Summary of chapter

This chapter has outlined and compared a diverse set of management practices that attempt to enact human-bird relations in urban areas in particular ways. These range from directly killing birds, to altering buildings to provide positive and negative 'affordances' (Gibson, 1986) to birds, to shaping human views (both in terms of ideas *and* visual perception) of what and where birds are and should be, and how relations between humans and birds (and different urban places) should be approached. Many of these practices shift over time, as urban areas change, as human notions of what is legitimate (Marvin, 2000) and/or acceptable change, and as birds adapt to or resist (Philo and Wilbert, 2000) practices and forms. I want to briefly highlight some key points from this chapter, in a similar manner to the summary from Chapter 6 (indeed, some of the points are similar, if differently constituted).

First – and as with Chapter 6 - the human-bird relations examined here are differentiated by bird species *and* by intraspecies variation between individuals. Different management practices both reflect and co-produce differing relations with different birds. Much of this differentiation occurs - at least *in theory* - at species level, with peregrines and black redstarts being fully legally protected, and management practices often seeking to assist and promote these species, whereas herring and lesser black-backed gulls *as species* are seen (implicitly if not explicitly) as potential pest birds, and their control is to an extent sanctioned by general licences (and thus management practices often seek to enact this control). In practice this differentiation is more complex. As well as being treated differently in some respects as species, the birds are also – intentionally or unintentionally - treated differently as individuals and groups. The presence of and the behaviour of different groups of birds or individual birds varies between different space-times, as does the kinds of management practices that are enacted for/against these groups or individuals in these space-times. Thus diverse and uneven relations are not just a species issue, but emerge from the wider complexities of relations.

Second, there is the related point that practices of management are contingent on their wider relations, and become enacted in particular ways because of these contingencies (see Law and Mol, 2008). The perceived need to pursue management arises from certain relations and ideas about these relations, decisions regarding what kinds of management to pursue are informed by a range of ideas, practicalities and limitations, the actual implementation of this management is affected by a range of factors and human and nonhuman agencies, and the subsequent effects of this management are influenced by not just existing contingencies but the development of new ones as humans, nonhumans and relations change over time and space. This appreciation of relational contingency is important for understanding both 'reactive'/'retro-fitting' approaches and proactive (designing birds in or out) approaches to management. Although proactive approaches do seek to prevent or at least take account of many contingencies, they cannot all be known and understood in advance, and thus there remains the possibility of unintended as well as intended effects being produced by proactive as well as reactive management actions.

Third - and developing the idea from chapter 6 about birds 'becoming' urban - what can be observed in these management practices is not just the enaction of human-bird relations in

particular ways, but also the enaction and production of urban areas themselves – or at least particular urban space-times. In one sense these practices are seen as means to an end – pursued to enact human-bird relations *and* the urban in certain ways – yet in another sense they are themselves constituent of the character of relations and the urban whilst in process. Different ways of ordering relations are thus simultaneously (partly) productive *and* performative (see Healy, 2003; Watson, 2003) of relations and the urban. Pest control practices may or may not deter gulls, but they can produce urban areas where spikes and netting are commonplace on buildings, and falconers become a regular presence. People engagement practices may or may not affect how people think and act more widely, but they do produce and perform certain kinds of relations and urban space at certain times of year.

The next chapter draws together many of the themes raised in this chapter and chapter 6 and considers the contribution made by this thesis to this literature more generally and to ideas of how humans might live better with birds in urban areas.

Chapter 8: Conclusion

8.1 Introduction

This thesis has reviewed the background for certain kinds of changing and varied human-bird relations in urban areas, and has examined specific examples of such relationships using case studies focussing on black redstarts, peregrine falcons and herring gulls / lesser black backed gulls. I initially set myself these two research questions to answer:

1. How are different human-bird relations in urban areas constituted, in terms of the different birds, people, things, knowledges, practices, agencies and subjectivities involved, and the roles that they play in how these different relations are comprised and enacted.

2. What are the key practical and ethical issues that arise from the constitution of these relations, and in light of these issues what are the possibilities for living with birds/wildlife in urban areas, and for more generally living with difference and finding "more equitable social relations between humans and nonhumans" (Lulka, 2004, p439).

In this conclusion I will summarise key points from the empirical work (chapters 6 and 7) that answer these research questions in turn.

It is important first to reiterate that I have not sought to provide a representative survey of all human-bird relations in urban areas (or indeed of urban areas), nor of all public attitudes towards particular species. Rather, my perspective is a snapshot of a much wider mêlée of relations – examined in terms of and via particular space-times, birds and people (with specific positionalities – see 5.4.5) - with a host of interactions and effects both preceding it and occurring subsequent to it. In a similar fashion to Latour (1999a) I have begun in the middle of a chain of translations that go backwards and forwards. Contemporary human-bird relations in towns and cities are built upon both past and future. Histories of construction trends and technologies, of economic cycles, of waste management, of modes of urban living, of evolving patterns of bird behaviour, and of human interactions with and ideas about birds *and* urban areas, are some of the factors that have directly or indirectly

helped produce particular relations. Within these relations, past challenges to what constitute legitimate ways of suppressing or assisting different bird populations have informed today's choices - and this chain of translations continues forward after this thesis ends, through for example future decisions and practices regarding what kinds of buildings will or will not be constructed for humans *and* birds, what methods of managing different humans and nonhumans become possible/impossible and/or considered acceptable, and what kinds of future interactions between different people and different birds occur as a result of present relations, spaces, knowledges and management practices.

8.2 How are human-bird relations in urban areas constituted?

In this section I discuss important factors in the constitution of human-bird relations in urban areas, drawing on my case study material. These factors are to a large extent inter-related and bound up with each other, though for convenience I will emphasise key issues in separate sections.

8.2.1 Difference and similarity

Chapters 6 and 7 discussed a diverse set of knowledges and practices that derive from and enact particular human-bird relations in urban areas, and which also enact particular urban space-times. This diversity shows that these relations are difficult to generalise, being heterogeneous, complex and multiple, and their constitution comes from/through a varying mixture of birds, people, places, things, practices and ideas. Different urban places are produced, thought of and enacted by different people and birds in different ways, as particular kinds of relations varyingly become more or less possible, and are enacted or not enacted. In terms of (for instance) how birds interact with people, and are perceived and treated by people, differences occur not only between the case study species but also between individuals and groups of the same species in different situations and space-times.

To give some examples - gulls are considered a major problem in some urban areas and not in others, with differences in the type of land use and physical form of places gulls use, along with numbers of, behaviour of, and patterns of movement of gulls, being influencing factors. Different people adopt different management strategies towards gulls, with some councils now favouring egg oiling/replacement, some pest control companies practicing

falconry (and sometimes culling), alterations to buildings and urban space as a deterrent being practiced by or advised by a wide range of actors, and restriction of food sources in some form being an aspirational if not an actual practice. Different physical, ethical, legal and financial/resource considerations are influential here, as are different kinds of relational agency (see 7.2 and 7.3).

Knowledges of black redstarts vary according to different contingencies, such as agency and movement of birds and people, physical structure of urban areas, and physical and legal access to different places (and thus are contingent on wider enactions of the urban as well as on birds and researchers - see 6.3). Black redstart conservation has progressed in some urban areas more than others, in part due to differences in their physical-political landscapes, as well as to the efforts of particular campaigners (see 7.3). Different peregrines do or don't make use of different nesting structures, with differing explanations of site suitability and birds' 'experience' being mooted by conservationists (how and why the birds themselves might actually think about or react to these sites in certain ways is speculative to comment on, though may well differ from such explanations) (see 7.3). People promote or maintain secrecy about some peregrines' nests (see 7.2 and 7.4), where notions of the perceived suitability of sites for 'people engagement', or the vulnerability of sites to attack, are influenced by factors such as location, local (human and nonhuman) demographics, and accessibility of the nest.

Difference – seen through the heterogeneity, complexity, multiplicity and specificity of relations (Law and Mol, 2002; Hinchliffe 2007) – is thus a key factor within the constitution of these relations and of the urban space-times that help co-produce and which are co-produced by them, and is both a problem and an opportunity within the search for better relations, as it often limits the usefulness of simple enactments and 'one size fits all' management, yet also provides scope for experimentation and innovation.

There are of course also similarities between different cases. 'Similarity' can be understood in two ways here. Firstly, it can be an effect of taking a broader overview of relations which will give a more generalized understanding of them, and is thus an effect of the scale of study. For example, statements like 'gulls are aggressive' or 'gulls are seen as a problem in urban areas' are not in themselves 'false' taken as general statements, but they suggest that

this is the case with all gulls (at all times) or in all urban areas, and it glosses over the many differences between different gulls and between and within different urban areas (such as different forms and practices – e.g. proximity of different towns to landfill sites, different architectural forms of different towns, etc).

Secondly, and more usefully, similarity can be explored as something that occurs in more than one particular situation across a wider set of space-times for certain reasons that can be attended to (and is not just an effect of generalization). Of particular interest is how aspects of relations come to be enacted in similar ways in different space-times. This can be seen as the result of the performance of certain relational effects (such as certain historically constituted bird or human behavioural tendencies) and/or the enactments of particular networks. In this latter sense for example similarity can be an effect of homogenising tendencies that arise when a particular (and influential) network seeks to enact relations and urban space-times in certain ways, such as for example how conservation bodies, primarily the RSPB, seek to promote and present peregrines to people in an increasing number of towns and cities (see 7.4), using similar methods and ideas across diverse urban places. This ability to homogenise (to an extent) relations and the performance of urban places can, like difference, be seen in positive and negative ways within the search for better relations, as on the one hand it can help promote a more benign public opinion of different birds (as in the peregrine example), and on the other it may serve to erase or crowd out difference (for example one interviewee suggested that some of the different people involved in peregrine projects before the RSPB got involved now felt sidelined by the larger organisation).

My research has emphasised that difference and similarity are both important in how human-bird relations in urban areas, and indeed urban space-times, are constituted and continually (re)produced. The tensions between homogenising and differentiating processes, that emerge as humans and nonhumans enact (or are enacted by) relations in particular ways, continue to shape interrelations and change ideas and practices.

8.2.2 Presence/absence in space-time
Human-bird relations in urban areas are further constituted by changing presences and absences in space-time, which in part contributes to the heterogeneity, complexity and

multiplicity of these relations, and also makes different enactments of relations and urban space-times more or less possible (being an aspect of the production of relational agency – see section 8.2.3. below). Different birds and people are in or are not in particular urban places (or urban areas generally) at particular times for particular reasons, with different birds using particular places (space-times) for feeding, roosting, nesting and other activities, and different people using different places for residence, commerce, industry, leisure and other purposes – these differing human and bird uses of different urban spaces-times being enabled by wider enactments of the urban. In the breeding season (spring and summer) gulls occupy certain roofspaces, peregrines occupy particular ledges, and black redstarts sporadically occupy nooks and crannies in structures as nesting sites. At other times of the year many of these birds will occupy other places within towns and cities, or indeed move out of urban areas altogether for a period of time. Co-presence of birds and people, through the intersection of their differing trajectories (Hinchliffe, 2008, p91), thus may or may not occur in particular places at particular times, and may or may not take particular forms involving certain activities and behaviours of birds and people.

For example, gulls breeding in the spring and summer on roofspaces in urban residential areas can produce a co-presence of gulls and people, and specifically of gulls making noise early in the morning, people trying to sleep, gulls acting territorially and aggressively, people living in/owning/caring about property and things, gulls causing mess and damage to property and things, people clearing away eggs and nests, and so on. Gulls nesting on roofspaces in industrial areas away from residential areas will not produce the same set of co-presences, and can lead to different possibilities and outcomes. Co-presences can varyingly involve conflict or relatively successful co-habitation, and can produce for people and/or birds a sense of order or disorder (see 8.2.3 for more detail). It is worth emphasising further here the importance of seasonality to human-bird relations in urban areas, as the interest shown in the case study birds by people tends to increase during spring and summer when more of the birds are present in urban areas and when breeding activity occurs, which is a key driver in how relations work and in how humans, birds and others enact the urban. Birds' breeding activity influences the character of different human-bird interactions, and the 'success' of breeding is of interest from both conservation and pest control perspectives (see much of 7.2 and 7.3).

In comparing the presences and absences of the case study birds in more detail, the trajectories of gulls and people can be seen to intersect much more often - in urban areas in Britain - than those of peregrines and people, and of black redstarts and people. This is partly because gulls are more numerous (with black redstarts being by far the least numerous of the case study birds), and partly because of the differing space-times and habits of the birds. Gulls are often present in large numbers – and visibly and audibly obvious – in places and times frequented by or near to people (on rooftops, on the ground, and flying around, in residential, retail, industrial and other areas) when nesting, roosting, searching for food and so on. This regular co-presence in a wide range of space-times creates possibilities for particular, sometimes conflicting relations.

By contrast the less regular co-presence of peregrines (a smaller number of birds who tend to nest and roost high up on tall structures out of most people's way) and people produces possibilities for other kinds of relations, and helps reinforce the notion that peregrines are rare and special (see 7.4). The even less regular co-presence of black redstarts (an even smaller number of small, less obvious birds, who often occupy places less frequented by humans, such as derelict, 'waste' areas) and people (perhaps 'co-absence' would be generally more fitting) presents a challenge for those who wish to observe and produce knowledges of black redstarts, and thus creates difficulties for trying to make black redstarts 'present' in politics (Hinchliffe, 2008).

Issues of presence and absence in knowledge production are not of course unique to black redstarts: whilst other birds may be more numerous and more often co-present in some respects, their presence in other space-times may be more difficult to establish. Thus knowledge practices seek to mark the presence – and the *movement* - of different birds by for instance ringing the birds (see 6.4), and through the collection of prey/food remains (which hints at the intersecting trajectories of different birds and other things - see 6.5).

The notion of movement needs highlighting here. The differing possibilities for human and bird trajectories to intersect arises not just from their presence/absence, but also to their differing capacities for movement and mobility. Birds (in general) are amongst the most mobile of nonhuman animals, and can move through space-time in wide ranging ways that many other animals, including humans, cannot – indeed, movement in the form of

migration is not just an ability but an important aspect of some birds' lives and their ability to live (thus movement is a part of their ontologies – see Lulka, 2004). The vertical as well as horizontal movement of birds shapes their lifespaces and challenges those humans wishing to interact with them to find new ways of moving their (limited) human bodies into other spaces, such as high ledges and roof spaces little frequented by other humans (for example, ringing peregrine chicks sometimes involves people abseiling down the sides of buildings). The particular characteristics of birds' lives thus directly and relationally shape the practices of humans.

Presences and absences as constituent factors of relations and urban space-times are further complicated by their instability, and their potential to be remade. The trajectories of birds and people are not fixed in their space-times. For example, if an urban area changes from industrial to residential use, this will change the possibilities for the co-presence of different birds and people (some birds might be displaced, others might be attracted in), and can also change the character of that co-presence (e.g. gulls that use the area might be considered more of an problem if that area becomes more residential). Trajectories are also thought to be changing in other ways, with some people contending that as certain birds become more 'urban' in their habits (see 8.2.5), their patterns of migration are changing accordingly. Thus for example lesser-black backed gulls, which previously tended to migrate south in winter, are now thought to remain in urban areas in Britain more frequently, because of the relative warmth, security and plentiful food of urban areas. This also means that some gulls in urban areas now breed earlier in the year, which further changes the space-times of co-presence.

A further way in which presence and absence is complicated, and is being changed, is through the 'virtual' presence of birds. Though black redstarts are rarely physically and visibly present with and to (most) people, their presence legally and symbolically has wide ranging effects (see 7.3). In other ways, the 'hidden' physical presences of birds are being translated in ways that make them visible to people, be it through telescopes at peregrine watchpoints, or notably with webcam footage of peregrine nesting sites that is relayed over the internet, on 'big screens' in city centres and in other ways (see 7.4), which produces a 'virtual' co-presence of peregrines and people as a means of enacting certain relations.

These varying ways in which presence/absence and trajectories are unstable, and can be remade, again offers problems and opportunities for better relations.

8.2.3 Agency and resistance in the production of 'order' and 'disorder'.

Difference and presence/absence are both key aspects of the constitution of relations, though in themselves they do not fully account for the 'lively' (Whatmore, 2002) ways in which human-bird relations work, and how this liveliness emerges in particular ways through co-producing/being co-produced by urban space/times. To further account for this liveliness, I thus wish to highlight the interacting and conflicting senses of 'order' and 'disorder' that arise through the enactments of different agencies. I have contended that different senses of 'order' and 'disorder' can be discerned within both human and nonhuman perspectives – I have not thought it necessary for nonhumans (or even humans) to intellectually understand these concepts as a prerequisite for perceiving order or disorder in their lives, although people and birds, as differing, changeable experiential subjectivities in relation, produce, apprehend and react to senses of order and disorder in differing, changeable ways.

Where a sense of disorder is perceived by a human or nonhuman, this can elicit enactments to regain a sense of order, and these enactments may themselves produce 'disorder' elsewhere as 'intended' and 'unintended' effects (see 7.3.5). There is then, within the constitution of urban space-times and human-bird relations in urban areas, a continual, complex, overlapping and interacting multiplicity of 'orders' and 'disorders' being produced by, apprehended by and reacted to by humans and nonhumans. This can be illustrated with some specific examples from my research. The noise, mess and aggression of (some) gulls runs counter to what is considered acceptable by many people in particular urban places (such as residential areas), thus producing disorder for some people. Gull control measures such as egg oiling (see 7.2) may be undertaken in response to this disorder to regain some sense of order and enact urban areas in particular ways. In the process, pest control operatives that enter gull breeding territories will themselves produce a sense of disorder for the gulls, who in turn may respond with a show of aggression to try to deter the pest controllers and re-establish their own sense of order.

The behaviour of peregrines (by contrast) within urban areas is not thought to negatively impinge much on most people's lives, and they are not seen to cause much in the way of disorder – indeed, peregrines are widely thought of as 'special' birds, and through showing people the birds and promoting peregrines as an 'asset' to urban areas (see 7.4), and also through managing human-peregrine relations more widely, conservation groups can be understood as trying to align peregrines with a new sense of urban order. This occurs through particular urban space-times being enacted in certain ways to enable peregrines to live well, to limit potential human-peregrine conflict, and to encourage people to perform certain 'benign' ways of relating to the birds. Certain aspects of how particular urban space-times are already being enacted and 'ordered' by others – e.g. large numbers of people passing by, existing facilities and resources – means that some urban space-times in particular are attractive to conservationists as places where people engagement activities can successfully enact relations (and urban areas) in other ways and rework ideas of urban order to include peregrines.

Peregrines do however (through killing pigeons) appear to create disorder for a small group of people, namely those people who keep and race pigeons, thus demonstrating how differing ideas of order and different 'realities' (amongst humans, as well amongst humans and birds) can exist simultaneously. A minority of these people are thought to pose a risk to peregrines and to have destroyed eggs and killed chicks and adult birds as a way of restoring their own sense of order between bird species. This in turn creates disorder not just for peregrines themselves, but also for conservationists and others who value peregrines as protected and special, and so elicits further enactments in the form of protection measures. Persecution of peregrines is not in itself a uniquely 'urban' issue, though the possibilities for certain kinds of order and disorder to be enacted through human and peregrine practices of killing are contingent on (and constitutive of) different urban space-times – e.g. accessibility of buildings, popularity of pigeon keeping in particular areas, and so on.

This process can also be seen as one where relations are enacted in certain ways by certain actors, and these enactments are to varying degrees successful, or are resisted (Philo and Wilbert, 2000, p5) by others. Considering agency and the relational ability to enact (or resist), it is for example perhaps simpler for a large organised network such as the RSPB to

promote a particular view (literally and conceptually) of peregrines in urban areas (section 7.4), than it is for a smaller, more disparate group of bird experts and council officers to control the food sources available to gulls across and beyond urban areas (see sections 7.3 and 6.5). These varying abilities to enact different things are not of course pre-given but contingent on associations and situation. Compared to what is (or would be) required to restrict food sources for gulls, organising and running a peregrine watchpoint involves working in a smaller number of space-times, with a smaller number of partners, and through currently more established organisational channels. It also involves doing something that is probably easier to promote to people, and to an extent works *with* the agency of the birds by celebrating the peregrines' activities, in contrast to seeking to restrict the activities of gulls.

A further point is the importance of hybridity (Whatmore, 2002). The kinds of associations that enable certain actions are not just those between humans, and are not just 'social', but are those between different humans and nonhumans. Birds, whilst in part having historically constituted capacities, are able to act in certain ways through their interdependence with other people, practices, places and so on. This often relates to the more obvious availability of practical necessities like food sources and nesting sites, but can also work in other ways. Black redstarts for example can be said to have agency even when (as they often are) physically absent, because of their presence politically and symbolically (Lorimer, 2008), and this agency can result in habitat considerations for the birds in terms of building design and refurbishment. In other circumstances, gulls have a strong physical presence in the form of dive-bombing humans attempting to oil or replace gull eggs, although this may be less influential in terms of improving their lifespace than the virtual presence/physical absence of black redstarts, and humans adapt their own practices in response and continue to (partly) control/stop gull lives – see the example (in 7.2.4) of pest controllers, umbrellas, and other things forming a hybrid that is able to 'resist' the gulls and enact its own agency.

These notions of differing senses of order and disorder (for humans and nonhumans), and of their production and enactment through relational, interacting, resisting and/or co-operating agencies, are key to the lively constitution of urban space-times and human-bird relations in urban areas. For people, enacting different relations often seems to involve

264

curtailing/resisting the agency of birds (and also of humans and other nonhumans) in some cases, and involves increasing it in others. Yet deciding *which* enactments support better relations is a complex question, both ethically (which kinds of enactments can be seen as good or bad), and practically (what things are more or less possible to enact in particular situations).

8.2.4 Ethics

As has just been highlighted, the kinds of relations that are enacted by different people, and decisions regarding what kinds of relations should be enacted in future (to produce 'better' relations), are influenced by ideas of what is practically possible and what is ethically acceptable. Ideas of acceptability are not singular but arise from varyingly formal/informal, close/distant and lived/abstracted relations between different subjectivities, being influenced both by different people's attitudes towards different birds, and by more generalized codes that derive from particular moral, legal and even ecological standpoints (which can be thought of as 'modes of ordering' – see Law, 1994).

Different people have differing attitudes to birds in urban areas because of two main factors. Firstly, there is the degree to which certain bird species (or individuals) impinge on the perceived regularity and order (see 8.2.3) of people's lives, which can influence people's tolerance of them. Secondly, there is the degree to which certain bird species (or individuals) are afforded status and 'specialness' by people, which will vary according to different knowledges and ideas of birds, the kinds of interactions people have with different birds, and the physical appearance and habits of birds, which shape ideas of rarity or commonness, and of 'positive' or 'negative' charisma (Lorimer, 2007; see 7.4.2).

Ideas of acceptability that arise from people's attitudes can be challenged or supported by more general legal, moral and ecological codes. Legal codes include legislation relating to what kinds of actions towards birds are permissible, such as Acts that confer protection and general licences that allow for some forms of control of certain birds. Ecological ideas are embedded within legal codes but can also be influential outside such codes through people's notions about how the world functions (or should function) ecologically and the place of particular humans and nonhumans within it. Moral codes include the notion of

'humaneness' that influences the kinds of actions some people take, and is used to critique some actions and support others.

The significance of these different codes varies as bird-human interaction varies. For example, peregrines are regarded as special birds by many people, and they do not disrupt to a great degree the order of human lives in urban areas. Where they do sometimes disrupt people's sense of order, for example by disrupting building or maintenance work through their presence as protected birds, or through being perceived by some pigeon fanciers as the cause of pigeon fatalities (and therefore as perhaps legitimate targets for killing under a particular code of ecological or moral behaviour), other people make efforts – because of the birds' 'special' status – to try to prevent any harm or ill feeling towards the birds. By comparison, though gulls are liked by some people, they are not generally afforded the same degree of 'specialness' as peregrines and do not generally inspire the same degree of affection. Legally it is permissible to control gulls in some situations, although some actions are still considered unacceptable by many due to notions of humaneness and welfare standards - e.g. egg oiling/replacement is often described as a humane control method, even though it technically involves the ending of a life. Thus notions of what is acceptable with regard to gulls are often quite different from those with regard to peregrines.

Ideas of acceptability, and thus the ethics of human-bird relations in urban areas, are heterogeneous and *relational* (Whatmore, 2002). They are also dynamic, arising from particular relations between differing subjectivities, things, places and ideas, and vary between different space-times. Indeed, ideas of acceptability have changed historically (such as the general move from culling gulls towards egg oiling/replacement and other methods), and continue to change as relations change. Heterogeneous ethics are thus integral to the constitution of human-bird relations in urban areas, with ideas of acceptability influencing notions of order and disorder and more directly the life chances and populations of birds, and, once again, offer both problems and opportunities in the search for better relations.

8.2.5 Urban areas

As I noted earlier (chapters 3 and 4), much conservation and geographical work exploring human-animal relations has focused on wild and rural areas – a focus that has been critiqued for often ignoring the wildlife closer to home (Cronon, 1996; Whatmore, 2002). More recent work has sought to engage with animals and natures in urban areas but much of this has focused on (broadly defined) 'green' spaces and animals that are conservation priorities. I have sought in part to focus on wildlife and/or places generally less considered by the social sciences, and importantly to address the differing, uneven, contested relations that occur between people and differing kinds of wildlife in other kinds of urban spaces. Perhaps the most distinctive aspect of this thesis is its focus on wildlife in urban areas, and more specifically on wildlife that shares some of the more built up places in urban areas, and indeed buildings themselves, with people. In this section, I will therefore consider what urban areas themselves, particularly built up areas and buildings, and different enactments of the urban, mean for the constitution of relations (and for the pursuit of better relations).

First, I want to stress that urban/built up areas are not unique in any essentialised way (as I wish to avoid reinforcing urban/rural dualisms). Yet urban areas, like any areas, are unique in the relational specificities that co-constitute them, and in how they make different kinds of relations possible. What matters is how differences *and* similarities are relationally produced.

Second, I wish to highlight, or to an extent re-emphasise, the notion of 'dense multiplicity'. Urban areas do not necessarily have a monopoly on heterogeneity, complexity and multiplicity, but they are places where particular kinds of heterogeneity, complexity and multiplicity are at play, and are places where such factors can perhaps be more apparent than in other places (Hinchliffe and Whatmore, 2006) and can often be seen as more intense and concentrated (Amin and Thrift, 2000). This 'dense multiplicity' of urban areas is in part what initially made human-bird relations in urban areas an interesting research topic to investigate, via the notion of uneven relations being enacted through different people, birds, and space-times within towns and cities. My research has helped emphasise further the importance of this dense multiplicity to the constitution of urban space-times and relations, through not only highlighting the concentrated heterogeneity of humans, nonhumans, space-times, knowledges and practices involved, but also through showing how the

practical, legal and ethical 'access' needed to enact relations is varyingly assisted and/or hindered by the dense multiplicity of different physical structures and spaces, property ownerships, ethical standpoints, attitudes, interests and practices in urban areas. It can thus be difficult to 'get at' the birds (in different senses) to produce knowledges – e.g. following black redstarts through cities and being able to see or hear them well is problematised by noise, obstructed lines of sight, and the birds moving through spaces that people are less able to move through (see 6.3) - or conduct management – e.g. egg oiling/replacement work to control gulls tends to occur on rooftops that are easily accessible (see 7.2). On the other hand, the large number of people in urban areas who move through particular spaces help make 'people engagement' activities that show people peregrines easier to enact and more successful (see 7.4).

Dense multiplicity also affects the ability to enact relations in a particular way across wider urban areas - e.g the ability to redesign, rework and enact large areas of towns and cities (to make them more or less amenable to different birds) is limited by the multiplicity of interests and ownerships bound up in already existing buildings (see 7.3.5). Of course, this is not to say that each place, built area or building is a law unto itself – different organisations and authorities have varying levels of influence over what is enacted is different places – though many of the issues relating to the dense multiplicity found in urban areas remain important for the constitution of relations.

Thirdly, there is the notion of birds 'becoming urban' that was discussed by some interviewees (see 6.4.5 and 6.4.7). This notion is important in two ways. For one thing, it highlights that some birds do, or are understood to, favour urban areas as places to breed and reside in (the idea often being that the urban environment was 'imprinted' on them as chicks). That some birds favour and seek out urban areas is obviously of importance for the constitution of relations and urban space-times. In another sense, it is important as a means by which some people understand and thus 'order' different birds. Whether or not the notion of birds 'becoming urban' is actually 'correct' (and it can perhaps be critiqued as essentialising some birds as 'urban'), it does nevertheless, as a way of ordering the world, have the potential to have effects in how relations are enacted. Thus for Peter (see 6.4.7) his ringing research is suggesting that a certain subset of gulls are changing over time to almost exclusively breed in urban areas, which he suggests will exacerbate existing gull 'issues' in

towns and cities, and which is prompting him and others to call for particular research and management strategies. Such a categorisation of some gulls as 'urban' – if it finds wider acceptance - could in the future potentially lead to (already diverse) management practices being enacted on particular groups of birds in particular ways.

Fourthly, and taking things further analytically, I want to discuss the importance that different approaches to buildings and built up areas have for the constitution of relations, and the potential importance they have for better relations. There are three aspects to this that I wish to discuss.

One: in built up areas, and (varyingly) on/around/in buildings, birds and people can end up living (for some of the time) alongside each other in close proximity. Here, wildlife can stop being something that most people only relate to at a relative distance – and which is generally just observed as a thing of interest in urban green spaces, in the countryside or on television – and can also for many people become something that is more materially (and symbolically) present in their lives, and which can have material, emotional, legal and financial effects. Likewise, the birds are also affected by their close proximity to people. This is not to argue that effects on and between people and wildlife only occur close up – see for example Whatmore's (2002, p9-57) discussion of the topologies of wildlife – but I do contend that the particular and sometimes 'close-up' ways in which many people and birds share built areas and buildings does affect relations, with some birds and people literally becoming neighbours who do or don't get along. Close co-habitation can emphasise the importance of trying to find better relations and produce a new "Constitution" (Latour, 1993, p138-145) that seeks to involve nonhumans in politics by "re-cognizing the place of the wild on the 'inside' of this shared dwelling place" (Whatmore, 2002, p31).

Two: urban places are often thought of as being made (and subsequently controlled) *by* people and *for* people - as 'artificial' rather than 'natural'. This perspective is, for example, blamed in part for the difficulties urban nature conservationists encounter in procuring funding and wider involvement for urban wildlife projects. Such anthropocentric ideas of buildings and the built environment have been critiqued from more relational perspectives that emphasise notions of human and nonhuman dwelling and process (Ingold, 2002;

Gieryn, 2003; see 7.3). 'Nature' and wildlife can for some people be unexpected in such places, or can be seen as being out of place, presumably belonging elsewhere such as the 'green' spaces of cities or even outside of urban areas. Unexpected wildlife in the built environment can be welcomed – people may find the urban presence of peregrines 'fantastic' (see 6.2 and 7.4) - but can also be unwelcome, and some people for example may think that gulls don't belong in cities but belong by the coast, reflecting differing enactions and orderings of the urban.

Three: since many people do not see built areas as 'natural' but as 'artificial' they are often less subject to ideas about what should 'naturally' be there, unlike in parks, urban nature reserves or the countryside where standard habitat types are sometimes created and/or conserved. Highly built up areas are thus (somewhat paradoxically) places that can sometimes enable more free experimentation in terms of how people and wildlife make use of them and live alongside each other within them. Such 'experimentation' can occur elsewhere of course, though my point is that ideas of naturalness are potentially less restrictive in a city centre: spaces for wildlife, and ways of living together, may (in some ways at least) be more creative and innovative, and open to ontological possibilities, than elsewhere.

'Experimentation' defined in a broad sense involves the open-ended ways in which human-bird relations come to be constituted in urban/built up areas, and includes the many changes to birds lifespaces (see 7.3) that are made in attempts to assist or deter birds. It can mean birds opportunistically making use of the built environment in certain ways and people responding to these usages. In a more specific sense, experimentation can mean the deliberate pursuit of better relations through alterations to how buildings and built areas are perceived and enacted, and through taking birds more fully into account in the design and practice of built areas – though of course experimentation (of humans and nonhumans) in the broader sense will be important in how such deliberate efforts play out. Though some people may have fixed ideas of what buildings and built areas are for and how they should look and work, other people *are* open to a wider and experimental sense of what buildings and built areas are and could be about, and this has enabled changes to be made to built areas such as green roofs on buildings (7.3), or buildings being designed to not have certain features like ledges to design different birds 'in' or 'out'. Of course, this in itself

(re)produces uneven geographies of human-bird relations, and is based to a large extent on the production of particular kinds of order, but it also (selectively) makes space for particular kinds of liveliness and others that do not produce too much disorder. The scope for experimentation in urban/built areas, and of being open to possibilities, allows room for better relations to be developed, involving innovative, creative uses of buildings, built areas, and indeed other urban spaces that not only rework the material structures and practices of such spaces, but also try to (tentatively) understand such spaces from human and bird perspectives.

8.3 Living with difference, and seeking better relations

Having discussed the ways in which different human-bird relations in urban areas – and urban space-times - are constituted, and having also highlighted some issues, problems and opportunities for improving these relations, I now wish in this section to summarise what better relations might, and might not, mean.

Relations are uneven between different people and different birds, with some birds – through their own actions and/or through the efforts of others – being or becoming more accepted within urban areas and urban life than other birds. Relations thus currently involve people finding ways of making 'places' (in different senses) for some birds but finding ways of denying 'places' for other birds. For the most part, these endeavours have been approached in a reactive, ad hoc way, where birds have been merely an *afterthought* in peoples' enactment of the urban, rather than as part of a pre-emptive 'plan'. This has produced limited successes in terms of practically assisting or controlling different birds, has sometimes involved ethically questionable practices in how some birds have been treated, and has (from a theoretical perspective) often failed to more fully engage with birds as agents and subjects.

A more 'progressive' alternative approach, already promoted in different ways by some practitioners (see 7.3.5), is to take birds more fully into account in the design and practice of urban areas, which would move them from being an afterthought to a designed in (or designed out) and acknowledged component of urban planning and politics. The hope is that such an approach would, in particular, more widely and pre-emptively affect the

271

lifespace conditions of different birds in urban areas, and be more effective at assisting/encouraging some birds, and at preventing disorder and conflict between people and other birds (by effectively preventing their co-presence). On the one hand this kind of progressive approach is broadly speaking ethically preferable, in that it takes birds more seriously as fellow inhabitants of urban areas (thus chiming with non-anthropocentric relational theory) and seeks to produce relations where conflict and the need for certain ethically suspect practices is largely negated. On the other hand it is limited in terms of its practical capabilities to pre-emptively deal with unintended effects and the uncontrollable complexities involved in relations, and is also ethically contentious in that it partly (re)produces the uneven geographies of human-bird relations in urban areas by seeking to include some birds and exclude others.

Ethically there seems to be a choice between notions of inclusion in a 'collective' (Latour, 2004a – in this case an urban collective), and notions of order (and reduction of disorder) within urban areas, as being the means to adjudicate what better relations should be. However, a 'right' to inclusion implies an extension of a traditional, homogenous set of rights to birds, which as discussed earlier (see chapter 4) are theoretically suspect and practically problematic to enact. Thus inclusion in urban areas should not necessarily be seen as a 'right' as such, but as something that comes to be worked out in specific circumstances between different birds, people and others. Also, urban areas are not bounded collectives but are permeable, where different humans and nonhumans (especially some birds) move in, though and beyond them, and can themselves *become* different through living in and/or beyond them. Thus the idea that inclusion represents some permanent settlement of relations is false. Similarly, the idea that certain kinds of order can be forever established is also false.

I contend that better and *imperfect* relations should involve broadly following the more 'progressive' approach that seeks to take birds more seriously in the enactment of the urban, whilst accepting (as some practitioners already have, e.g. 7.3.5) that complete control of human-bird relations is impossible, and that managing situations as relational and in process is key, rather than trying to settle relations once and for all. It is an approach to living with others that, as suggested by Hinchliffe (2007, p191-192), acknowledges the need both for codes *and* an openness to difference, that is necessarily partial and

provisional, and that involves a continual renegotiation *of* codes and boundaries – what Lulka (2004, p461) refers to as a "slip-fault" approach. Order and/or inclusion, whilst not being necessarily possible or even desirable in all cases, and whilst not being 'rights' as such, are broad goals that can be sought after through management that is *creative* and *experimental* – human-bird relations in urban areas themselves being in many ways experiments. This follows Latour's call for "collective experimentation" (2004a, p223; see also Whatmore, 2002, p146-167, and Hinchliffe, 2007, p186-192) by a myriad of humans and nonhumans to work out better ways of living together, and also follows existing practical examples of how humans, birds, urban/built areas and others have experimented to produce different, better relations.

Taking birds/animals more fully into account is, and will remain, a key issue in the search for better relations between humans and nonhumans. Some of the issues involved have been and continue to be explored by theorists (e.g. Hinchliffe *et al*, 2005) and practically engaged with by bird researchers, and indeed have been considered in this thesis. Beyond reiterating the need for continued and diverse research I do not wish to say much more on this subject here. One specific point from the thesis I do want to highlight here (see 7.3.3) is to suggest that tentatively and experimentally exploring the ways in which birds *may* perceive different aspects of urban areas – through working with animal scientists and others who have different knowledges and perspectives - could prove useful in better understanding birds' use of urban space, and in managing that space.

What I wish to promote, and re-emphasise, in particular in this section are the experimental possibilities of buildings and built areas, and of heterogeneous urban space more widely, as means to pursue better relations, and to hopefully enable relations to move further away from a perceived need for ethically suspect practices of killing and egg destruction. As discussed earlier, buildings and built up areas can be viewed in less anthropocentric, and in more relational and open-ended ways. Including birds in the design and practice of buildings and built areas is important. There are possibilities to take current efforts to change these places (to make them more or less amenable as appropriate) and experiment with them much further. This could include not only making more spaces for birds that are currently favoured by many people, but could also include the more effective removal of spaces for other birds where necessary, and perhaps even include finding ways of enacting

273

buildings that allow people and birds such as gulls to co-exist to an extent with less disorder and conflict. A greater consideration of how birds perceive and relate to their urban lifespaces, as highlighted above, would be one important aspect of such experimental work

Beyond focussing on particular buildings or built areas, I suggest that a more creative use of heterogeneous urban space would be a useful tool in pursuing better relations. This would involve much wider planning and management strategies (of the kind that for example are currently seen to be generally lacking in gull management in urban areas), and also an openness and reflexivity to change. One example can be seen in the 'black redstart priority area' drawn up by the Greater Manchester Biodiversity Partnership (see 7.3.3), in which a large area of central Manchester has been designated as such, thereby working with the possibility of black redstart presence (rather than just 'actual' recorded presence) in this area as a means of procuring green roofs and of taking the birds more into account.

Of course this example is about trying to include and assist particular birds. In the case of birds such as gulls that do not need this kind of 'assistance' as such and that sometimes conflict with people, a possible approach might be to acknowledge that gulls are not an issue to the same degree in all parts of urban areas, and that this heterogeneous intra-urban geography of human-gull relations should inform management to a greater degree. Management work could be targeted more on what some people refer to as 'problem areas', such as the residential and retail areas where people live and work, and be less targeted on other areas where gulls are less of a pressing issue (and where perhaps more tolerance/order could be promoted and worked towards). Currently, some local authorities target their control work on places that are accessible and easier to deal with, such as industrial areas, rather than on places such as residential areas where the most conflict occurs and which are often less easy to deal with. Whilst this approach of authorities is understandable to an extent, being based partly on a belief (critiqued by others) that they can effectively control local populations, and partly on resource issues, a desire for 'value for money' within councils, and a perceived need to do something quickly, it is in many ways a short term approach, and does not constitute a more long term strategy for 'living with' gulls. A strategy involving better use of diverse urban space, though difficult, could potentially do

this in the long term, and in more general terms is an approach that could be of use in other ways and in other human-bird relations.

A final point that I wish to make here regarding better relations relates to the ways in which urban areas are linked to, and not separate from, the wider world. Human-bird relations in urban areas do not exist in isolation – something many of those involved in the knowledge and management practices considered in this thesis are well aware of. Yet these relations are sometimes approached as if they are somehow separate, notably in the case of gulls. Notions of birds 'becoming urban' notwithstanding, the birds, and the relations, considered in this thesis are affected by, and themselves affect, places 'outside' of urban areas, in part due to the movement of the birds and their reliance on other places at other times. Though gulls in urban areas to an extent have been and are managed as if they were a separate issue from gulls elsewhere, this state of affairs is becoming increasingly untenable – herring gulls for example have recently been removed from some of the general licences permitting their control due to conservation concerns about an overall decline in their population (though some control remains permissible, including egg and nest treatment/removal for public health and safety reasons, thus allowing some urban control to continue) (Natural England, 2009). The main point here is that better relations should not just be about 'living together' (or not doing so) within a particular place, but have to also take account of such wider issues. It may be that gulls in urban areas become increasingly of conservation importance themselves if gulls elsewhere continue to decline, and relations will have to be reworked accordingly.

8.4 Future research

This thesis has examined the ways in which particular human-bird relations in urban areas are constituted, and has considered some of the possibilities for improving these relations. Many questions of course remain, and indeed have arisen from this research. Some of the broad areas where future research is required have been highlighted elsewhere in the thesis, and are already (in differing ways) the concern of many theorists. These include exploring new ways of attending more fully to the subjectivities of nonhumans, and how they are shaped by and themselves shape different situations, environments and relations; further exploring the ways in which the sciences are involved in 'knowing' and 'speaking for'

animals within politics, and how the relationships between science and politics work (and how this affects different animals); and considering in more detail how certain relations come to be enacted in certain ways. Research in all these areas would help produce greater understandings of human-wildlife relations in urban areas (amongst other things), and would contribute to search for better relations.

More specifically, I would like to further pursue research that considers and engages with the experimental possibilities of buildings, built areas, and urban areas generally, as a means of reworking and enacting relations in different ways. This would include further engagement with the innovative practices of 'creative conservation' and how similar approaches could be translated to other endeavours (such as dealing with problems), and more co-operation and engagement with conservationists and pest controllers themselves, and also with architects, planners and others. An example of this would be more specific research into how green roofs and similar technologies are enacted – for instance how notions of 'best practice' from the research into substrates, biodiversity, etc are able to translate with relative ease or difficulty into actual roofs on other buildings, and how the intentions for and the form of particular roofs altered, compromised and transformed by the differing contingencies and agencies of humans, nonhumans, buildings, regulations, and other factors. Another example would be examining how practices of designing birds 'out' of buildings are similarly enacted, how ideas and designs translate into built forms and practices, and what the effects are on humans, nonhumans, relations and urban space-times.

Also of importance here would be more detailed work exploring the varied human and nonhuman geographies of buildings (and built areas), both as a means of unsettling anthropocentric readings of such places, and as a way of producing greater understandings of the problems and opportunities involved in seeking to rework them. This would usefully engage not just with birds but with a wider set of nonhumans – for instance examining the ways in which different invertebrates use buildings and are involved in varied relations with people and the built environment would further address the need to consider the practical and ethical issues involved in such little studied and theorised human-nonhuman relations and space-times.

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Appendix 1: Project Outline for Research Participants

Birds in Built-up Areas

A study of the contrasting experiences of and human relations with black redstarts, peregrine falcons and large gulls in urban areas

Background to the Research

Urban areas are increasingly considered to be important places for wildlife, and the opportunities they allow for the close interaction of people with wildlife are seen as vital for the future of nature conservation and as an important component of 'sustainability' in towns and cities. This also makes them of importance to academics within human geography and other fields who are interested in the social as well as ecological relations between humans, animals and plants.

The wildlife that is found in urban areas is not of course all of the same type, and different species are not perceived, valued or treated equally, either in official policy or by different sections of the public. Indeed, whereas some species are considered welcome in urban areas, others are generally unwelcome and are regarded as pests. My interests as a research student lie within these unequal approaches to different species, as well as the ecologies and rights of these species and the ways in which people and wildlife can 'live together' successfully.

Research Aims

The three main research interests of my PhD project are as follows:

1. What are the various ways in which urban wildlife is represented, why is this, and what does this say about the role people wish urban wildlife to play (what do they want from it)?
2. What are the experiences and perspectives of urban wildlife species themselves, in terms of their recent histories, current situations, ecological needs and their rights?
3. How well and in what ways does the concept of 'living with wildlife' in urban areas translate into practice, and can this situation be improved?

I hope to address these questions by investigating the contrasting experiences of black redstarts, peregrine falcons and large gulls (herring and lesser black-backed). I have chosen to focus on these species due to their increasing association with urban areas.

Further information

I am seeking to interview, consult and work with individuals and groups who have a working or informal interest in either urban black redstarts, peregrine falcons or large urban gulls. For more information please contact me on **07931 893 993**, or at D.J.Pedley@2005.hull.ac.uk.

Daniel Pedley, Geography Department, University of Hull.

Appendix 2: Ethical Statement

Birds in Cities PhD Project - Daniel Pedley

Ethical Statement and Consent Form

This statement of my research methods and the ethical framework for their implementation (along with relevant additions) will provide an agreed basis for how the research relationship between the individual(s)/organisation named below and myself will be conducted, and how the data arising from this relationship will be used.

How will the data be collected?
Interviews will be recorded onto a digital dictation machine. Less formal interviews during participatory work and other work in the field will be recorded in this manner where practical, though it is likely that note taking will be of greater use and importance here. Observations will be made with note taking and photographs.

How will the data be used?
Audio data will be typed up to produce transcripts of interviews. The primary use of the transcripts, notes and photographs will be in answering my PhD research questions outlined in the research summary. This work will ultimately be presented in my final written PhD thesis, and will also be used in an audio/visual presentation I will give to fellow students and staff members in Hull University geography department. A summary of my findings will be available to research participants.

It is possible that some of the data will in future be used to form the basis of papers I may submit to academic journals, and also may be used in presentations I give at other academic establishments and events.

Who will have access to the raw data and completed work?
I will be responsible for the safe storage of audio files, interview transcripts, notes and photographs. Raw data will be used by myself and will only be seen by members of my supervisory committee within the geography department. Data gathered from a specific individual or group can be made available to that individual or group for inspection if required.

Completed work that uses some or all of the raw data (PhD thesis and presentation, subsequent written work and presentations) will be available to or viewed by a generally academic audience, though confidentiality and anonymity will be factored into this work. The summary of findings will be available to all research participants and therefore a wider, non-academic audience – the same degree of confidentiality and anonymity will feature in this work.

Confidentiality and anonymity

Personal information that is not already (or not due to be) in the public domain will not be made available to anyone beyond myself and my supervisory committee.

The manner in which an individual or group will be referred to within written work and presentations will be negotiated with that individual or group. In many cases anonymity can be assured, though in the case of key experts and others whose opinions and work would render then easily identifiable this may be impractical and unnecessary. A distinction could be made between 'public' comment and 'private' opinion, where anonymity could be offered for the latter. Persons in photographs, if they appear in written work or presentations, can be rendered anonymous if requested or required by law.

Animals
In fieldwork I will seek to avoid harming or unduly disturbing animals. As part of my fieldwork may involve observing and accompanying bird researchers or those who actively control and disturb gulls in their line of work then some disturbance will be inevitable. My basic ethical position in this case will be guided by relevant legislation.

Health and safety
Where relevant to fieldwork I will make available a copy of my personal risk assessment, and will consult and follow the risk assessments provided by organisations and individuals for specific field visits.

Additional comments and conditions of the agreement (inc. manner of reference):

I have read and understood the ethical statement provided by the research student (Daniel Pedley), and have negotiated further details with him.

I therefore agree to my/our involvement with this research project and for Mr Pedley to collect and use data in the manner outlined above.

Name(s) and Organisation:

Signature(s):

Date: