Foraging in the UK: A critical posthuman study of contested knowledges and practices

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Summary

This thesis explores why foraging is a contested practice in the UK, and what this shows us about the different ways stakeholders in this debate relate to the more-than-human world. Bringing together assemblage approaches alongside critical posthumanism, I examine the material and relational forces, both human and nonhuman, that coordinate in the space of foraging to make it contested. I bring in knowledge practices and values as key forces that underlie how stakeholders respond to foraging and foraging debates. I also bring in the multitude of competing and conflicting responsibilities that individuals might experience and be affected by in the context of foraging as a contested practice. In this way, this thesis contributes to a wider literature on controversy and contestations, especially to do with land management and conservation.

My research design is influenced by multispecies ethnography (Kirksey and Helmreich 2010), and draws on mixed methods. I combine online research, walking interviews, virtual (Zoom) interviews, case study species, and autoethnography, to create a rich account of situations in which foraging can be considered a contested practice, also providing examples of best practice foraging and how it is monitored and regulated. Using 'thick description' (Geertz 1973), I tell stories of my research encounters, based around the seasons, including nonhuman agencies at the forefront of my analysis.

Having analysed the different forces that come together to make foraging a contested practice, I look for the threats and opportunities that are associated with this practice. I look at the risks of the rise of interest in foraging, while also suggesting ways that foraging could be synergetic with conservation and land management strategies. I make use of critical posthuman theory, in particular drawing on the work of Puig de la Bellacasa (2010, 2017), to explore how foraging can contribute to a 'naturecultural' awareness (Puig de la Bellacasa 2010, p. 161) and a land management ethos that promotes habitat protection, biodiversity, and access.

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Table of Contents

Table of Figures

Tables

Figures

Abbreviations

AFNs	Alternative Food Networks
ANT	Actor-network theory
AoF	Association of Foragers
CIC	Community interest company
DEFRA	Department of Environment, Farming and Rural Affairs
ECA	Ethnographic content analysis
ESRC	Economic and Social Research Council
IUCN	International Union for Conservation of Nature
NGOs	Non-governmental organisations
NRW	Natural Resources Wales
Red List	Red List of Threatened Species
RSPB	The Royal Society of the Protection of Birds
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
STS	Science and Technology Studies
TEK	Traditional Ecological Knowledge

Chapter 1: Introduction

Foraging, the hand gathering or harvesting of wild foods, has had a resurgence in industrialised countries in recent years. There is now a multitude of blogs, books, articles, and courses on the topic (de Jong and Varley 2018; Landor-Yamagata et al. 2018, p. 13). Many elite restaurants have wild foods, such as wild garlic, marsh samphire, and three-cornered leek, on the menu as highly prized products (Landor-Yamagata et al. 2018). In the UK, food security can be a motivator for some people to forage (Nyman 2019), although for many it is more about enjoyment of the natural landscape, feeling connected (Morris-Webb 2021), or about taste and fashion (de Jong and Varley 2018). Some people also practise foraging for commercial enterprises, such as restaurants or the production of wild food preserves to sell.

Although foraging is often seen as a beneficial and sustainable way of connecting with nature (de Jong and Varley 2018), it is also a potentially unsustainable practice that can be damaging to ecosystems. Foraging activities, such as the Victorian hobby collection of bearded 'red' seaweed, are said to have caused major declines in certain species throughout history (Morris-Webb 2021, p. 3). Research suggests that even further back, since Palaeolithic times, humans have contributed to biodiversity loss through the overharvesting of certain species for consumption, whether this be through hunting or gathering (Smil 2013). This overharvesting has continued alongside the development of agriculture as wild foods have always supplemented human diets (Smil 2013).

A recent report by some of the UK's leading conservation organisations has identified the UK as one of the 'most nature-depleted nations on Earth', with 40% of species in decline (Natural England et al. 2021, p. 17). Although industrial practices such as agriculture and urbanisation are usually blamed for this, overexploitation of resources, including wild foods, has been reported as one of the main threats to biodiversity (Di Minin et al. 2019). Currently, due to the prevalence of private property rather than common lands in the UK, few areas are available for foraging, which increases the potential risk of overharvesting (Lee 2012).

A number of the public concerns about foraging in the UK have been represented by the media in recent years (Reporter 2020; Morris 2022). Online forums and blogs also highlight some of the debates that circulate around foraging, such as whether local laws or byelaws

are beneficial for people and planet. For instance, there is much debate around whether foraging should be banned/limited in the New Forest National Park (Tarnoff 2016; Butler 2018; Docio no date). As Wright notes, 'people can become very disquieted over the matter of conservation and foraging' (Wright 2010, p. 22). There are also concerns about human trafficking and unfair working conditions among commercial harvesters working for illegal operations (Welford 2022; BBC no date).

Therefore, Luczaj et al. (2021) highlight that foraging in the UK is controversial, and a contested practice, as differing viewpoints about resource use and land access clash and collide. Furthermore, Morris-Webb (2021) and Luczaj et al. (2021) both acknowledge that there are multiple knowledge gaps when it comes to foraging in the UK, especially in addressing multi-stakeholder perspectives and concerns in contested spaces. Currently, studies of foraging in the UK are limited. Luczaj et al.'s (2021) ethnobotanical study of members of the Association of Foragers (AoF) is the most detailed observation of contemporary foraging practices, describing the species they harvest, their commonalities, and differences. There are a few examples from tourism studies, such as de Jong and Varley's (2018) analysis of the narratives surrounding foraging tourism. There are also one or two studies looking at the regulation of foraging and hand gathering in the UK from a legal perspective (Lee and Garikipati 2011; Bean and Appleby 2014). From a natural science perspective, there are calls for more research, as measuring the impacts of harvesting species such as shellfish on coastal ecosystems is extremely challenging (Christensen-Dalsgaard et al. 2020; Morris-Webb 2021; Tinlin-Mackenzie et al. 2022). It is clear that as the popularity of foraging increases in the UK, there is a growing need for research to inform resource management decisions.

Beyond the UK, the largest fields of academic literature related to foraging are from ethnobotanical studies and natural resource management, land management, and planning studies that explore the gathering of non-timber forest products (Robbins et al. 2008; Laird et al. 2010; Short Gianotti and Hurley 2016). Ethnobotanical studies focus on conserving Traditional Ecological Knowledge (TEK) of edible and medicinal plants from around the world (Bortolotto et al. 2015; Ahmad and Pieroni 2016; Cucinotta and Pieroni 2018; De Koker et al. 2018). Resource management studies, on the other hand, explore the threats and opportunities for human populations and ecosystems posed by the gathering of non-timber

forest products. Both fields put human knowledge practices and economic and intellectual interests at the centre.

In response to the limitations of human-centred approaches, within the geographical sciences there is a growing interest in posthuman research methods and analysis, often termed more-than-human geographies, which decentres the human (Whatmore 2006; Miele and Bear 2022). This field of research aims to 'disturb the discipline's frequent anthropocentrism, shifting the conceptualization of agency away from the demarcated individual (human) body, and extending understandings of nonhumans beyond representations to incorporate actions, emotions, and affects' (Miele and Bear 2022, p. 5). Going further, critical posthumanism aims to decentre human interests, acknowledging that 'living arrangements that took millions of years to put in place are being undone in a blink of an eye' by human actions (Tsing et al. 2017, p. G1). Indeed, since humans are often the primary producers in the landscape, it is argued that they need to take responsibility for their actions, acknowledging the power imbalance (Ingold 2005).

Examining the contested space of foraging from a critical posthuman lens seems important and relevant. Although there are a few studies which examine foraging practices from a more-than-human perspective, drawing on theoretical influences such as political ecology, relational materialism, and actor-network theory (Staddon 2009; Poe et al. 2014; Nyman 2019), currently there is a lack of critical posthuman studies on this topic, particularly in relation to the controversies and conflicts. Since overharvesting can be a threat to an already depleted ecosystem, it seems pertinent to take this matter seriously, and to engage with the complexity and agency of the nonhuman world. In Chapter 2, I outline these knowledge gaps and explore the study of topics such as controversy and care, which are relevant to this research.

This thesis, therefore, discusses foraging as a contested practice in the UK, focusing particularly on the highly populated southern regions. To gather data, I used mixed methods under a broader multispecies ethnographic approach, which I describe in detail in Chapter 3. I focused on interviewing human stakeholders involved in cases of conflict, as well as foraging teachers and conservationists who experience and live the contested practice of foraging within their work. Online research often provided me with a starting point to know where and who to involve in my search. Additionally, the method of autoethnographic

journalling enabled me to understand the complexity and contradictions that can be involved in the inner world of a person who is interested in foraging, sustainability, and conservation. To engage with the nonhuman stakeholders who are involved in the spaces in which foraging is contested or practiced, I used audio-visual methods.

I analyse this data through looking at the coordinations (Gan and Tsing 2018) and territorialisation (DeLanda 2016) that take place in the contested space of foraging. Since foraging is a seasonal activity, and since this thesis foregrounds nonhuman agency, the empirical sections in Chapter 4 are presented in line with the seasons, looking at the relationships and complexity surrounding foraging and conservation conflicts through the lens of assemblage and affect theories. This, in turn, provides the foundation for a discussion about the material and relational forces that surround the contested practice of foraging, enabling an understanding of the bigger picture from a posthuman perspective. In Chapter 5, I use this foundation in relation to concepts such as nonhuman charisma (Lorimer 2015), territorialisation (DeLanda 2016) and care (Mol and Law 1994), which provide a framework to understanding why foraging becomes contested in certain contexts. Using these concepts brings together assemblage and affect, showing how nonhumans and humans dwell together and are moved by one another.

This discussion also provides a basis for analysing the overlaps that exist between foraging and conservation practices, and the establishment of new ways of relating. Indeed, it would be unwise to think constructively about how we can live more sustainably without first considering ordinary situations in which foraging is made contentious, and the complexity of forces surrounding this. In this way, I seek to understand what is occurring in the contested space of foraging, who is involved, and why and how.

The empirical section in Chapter 4, therefore, is followed by a discussion about the knowledges, values, and ways of relating that surround foraging as a contested practice. I critically examine ways of relating that contribute to foraging as a potentially damaging practice. However, in the discussion in Chapter 5 I also draw out ways in which foraging as a practice can be beneficial for engaging sustainably with the more-than-human world, thinking about it as an opportunity rather than a threat. Following Puig de la Bellacasa (Puig de la Bellacasa 2010, 2017, p. 130), I explore how foraging can engender an ‘alterbiopolitical’ ethos which could bring together foraging and conservation for land management. I

recognise the benefits of foraging in contemporary times and think about how we can harness the opportunities of this practice, while reducing the threats.

This thesis, therefore, contributes to the field of critical posthumanism, which explores and offers insights into how humans relate to the nonhuman world (Puig de la Bellacasa 2010; Tsing 2010; Puig de la Bellacasa 2017; Tsing et al. 2017). I also present suggestions for the formation of new ways of relating, based on the findings of this study, which could influence land management projects and the monitoring of foraging. I employ and develop an experimental method of analysis, drawing on assemblage approaches (Bear 2013; Kleinherenbrink 2015; DeLanda 2016; Gan and Tsing 2018) to contribute towards progress in posthuman methodologies.

Chapter 2: Literature Review

This chapter situates this research project in relation to four interlinked sub-fields within academic research; contestation and controversy; posthumanism, knowledge practices, and ways of relating and caring. These sub-fields of research have been chosen to provide a framework for studying foraging in the UK as a contested practice, situating it within theoretical trajectories that guide the analysis. Throughout these sections, where possible I have included previous research which has examined controversies or conflicts surrounding wild food industries and conservation projects.

I begin this review by examining the context of foraging in the UK in greater depth (section 2.1) before moving on to the theoretical approaches. Section 2.2 explores the topic of contestation and controversy, which, in section 2.3, I relate and explore through the lens of posthumanism, thinking about the ways in which controversies have been studied within this field. I then move onto examining literature about knowledge practices and ways of relating, particularly in relation to contestations around conservation and wild food industries, as well as local vs. scientific knowledge claims (section 2.4). This leads on to an exploration of the literature surrounding caring, particularly posthuman studies, in section 2.5, looking at how care is inherently contentious and contested, particularly in relation to land use and management and relationships with nonhumans. In section 2.6, I show how I contribute to these fields of literature, presenting three research questions that build on this literature and guide this enquiry.

2.1 Contextualising foraging

As stated in the introduction, I am using the term foraging to mean the hand gathering of wild foods, although the word itself has a number of different meanings, applications, and associations. The oldest root of the word forage is the French *forrage,* which refers to cattle fodder as well as the verb meaning pillaging, looting, and hunting about for (Harper 2020). In contemporary English language, according to *The Britannica Dictionary*, the meaning is associated with an animal eating growing grass or other plants and is associated with grazing as well as the act of collecting (The Britiannica Dictionary 2024). On the other hand, in the *Oxford Learner's Dictionary*, to forage in contemporary English means searching for food,

and it can be applied to humans and nonhumans (Oxford Learner's Dictionary no date). Furthermore, when applied to humans, this specifically indicates that they are searching for something using their hands (ibid). This later definition distinguishes foraging from hunting or fishing, as although they are also ways of searching for food, they involved the use of more complex technologies rather than the use of hands to collect or gather. Hunting and gathering, a phrase used by anthropologists to refer to peoples reliant on wild foods, also makes this distinction (Widlok 2020). Foraging, therefore, is associated with the gathering part of this term, rather than the hunting (or fishing).

There are communities in the UK where foraging is an important part of the lifestyle, and has been practiced by families for generations (Tinlin-Mackenzie et al. 2022). Indeed, contemporary foraging in the UK is considered a combination of TEK and modern practices (Luczaj et al. 2021), enabling people to reconnect with what they perceive as traditional ways of being and relating. The term hunter-gatherer is also used among foragers to refer to pre-agricultural lifestyles and ways of being associated with this, which foraging can reinspire (Campbell 2012).

The concept of TEK is associated with the field of ethnobotany and ethnomedicine which aims to document species and practices that are used as foods and medicines across the world (Bortolotto et al. 2015; Ahmad and Pieroni 2016; Cucinotta and Pieroni 2018; De Koker et al. 2018; Pawera et al. 2020). TEK refers to local knowledge that some scholars have argued is disappearing in the context of globalisation and industrialisation (De Koker et al. 2018). It has been suggested that the preservation and encouragement of TEK may benefit human health (Pawera et al. 2020), cultural diversity, and species diversity (Bortolotto et al. 2015).

Unlike other parts of the world (Ahmad and Pieroni 2016), in the contemporary context in the UK, there are very few people reliant on foraging for survival. Most people who forage are supplementing their diets usually supplied by industrial food systems or other Alternative Food Networks (AFNs), or for income. However, members of the AoF have been researching the health benefits of eating only wild sources of food through citizen science studies, as a way of proving the value of doing this (Wilde 2023).

There is also a renewed interest in foraging among those who do not have a history of foraging with their families. Foraging is gaining popularity as an activity to connect with local landscapes when on holiday, and wild food on the menu a way to taste the local *terroir* in the UK (de Jong and Varley 2018). It is often seen as a way to live more healthily, ethically, and sustainably (NatureScot no date). In this context, in the UK the term foraging has taken on a contemporary cultural significance, and is described in many books, for example *The Foragers Calendar* (Wright 2020). There are a number of species that are considered particularly desirable, especially when prepared in certain ways.

Many articles from online news sources correlate the rise in interest in foraging in the UK with the COVID-19 pandemic. News articles reported an 89% rise in social media interest in foraging between 2020-2021, and linked this with people wanting to spend time outdoors as well as restauranteurs promoting wild foods on their menus (Bramley 2021; Cole 2021). Totally Wild UK, who runs foraging courses, reported a 25% increase of traffic on its website, for example, between 2020-2021 (Bramley 2021). NatureScot, on the other hand, links the rise in popularity to people's awareness of climate change and interest in low-impact lifestyles (NatureScot no date).

Increasingly, there are news articles about the risks associated with a rise in foraging activities (Greenfield 2019; BBC 2022; Morris 2022; Horton 2023). Mushroom harvesting was reported as a risk to wildlife in a Guardian article (Horton 2023) and there have been many reports about illegal commercial harvesters (Morris 2022; Welford 2022), some having been fined or taken to court for their foraging activities (Bawden 2015; Cowen 2021). Commercial foraging has also been linked to modern forms of slavery (BBC no date).

Indeed, with a rise of interest in wild food, there's a growing commercial foraging industry in which wild foods are harvested for restaurants and high-end foraged products in the UK. Commercial foraging, unlike foraging for personal consumption, is illegal without landowner permission (Theft Act 1968) – although it is particularly difficult to regulate.

As Lee (2012) explains, foraging rights are complicated and generally overlooked by the legal system in the UK. There are a number of different regulations that overlap, making foraging law and regulations complex. As Wright puts it, it has 'never been an entirely settled matter' (Wright 2010, p. 25). For instance, it is necessary to obtain permission from a landowner to

forage on their land (Countryside and Right of Way Act 2000), yet it is not considered a crime unless you uproot a plant, which is judged as theft (Theft Act 1968) (Lee and Garikipati 2011). There is a common right for people to collect 'fruit, flowers, fungi, and foliage' under the Theft Act 1968 for personal use, as long as it is growing wild (Wright 2010, p. 26). However, foraging without landowner permission is an act of trespass, a civil offence rather than a legal offence, and landowners are allowed to remove foragers from their land by force if necessary (Countryside and Right of Way Act 2000) (Wright 2010; Lee and Garikipati 2011). Therefore, although foraging can be entirely legal, the activity is restricted by land and property laws and foragers can be penalised for committing a civil offence if they do not own the land or ask for the necessary permissions.

However, foraging of certain species or in certain areas is illegal. For instance, under the Habitat and Species Directive, byelaws to protect specific habitats and species can be created (Lee 2012). This means that it is illegal to damage or harvest any protected species on a Site of Special Scientific Interest (SSSI) or a species under Schedule 8 (Wildlife and Countryside Act 1981) (Wright 2010). Furthermore, certain sites such as Epping Forest have a byelaw that bans the picking of fungi (Dann 2017). Rangers patrol certain areas, fining harvesters that they catch in the act, but whether this is enforceable by law is a somewhat grey area.

Yet, foraging is notoriously difficult to monitor, and rules and restrictions are often ignored or are ineffective (Morris-Webb 2021). Many conservation organisations produce codes of conduct and other educational materials to help people forage carefully, for example, Natural England's code of conduct for seaweed harvesting (Bailey and Owen 2014). Overall, due to the difficulty in regulating foraging, as well as the complexity of access and common laws, a number of disputes emerge around foraging each year.

Overall, from the grey literature mentioned above it is evident that there are some concerns about the rise in foraging in the UK, in context of the difficulties in monitoring and regulation of the practice. Journalists have reported various controversial topics around foraging such as habitat destruction and threats to non-human species, as well as illegal commercial harvesting. In addition, scholars have suggested that more research should be undertaken in context of foraging as a contested practice (Luczaj et al. 2021). In this way, the topic of foraging practices sits within a wider field of literature that looks at contestation and

controversy. It is also an opportunity to develop posthuman approaches as it is directly linked with multispecies relationships and entanglements. Having explored the context of foraging in the UK, I move on to presenting these thematic and theoretical trajectories, which, in turn, enable me to build a framework through which I examine foraging as a contested practice.

2.2 Contestations and controversy

One of the key themes in my study of foraging is contested space and controversy. As Luczaj et al. (2021) show, foraging as a contested practice is an underexplored topic. This topic, therefore, provides me with an angle from which to contribute to wider research around controversy and contested practices, particularly when it comes to land management and land use, thinking about the formation of mutual understanding and synergies. It also offers an opportunity to contribute to the field of posthumanism, and in particular critical posthumanism, which is the focus of the following section (2.3).

Controversies are debates in the public sphere which involve multiple, often conflicting, opinions and feelings between different stakeholders. The word 'controversy' is often used synonymously with the word 'contestation', although the latter suggests a greater disagreement between different parties (Caffyn 2020, p. 13). In general, the word controversy is used more often than contestation within academic research (ibid 2020). However, in this research, I am mostly referring to foraging as a contested practice rather than a controversy, as it is less of a debate in the public eye than a practice which can cause conflict between different stakeholders. Nevertheless, researching controversies is central to Science and Technology Studies (STS) and posthuman research, and thus this field is relevant and interesting to my research into foraging and conservation conflicts.

Callon et al. (2011) explain that controversies, and the processes in which they are discussed, are 'powerful apparatuses for exploring and learning about possible worlds' (Callon et al. 2011, p. 28). Controversies are necessary and can be beneficial, as they expose complicated and potentially problematic issues that may otherwise have gone unnoticed (Caffyn 2021). Foraging in the UK involves multiple controversies and therefore this topic offers an opportunity to investigate multiple worlds that unfold and meet in these spaces.

Within academic research, social constructionism and symbolic interactionism are two interrelated theoretical approaches that have a significant place in anthropological thought and practice (Burr 2015), and therefore in the study of conflicting values and contested spaces. They are based on the philosophies of Durkheim and Weber, which state that there are certain cultural facts in society that bear no resemblance to objective reality and form the basis of social interaction and how life is experienced (ibid 2015). Social constructionists generally view social problems and disputes as something created and recreated through social discourse (Berger and Luckman 1967; Ibarra and Kitsuse 1993). This theory inspired a field of social problem research, focusing on the claims-making activities of various institutions and the impacts of these (Weinberg 2014). Symbolic interactionism's main premise, on the other hand, is that culturally and historically specific language, gestures, and ritual are the main expressions of experience (Carter and Fuller 2016). The symbolic interactionist attitude towards resource conflict would, therefore, be based on difference in language, symbols, and the worldview between cultures. Both theories resonate strongly with the idea of cultural relativism, originating with the work of Boas (Caduff 2011), which sees problems as something socially and culturally constituted rather than objective.

An example of how these theories have been used to explain differences in environmental values and land practices can be seen in the work of Strang (1997). She explains the difference between Aboriginal peoples' and white cattle farmers' values and land use strategies, arguing that human-environment relationships are culturally constructed (Strang 1997).

Despite the fact that social constructionism and symbolic interactionism still influence work in social science, especially around conflicting values, there has been an overwhelming amount of criticism in recent years for the way researchers using these epistemologies separate the idea of culture from that of nature (MacNaghten and Urry 1998; Ingold 2000; Hinchliffe 2007; Haraway 2008; Latimer 2013; Latimer and Miele 2013).

The reaction to this by academics has produced a plethora of work in the field of research about more-than-human and visceral approaches to practices (Hayes-Conroy and Hayes-Conroy 2010; Dowling et al. 2017). More-than-human is a term used by geographers to refer to research which decentres the human (Miele and Bear 2022). This links to the broader field of posthumanism that emerged as a response to disillusionment with 'human

exceptionalism' and the concept of the 'Anthropocene' within the social sciences (Ulmer 2017; Miele and Bear 2022, p. 3). The aim of posthuman research is to focus on the affective agency of nonhumans, rather than representations (Miele and Bear 2022). Posthumanism's main assertions are that knowledges are relational, processual, and embodied, and that practices are the moments in which multiple bodies, tools and materials collide (Ulmer 2017). From this standpoint, human activities can only be understood in relationship with others, both human and nonhuman, animate and inanimate. This has an impact on the way that controversies and conflicts are understood – and rather than being about discourse or symbology, they are about material relationships between different agencies. Dualisms such as nature-culture and body-mind are thus rendered irrelevant (Latimer and Miele 2013). Despite adherence to these basic ideas, there are many nuances and avenues within this field, which are further explored in the next section. This leads on to a discussion about how contestations and controversies have been approached by scholars working in the field of posthumanism.

2.3 Posthumanism

Although geography has 'never been comfortable with the all-too-human worlds of social science' (Whatmore 2004, p. 1361), it was the 1990s when researchers began explicitly examining how space and place are co-produced by multiple species and forces (Miele and Bear 2022). This field of research explores networks (Latour 2005), or assemblages (DeLanda 2016), of different agencies (Murdoch 1997), as well as the hybridity between humans and nonhumans (Whatmore 1997; Haraway 2006). One of the aims was to dissolve the Cartesian nature-culture dualism implicit in theoretical trajectories that focus on human experience, beliefs and narratives, such as social constructionism (MacNaghten and Urry 1998; Ingold 2000b; Hinchliffe 2007; Haraway 2008; Latimer 2013; Latimer and Miele 2013). The term posthumanism is often used to describe an approach to research which recognises the symmetry between human and nonhuman agency in the production of space (Miele and Bear 2022). Symmetry is recognising that 'natural entities are not to be regarded… simply as passive intermediaries; they retain the ability to subvert the associations of the social, thereby recasting associations in new ways' (Murdoch 1997, p. 740).

Within the discipline of geography, many scholars have been tentative around using the term posthumanism, for its similarity to the problematic and disputed concept of postmodernism as well as its dismissal of any usefulness of humanist theories (Miele and Bear 2022). More-than-human geographies is often preferred as a way to label research which takes the agency of nonhumans as seriously as that of humans (ibid 2022). Within this field, there are growing numbers of multispecies, plant, and animal geographies that reflect broadly theoretical underpinnings of posthumanism, examining how humans and nonhumans co-exist, and co-produce practice, space and place (Bear 2013; Latimer 2013; Head et al. 2014).

Nevertheless, although my study contributes to this field of more-than-human geographies, I have chosen to situate it more broadly within the framework of critical posthumanism. Feminist scholar Braidotti (2013) explains that there are three types of posthumanism; the first is a moral philosophy closely linked to American liberalism, looking to establish abstract, universal moral values. The second is the analytical approach influenced by STS, which looks at webs of interdependencies between different material and relational forces (Braidotti 2013). This, in turn, sets a tone for multispecies studies and ethnographies, looking at how different species affect each other in practice (Kirksey and Helmreich 2010; Despret 2013). The third is critical posthumanism, which acknowledges the interdependencies between different agencies, while at the same time infusing a sense of urgency in the context of environmental crisis and climate change and the responsibility humans have to create new ways of relating that benefit the collective (of which humans and nonhumans are part) (Braidotti 2013). Going forward, when using the terms posthumanism or posthuman, I am referring to the second and third types that Braidotti describes.

Posthuman research often engenders a certain ethos, or ethics of research practice, linked to feminist scholarship. The practice of enlivening and noticing neglected subjectivities is a key concern within posthuman research (Puig de la Bellacasa 2012; Miele and Bear 2022). Nonhuman others, and objects, for instance, are often neglected as agents and as stakeholders within research. Yet, Puig de la Bellacasa (2011, p. 88) explains that including nonhuman agencies in research gives them a ‘political voice’. She argues that noticing and respecting the differences between subjectivities and enlivening their worlds, gives

researchers the best chance of representing without putting their own agenda at the forefront.

An example of this can be seen in lively ethographies (van Dooren and Rose 2016; van Dooren 2022) and ethnographies which story the worlds of specific species through attending to their life worlds. This involves examining and attuning to these species, to understand their movements and ways in which they dwell in the landscape, and drawing on natural science and other sources of knowledge, to enliven their worlds (van Dooren and Rose 2016). Scholars have attended to soil (Puig de la Bellacasa et al. 2019), mushrooms (Tsing 2012), and crows (van Dooren 2017) in this way.

Nevertheless, there is a general recognition among posthuman and feminist scholars that knowing the other is always partial, and that representations can be problematic (Haraway 1988; Puig de la Bellacasa 2012; Pitt 2015; Toncheva and Fletcher 2022). Following Haraway (1988), feminist scholars argue that knowledges are situated in unequal fields of power. When it comes to nonhumans, 'despite the aspirations of many posthumanist researchers to "flatten" disparities between humans and nonhumans, unequal power relations must still be taken into account in human–wildlife relations'(Toncheva and Fletcher 2022, p. 906). Therefore, there is an ethos of self-awareness and an understanding of positionality that underpins this research.

Furthermore, power hierarchies between different forms of knowledge must be considered when representing nonhumans (Toncheva and Fletcher 2022). In some instances, researchers have responded to this concern by taking a postcolonial approach to knowledge production, including nonhuman subjectivities, while also encouraging ways of knowing outside of western science. For example, researchers have collaborated with indigenous communities to bring their ontologies into studies of place (BawakaCountry. et al. 2016) and human-animal coexistence (Vannini and Vannini 2020). These researchers chose to engage and collaborate with indigenous communities to cultivate an intimate way of knowing, and representing, nonhuman others. Although, arguably, the knowledge of nonhuman others produced in these contexts is still a partial perspective, these studies point to alternative ways of knowing that can engender a more relational and intimate perspective, and include marginalised ontologies as well as subjectivities.

Posthumanism is applied to research in many different forms and there are a number of different theoretical trajectories within the broader field. The next section examines the ways that posthumanism has been applied in different ways to the study of contested practices and controversies by different scholars.

2.3.1 Posthuman approaches to studying contested practice

The purpose of this section is to present some of the key approaches in posthumanism that have already been used to analyse contestations and controversies, including actor-network theory, assemblage theory, and relational materialism. I also discuss the field of political ecology, which is often used to discuss controversies, especially in relation to land use, conservation conflicts, and access. I also examine how these different theoretical trajectories have been used by scholars researching foraging. Lastly, I present the framework I use for my study of foraging as a contested practice, situating it within the wider field of critical posthumanism and assemblage theory.

2.3.1a Actor-network theory

Researchers using actor-network theory (ANT), most associated with Latour and Callon (Müller and Schurr 2016), are particularly interested in controversies – often tracing 'the connections between the controversies themselves rather than trying to decide how to settle any given controversy' (Latour 2005, p. 23). ANT encourages scholars to examine the network of associations between people, objects, nonhumans, and ideas that are enmeshed in controversies or events.

A classic example is the study of a scallop fishery in France by Callon (1986). Callon (1986) studies three marine biologists who explore the reasons for, and a potential solution to, the decline in scallop numbers in St Brieuc Bay, and communicate this to other stakeholders. The event is considered a controversy because the scientists must negotiate various contradicting opinions and understandings from different stakeholders.

An example of how ANT has helped to frame land use controversies is Bennett's (2018) study of a conservation conflict in North West England. Following a community protest against the felling of trees on a SSSI, she explores the relationship of different actors to the area. She notes how people are affected by narratives of the past and the future, by different species, and by campaign materials from different parties (Bennett 2018). Her approach highlights

the divergent ideologies and practices of care that circulate in between and within different groups of people, which are still undeniably anthropocentric. She ends by arguing that her study demonstrated 'how we need to attend to the more-than-human world in order to understand our human impacts on the future' (ibid 2018, p. 167). Evidently, a method to challenge our anthropocentric view of the world is to study these debates and phenomena from a more-than-human perspective.

Despite its benefits for studying controversies in a symmetrical way, ANT has been criticised for having 'little consideration for whether or to what extent structures of inequality (e.g. patriarchy, heterosexism, colonialism/imperialism, the international division of labor, speciesism) might be built into (its) categories and concepts' (Chagani 2014, p. 427) and situates the researcher outside of any power dynamics. Indeed, ANT generally doesn't work with meta-structures or theories but with empirically traceable connections between different actors in particular case studies (Latour 2005).

Another criticism of ANT is that it is too focused on empirically traceable connections between actants, leaving no room for the 'virtual' or the 'metaphysics of potentialities' (Müller and Schurr 2016, p. 219). Latour's pre-1999 version of ANT also supposedly does not account for moral values or emotions within the traceable network (Krarup and Blok 2011). Despite this criticism, scholars using ANT have referred to the way different actor networks make people feel as well as act (Law 2008; Bennett 2018), and others have tried to make useful additions to the theory, such as the concept of quasi-actants that stand in for moral values and virtual concepts (Krarup and Blok 2011). Other 'more-than-Latourian' (Müller and Schurr 2016, p. 222) ANT projects have shown that networks are fluid and changeable (Mol and Law 1994), and Latour has also incorporated the virtual into his thinking (Latour 2012). However, still many scholars prefer to use a broader assemblage-based approach rather than ANT (Müller and Schurr 2016), which is explored in the following section.

2.3.1b Assemblage Theory

The concept of assemblage emerged at a similar time to ANT in the social sciences, and the two terms are often used interchangeably by scholars (Anderson and McFarlane 2011; Müller and Schurr 2016). However, there are a few distinct epistemological differences that were pointed out in the previous section – most notably, a sense of greater fluidity and

attention to the metaphysical within assemblage theory (Müller and Schurr 2016). This difference has been attributed to assemblage theories rooted in the philosophical world of Deleuze and Guattari, which emphasises 'flux, becoming and process' (ibid 2016, p. 218) over the apparent and the empirical (Bear 2013).

However, like ANT, the use of the basic concept of assemblage varies a great deal among different scholars (Anderson and McFarlane 2011). Anderson and McFarlane (2011, p.125) describe three categories of its uses: 'descriptor', 'concept', and 'ethos'. Using assemblage as a descriptor, scholars look at groupings of entities and how they hold together. In contrast, the concept is tied to the work of Deleuze and Guattari (1987). Many scholars apply the concept of assemblage by paying closer attention to metaphysical forces, such as 'desire' (Deleuze and Guattari 1987, p. 399), which has the power to bring together different bodies, ideas, and technologies (Anderson and McFarlane 2011; Müller and Schurr 2016). Deleuze and Guattari think about space and place as multispecies territories, or 'inter-kingdoms' (Braidotti and Bignall 2019, p. 1).

Assemblage theory stemming from their work looks at how territories are formed and are constantly made and remade (Kleinherenbrink 2015, DeLanda 2016). Firstly, territories are made through milieu - 'a semi-stable selection from chaos' (Kleinherenbrink 2015, p. 212) and an assemblage of different materials that have formed a 'strata' over time (Bowden 2020, p. 73). Different materials come together to form environments which then become inhabited by different species. Species then mark their territories with their bodies through the embodied 'formation of a domain' called 'ritornellos' (Kleinherenbrink 2015, p. 216). Kleinherenbrink (2015) reminds us that the root of the word is the French *terre*, which signifies the physical environment in which a being acts and dwells. Although territorialisation involves a coming together of different force relations, including multiple species, it is also about exclusion - the formation of spatial and non-spatial boundaries (Bear 2013). Certain species use ritornellos to mark out their territories to exclude others.

Furthermore, territories are constantly being disrupted and changing as different force relations come together over time (DeLanda 2016). The word for the process in which a territory breaks apart is deterritorialisation and is an inherent aspect of territorialisation (ibid), since, referring back to assemblage as a concept, everything is seen as fluid and in constant motion (Anderson and MacFarlane 2011). Overall, this process of inclusion and

exclusion, territorialisation and deterritorialisation, is foundational to the use of assemblage as a concept.

Developing Deleuzian assemblage theory, Gan and Tsing (2018, p. 103) explain that ecosystems are results of 'coordinations' – synergies and symbiosis between different species and materials which create a new form. These synergies, then, form assemblages of different species that make up one ecosystem. Indeed, coordinations are where assemblages emerge and become historically consequential (ibid 2018). Different rhythms align with each other, in some way, to create landscapes, although these can be ruptured by change as outside influences impact the synergies. This work also echoes the rhythmanalysis of Henri Lefebvre, which focuses on the relational polyrhythmia created by the meeting and synchronising of different bodies (Brighenti and Kärrholm 2018). This theory stipulates that environments are made up for multiple beings and agents whose rhythms come together to produce new forms and atmospheres.

Moreover, Gan and Tsing (2018) criticise the Latourian concept of coordination (actions that emerge from interconnection in the network) in ANT for being too focused on top-down projects that have been planned and communicated, such as the actions of scientists to create and control a particular outcome. The authors argue for a more flexible and temporal way of seeing coordinations to look at how assemblages create coordinations, and coordinations create assemblages in fleeting moments – including the research process as coordination that creates and/or destabilises. They use Haraway's concept of 'becoming with' (Haraway 2008, p. 244) to show how different beings affect each other. Haraway's (2008) concept has had a great deal of influence over posthuman geography, showing that human bodies are viscerally and phenomenologically linked with those other creatures that they exist alongside.

Gan and Tsing's (2018) approach to writing, including themselves in the narrative, also helps overcome another criticism that posthumanism (namely ANT and assemblage theory) removes the social scientist from view, which has been argued by some political ecologists (Chagani 2014).

Assemblage approaches can also encourage an attentiveness to particularities of situations, and the knowledge practices involved, while also showing the effects of wider movements.

Although it has been criticised for being too abstract next to the more empirical ANT (Müller and Schurr 2016), the grounding of assemblage theory in particular spacio-temporal situations, as has been shown in the above examples, makes for a convincing exploration of contested spaces.

Moreover, the concept of assemblage provides a theoretical underpinning to the development of assemblage as an ethos (Anderson and McFarlane 2011). This ethos requires attention to be paid to the lively world of different bodies and beings and often requires storytelling and thick description[1] (ibid). Assemblage as an ethos embraces flux and uncertainty and attends loosely to the way assemblages form and break apart as transitory processes. Moreover, in a similar way to ANT, assemblage theory as a concept and ethos is based on a premise that agency is dispersed – but instead of being dispersed though fixed objects, 'agency is dispersed through emerging processes of co-production' between different actants (Bear 2013, p. 23). Assemblages 'are composed of (and continually recomposed by) relations between different "kinds" of entities including materials, bodies, discourses, symbols, practices, and subjectivities' (Kinkaid 2019, p. 556). In criticism, scholars have noted that the boundaries of what is within and outside of an assemblage is typically hard to define, which sometimes negates the concept's use (Kinkaid 2019). It is arguably difficult to see where one assemblage ends and another begins.

In thinking about how scholars use assemblage theory to research controversies, Bear (2013) describes the Cardigan Bay scallop fishery as under scrutiny by conservationists, who were worried about the effects of dredging on the ecosystem, with particular concern for migratory dolphin populations that pass through the bay. Bear argues that 'the blame game is decidedly more-than-human' (ibid, p. 30), as there are many forces involved in the degradation of the seabeds where the scallops live and the bottlenose dolphins feed - the scientists' reports remaining inconclusive about what exactly is responsible. Looking at the 'fishery-as-an-assemblage' (ibid, p. 23) allows for a more holistic approach to understanding the influencing factors, Bear suggests. Yet, he reminds us that seeing humans and their impacts as just part of a bigger picture should not diminish our sense of responsibility for our actions. Clearly, policy decisions as well as individual behaviours impact the wider web

[1] Thick description is a term developed by Geertz (1973) referring to in-depth narrative used to story a research encounter.

of activity, just as humans are impacted by the movements, flows, and migrations of other-than-human actants.

Moreover, Kinkaid (2019, p. 555) explores the 'rights of nature' movement, suggesting that the legislative concept might appear to hold divergent governments together in a global assemblage, but, in fact, the way that it is practised and understood in New Zealand is very different to how it manifests in India. He, therefore, uses Leigh Star's (1986, cited in Kinkaid 2019) concept of a boundary object to separate the global 'rights of nature' idea from the local 'rights of nature' assemblage. This helps to explain how certain legislative or popular concepts can be disputed, as they are understood differently by communities and need to be contextualised within localised ways of relating to the nonhuman world.

Tsing's anthropological studies of the matsutake mushroom industry in Oregon and Japan offer another example of how an assemblage approach can be used to study particular spacio-temporal events in wild food industries (Tsing 2015; Gan and Tsing 2018). For example, Tsing's (2015) study of matsutake harvesting in Oregon, USA, pays as much attention to the network of mycelia that support the edible fruiting body as she does to the network of global commodity exchange bringing that edible fruiting body to dinner tables across the world. For this study, Tsing (2015) conducted ethnographic fieldwork in the Oregon forests with mushroom pickers, buyers, and traders, as well as exploring the natural history of matsutake, to show how humans and nonhumans are entangled together in this industry. She highlights the uncertainty and precarity in this trade, as the human pickers' success is based upon many factors, including the climate, the forest management, the impact of human disturbance, the unpredictable nature of the mushrooms themselves, and the market price. She finds that the very disturbance of the forest by the pickers keeps the matsutake mushroom fruiting, as this particular species thrives in well-trodden, low-nutrient soils.

Tsing (2015) shows how some landowners open their forests during the matsutake season for people to enter to gather firewood and other non-timber forest products, which leads to scarring of the landscape and poor soil quality. This, she explains, is against the values of the conservationists who try to reduce human impacts on forest ecosystems yet is beneficial for the matsutake and related industry. Tsing finds that certain studies suggest that there are some harvesting practices, such as raking, that can damage the habitat of the mushrooms.

This shows that certain kinds of human disturbance can benefit some species, so it is important to understand the particularities of species in order to understand the impacts of human harvesting. It cannot be assumed that all forms of human disturbance are bad for all species. It also helps explain how the efforts of conservationists can be at odds with the interests and knowledge practices of mushroom harvesters.

Furthermore, Tsing (2015) develops the term salvage accumulation to refer to the process of taking a raw material from the landscape which then enters the capitalist market as a commodity. Similarly, commodification can be conceptualised as a process in which economic values are applied to subjects initially considered outside of the market (Smessaert et al. 2020). According to Ortiz-Przychodzka et al. (2023, p. 4), it is an 'irruptive trajectory' which changes assemblages and creates new ways of relating and encounters between species. In this way, Tsing (2015) explains how, through capitalism, landscapes and species can become reduced to their economic value, or as assets, rather than valued for their life world or multispecies interactions.

> *Through alienation, people and things become mobile assets; they can be removed from their life worlds in distance-defying transport to be exchanged with other assets from other life worlds, elsewhere. This is quite different from merely using others as part of a life world—for example, in eating and being eaten. In that case, multispecies living spaces remain in place. Alienation obviates living-space entanglement for asset production (Tsing 2015, pp. 5-6).*

Within the context of the wild food industry, like the matsutake industry in Oregon, Tsing (2015) shows how the value given to these mushrooms, and the way the harvesters interact with them, is inherently intertwined with their value on the global market. The market affects the lives of the harvesters and the mushroom populations, just as the mushrooms and the human taste for them affects the market. Tsing's (2015) study is inspiring in this way as she shows the agency and liveliness of the mushrooms as subjects rather than merely objects. It also shows how contested practices, such as the illegal harvesting of wild foods, is tied up in socio-political and economic assemblages.

Overall, assemblage, as a concept and an ethos, encourages researchers to examine the socio-political and economic context in which humans and nonhumans are entangled,

always treating this as a multispecies experience, rather than separating the worlds of humans and nonhumans. Assemblage, as an approach, manages to capture complexity and flux, which could be usefully applied to foraging as a contested practice.

2.3.1c Relational Materialism

Relational materialism sits within the field of posthumanism, stemming from new materialist theory, developed by feminist authors such as Bennett and Barad (Barad 2003; Bennett 2010). New materialism is concerned with matter, the material processes that are created through the entanglement of different bodies (Bennett 2010). For theorists such as Barad (2003), there is no individual outside of material relationships between things.

Relational materialism, then, focuses on 'human metabolic engagements with the world', rather than words, looking at the way human and nonhuman bodies merge in action (Mol 2021, p. 3). Researchers with a materialist focus often explore the conditions that make matter become food (Roe 2006-b; Colebrooke and Miele 2017) as well as how identity and belonging is enacted in food contexts (Slocum 2008; Hayes-Conroy and Martin 2010). Yet, since everything is in the process of becoming rather than fixed, as contexts change, human minds and concepts also change.

Materialist approaches do offer insights into why people are drawn to consuming certain foods. Geographers Hayes-Conroy and Martin (2010) and Hayes-Conroy and Hayes-Conroy (2010), for example, explain that people are drawn to AFNs or certain food movements, such as Slow Food, because, through their history, they are predisposed to identify with the value set behind these movements. When people eat what they consider healthy or ethical food, they experience a 'bodily resonance' (Hayes-Conroy and Martin 2010, p. 278). Indeed, many scholars have suggested that taste is inherently both social and biological, tied up with ideas of fashion and identity (Bourdieu 2010; Hennion 2016). Eating is a complex negotiation between different goods and different bads (Mol 2021), and choosing food is an inherently political act as moral judgements and debates surround the food industry, and people's bodily resonance with certain political food movements can cause disquiet (Goodman 2016).

This links to a body of work by more-than-human geographers on edibility (Roe 2006-a,b; Colebrooke and Miele 2017; Sexton 2018). Sexton (2018), for example, argues that the way alternative proteins have become considered food is inherently biopolitical. She explains

that, in the context of climate change and animal rights abuses, alternative proteins offer individuals a way to eat more ethically. However, companies have simulated their counterparts (animal products) to make them identifiable and relatable to consumers, then arguing that they are better, meaning healthier and more ethical. Conversely, consumers can take a dislike to a certain process in the agri-food industry, such as genetic modification, and can reject products, rendering them inedible for health or ethical reasons (Roe 2006-a).

This is useful to consider when thinking about how foraged wild foods are considered edible by some and not by others. However, relational materialism is often used alongside other theoretical trajectories, such as political ecology. For example, Hayes-Conroy and Hayes-Conroy (2013) develop a Political Ecology of the Body to explore the accessibility of healthy eating and the way that governmental health agendas affect individual bodies (Hayes-Conroy and Hayes-Conroy 2013). Furthermore, researchers using relational materialism to study foraging have also combined it with political ecology (more on this in section 2.3.1e). Thus, the next section explores the field of political ecology and how it has been applied to conservation conflicts.

2.3.1d Political Ecology and conservation conflicts

Political ecology is a 'field that seeks to unravel the political forces at work in environmental access, management and transformation' (Robbins 2012, p. 3), often focusing on the interface between politics and environmental degradation (Forsyth 2005). Like any field, there are various approaches including Marxist, realist and critical (ibid 2005), which offer slightly different lines of enquiry. These various forms of political ecology are often used as a framework by researchers looking at resource conflicts to highlight the power struggles and inequalities that exist in relation to land use (Grossman 1998; Jansen 1998.; Kiik 2018). Critical political ecology, in particular, encourages researchers to question the underlying knowledges behind political decisions about the environment, especially those based on Western science, which is often at odds with local knowledges and understandings (Goldman et al. 2018). It encourages researchers to attend to those that may not be considered in mainstream political ecologies – such as women, ethnic minorities, and nonhumans (Staddon 2009). We have seen that critical political ecology has been used as a framework in various studies on foraging in the USA and the UK (Staddon 2009; McLain et al. 2014; Poe et al. 2014; Nyman 2019). These researchers show that access to land and

regulatory frameworks surrounding foraging do not always take into account local knowledges, cultural identity, or class struggles.

Within the field of geography, there are many examples of studies which suggest that conservation projects, particularly the designation of protected areas, are often at odds with the activities of local communities and can perpetuate preexisting power struggles (Zimmerer 2006; Rai et al. 2019; Minarchek 2020; Marijnen et al. 2021). For example, Masse (2019) shows how militarised anti-poaching practices, in support of wildlife, alienates people who live adjacent to protected areas (Masse 2019). In some cases, communities are removed from the land, and their members often do not have the relevant qualifications, experience, or technologies to participate in the conservation project (Zimmerer 2006). Terms such as 'land grabbing' (Ojeda 2012, p. 357) and 'green militarization' (Marijnen 2017, p.1566), for example, are used to describe the violent process of allocating land for conservation purposes at the expense of local communities.

Furthermore, Kiik (2018) suggests that, historically, anthropologists studying conservation encounters have often tended to use Marxist political ecology as their main theoretical trajectory, looking at the inequalities in land use, and the dispossession that occurs when local communities are removed from their land or traditional practices in the name of wildlife or habitat conservation (Kiik 2018). Indeed, many researchers have argued that local communities' interests, knowledges and needs are often neglected in wildlife conservation decisions (Kiik 2018; Rai et al. 2019; Phongchiewboon et al. 2020; Marijnen et al. 2021).

Yet, Kiik (2018) criticises these anthropological studies of conservation encounters for their neglect of nonhuman agencies. The author advocates for a more-than-human ethnographic approach to the anthropology of conservation encounters, which he feels better represents the way that humans and wildlife are entangled – he explains that 'such wilder ethnography may also better connect people's suffering and nature's vanishing' (Kiik 2018, p. 217). Similarly, Poe et al. (2014) and Staddon (2009) highlight the limitations of political ecology when it comes to studying foraging and resource use in a holistic way, suggesting that more attention needs to be paid to the other-than-human forces that are entangled in foraging practices and regulations.

As Chagani (2014) argues, some political ecologists have appropriated posthumanist ideas into their work. Yet, Political ecology remains somewhat distinct, and researchers in this field have argued that posthuman scholarship does not do justice to human inequalities (Chagani 2014, p. 425). However, as Kiik (2018) explains, if too much attention is paid to human conflicts and inequality, without serious consideration of the nonhuman species there is an imbalance in the argument. So, where a political ecologist would ask, "where are the disenfranchised people in this situation", a posthumanist may ask "how are human and nonhuman subjects entangled in this situation". Both trajectories echo a feminist concern with representation and voice, elaborated in work by Braidotti (2013), among others.

2.3.1e More-than-human geographies of foraging

Before presenting my framework for this study, it is important to mention the small sub-field of more-than-human geographies which looks specifically at foraging and how posthumanism has been used in this field. For example, Nyman (2019) studies contemporary foraging for wild food in London, discussing how what is seen as food, and its abundance and scarcity, is related to a person's perspective and background. Nyman comments on the tensions between foragers and botanists, explaining that some people see plants as food whereas others value plants for their heritage and aesthetics. Another tension, he points out, surrounds invasive species; many people feel that Japanese knotweed, for example, is a pest and should be eradicated, despite its edibility.

Poe et al. (2014) use their own framework, which combines political ecology and relational materialism, to explore how divergent foraging practices are tied up with identity and cultural background, notions of edibility and the value of different species, and the way people have learned to engage with natural sites in the USA. They discovered a great deal of variability among foragers from different backgrounds, land managers and conservationists, who all had a different way of relating to the nonhuman world, making foraging contentious and heterogenous (Poe et al. 2014). These ways of relating and moving through the landscape were very much affected by the nonhuman beings who attracted attention and changed ecosystems.

Both Poe et al. (2014) and Nyman (2019) combine critical political ecology and relational materialism in their studies of foraging. This combination of approaches allows them to draw

on the strengths of both frameworks. Nyman (2019) argues that 'the synthesis of political ecology with a relationally-grounded approach creates room for historical sensitivity to the urbanisation of nature, 'the present-future orientation of engaging seriously with the vitality of "things"' while also 'framing the possibilities of cosmopolitan or more-than-human urban futures' (Nyman 2019, p. 172). Both these researchers find that the nuanced practices of foraging, and some of the conflicts of interest, result from people's different categorisations of what is considered food and what isn't, what is considered a pest, and what is considered accessible. Although it is critical political ecology that shows how political ideologies and the framings of Western science shape people's access to wild food, the more personal categorisations of food are explored through relational materialism.

To some extent, seeing the nuances in the ways that people categorise different species as food does help us to understand why there are conflicts of interest in the foraging world. Nevertheless, Nyman's (2019) goal was to offer commentary on the wider food system in the context of food security rather than explore more deeply the contested space of foraging in the UK. His focus on the way wild foods were understood and framed by different people in the city streamlined his study for his desired outcome, but it also meant that he missed other important aspects. For example, his study does not mention the other beings and forces that play a part in foraging practices, beyond the triangle of city planners, foragers, and wild foods. He also did not touch upon the life worlds of the wild foods themselves, or other beings that may rely on them, as he was focused on exploring the human problem of food security. A more critical version of posthumanism requires researchers to take issues faced by nonhuman beings more seriously (Braidotti 2013). Since Nyman's (2019) is one of the only studies of foraging in the UK from a more-than-human perspective, it seems important to look beyond London, and beyond the frame of food security, to understand the bigger picture of what is taking place in the contested space of foraging and what this means for our actions as humans towards our environment.

Furthermore, Staddon (2009) also combines political ecology with posthuman approaches to explore why regulations and restrictions surrounding foraging are not taken seriously by rural Bulgarian harvesters, who have formed over time a relationship with nonhuman species, a network of exchanges in which the law and political system is just a small player. He explores people's understanding of balance and sustainability in their local forests and

how this is at odds with the restrictions placed on them from outside. Staddon (2009) uses ANT to explore the networks and flows of actants within the forest economies of rural Bulgaria. He also makes use of the concept of symmetry, to attend closely to the agency of nonhuman actants, such as mushrooms and wild herbs. For example, he argues that the mushrooms make themselves visible in order to encourage humans to spread their seeds or spores (Staddon 2009). These nonhumans are therefore active actants rather than passive. He shows how 'to see the hunter–hunted relationship as a purely exploitative, unidirectional one is to entirely miss all the hard work that goes in on many sides to construct and maintain a specific actor network' (ibid, p. 170). He finds that in order for policy in Bulgaria to be more effective, more attention needs to be paid by policymakers to local human-nonhuman forest networks.

As Staddon (2009) shows when studying foraging, there is a vast and wide network of exchanges and movements taking place simultaneously. Little is known about what processes, entanglements, and engagements are going on under the surface of these debates about foraging in the UK. Although Nyman (2019) has touched on how notions of edibility vary between stakeholders from the perspective of relational materialism, it feels necessary to unpack foraging practices and regulations in the UK in a more detailed way. This is a clear gap in the literature around foraging in the UK.

From this review of the literature, Poe et al. (2014), Staddon (2009) and Nyman's (2019) more-than-human geographies go some way to exploring why and how foraging becomes contested in Oregon, rural Bulgaria and London. However, these studies do not enliven particular events or situations that lend themselves to detailed posthuman analysis. The framing of foraging as contested is also marginal in these studies and requires deeper analysis and understanding. I am therefore contributing and developing this sub-field of more-than-human geographies by exploring the contested practice of foraging through this lens, while also contributing to broader developments in critical posthumanism and the study of contested practices.

2.3.2 Controversies in the context of the more-than-human collective

Section 2.3.1 has presented several different theoretical fields within posthumanism, which have been applied to the study of controversies, conflicts, and disputes as well as the topics

of foraging and conservation. Considering these modes of analysis, when examining controversies from the perspective of posthumanism it is important to explore the socio-historical processes including fields of power and multispecies entanglements. Each of these fields has value in explaining and theorising how controversies, particularly around wild food industries and conservation, can manifest.

However, I find that assemblage-based studies offer the richest and most holistic approach to understanding the relationships that play out in the formation of contested spaces. Work associated with assemblage theory that looks at wild food industries, such as that of Gan and Tsing (2018) and Bear (2013), explores specific spacio-temporal relationships surrounding contested sites and species interactions, while at the same time encouraging an awareness of the wider forces from outside. Indeed, in the context of disputes and controversies around the environmental impacts of foraging, it seems important and necessary to see humans as part of a more-than-human collective in this way, rather than as separate – which is a key part of posthuman theory (Braidotti 2013). I explain how I intend to use an assemblage approach in section 2.6. Before this, however, the topic of knowledge practices, and ways of relating and caring are important to consider for the development of this study. Knowledge practices are inherently part of the complex web of forces that come together to produce contested practices.

2.4 Knowledge practices and ways of relating

This section explores the relevance of knowledge practices and ways of relating within the study of controversies. Rather than being distinct, this body of literature is often embedded within fields of literature previously mentioned, such as ANT, assemblage theory, political ecology, and studies of conservation conflicts.

Geographers and STS scholars have a history of exploring the 'social and political dimensions' behind controversies, paying close attention to how knowledge claims are produced, with the aim of redistributing expertise (Whatmore 2009, p. 592). Whatmore (2009) explains that these researchers often share a commitment to the more-than-human conception of knowledges, influenced by ANT and assemblage approaches. This field of

research is a response to public distrust of scientific knowledge, particularly around environmental issues such as climate change or flood-risk management (ibid 2009).

As mentioned in section 2.3.1a, Callon's study of the knowledge controversy around the scallop fishery in St Brieuc Bay is one example of how this field of research has been applied. Also using ANT as a framework, Burgess et al. (2000) examine the different conceptions of nature and the landscape between conservationists and farmers participating in a Wildlife Enhancement Scheme in southern England in the 1990s. They found that scientific conservation knowledge was not necessarily accepted by the farmers, who felt they knew how to manage the landscape through years of experience. The authors conclude that a successful delivery of conservation projects needs to consider local knowledges and involve local people in planning and implementation (Burgess et al. 2000).

Moreover, these examples show how knowledges affect the way people manage land and relate to nonhumans. The knowledge practices of the farmers, for example, meant that they managed land in certain ways, which was distinctly different from the conservationists in Burgess et al.'s (2000) study. In contrast to the farmers, the conservationists' perception and management of the landscape was enmeshed in scientific and political knowledges and agendas.

From anthropology, Ingold and Kurttila's (2000) phenomenological study also demonstrates the nuances in ways that knowledges can be perceived and understood. For example, the knowledges of the Sami in Finnish Lapland are based on the way they inhabit the more-than-human world, which constantly changes and develops through lived experience, whereas the state views traditional knowledges as an indigenous knowledge system, somewhat fixed in time and place, and passed on through generations (Ingold and Kurttila 2000). For example, their adaption to changing weather conditions reflects a way of being-in-the-world which requires adaption to changing environmental circumstances rather than a fixed knowledge system. The very meaning of knowledge itself, then, can be contentious and, at times, the categorisation of a knowledge as traditional at odds with the lived experience of local people.

Rather than seeing knowledges as fixed, and as outside of relational and material forces - an epistemology related to social constructionism (see section 2.2) - these studies view

knowledges as embedded in contingent multispecies assemblages. Linked to this idea is Haraway's (1988) understanding of knowledge as a situated practice. Haraway (1988) views knowledge as subjective, produced by circumstances and through utilising certain learned tools and techniques, rather than objective. Seeing knowledge in this way has influenced other scholars, such as Simandan (2019), who develops the concept of the 'encountered situation' to refer to someone's experience of knowing the world, which is 'coproduced in the moment in discursive webs of power alongside axes of social difference' (Simandan 2019, p. 136). Similarly, Mol (2021, p. 61) explains that knowing comes about 'when, in a specific situation, a specific person attends to selected bits of the world that, as she ingested them, affect her in this or that not-quite-predictable way'. It highlights the fleeting, circumstantial nature of knowledges, which emerge and are practiced in the encounters between bodies, tools, ideas and values in spacio-temporal and socio-political contexts. As she highlights, different people are affected differently by the same situations, which can be based on a multitude of factors including what they have learned to attend to (Ingold 2000; Latour 2016). Therefore, it is a constantly evolving process as people experience the world through a series of embodied experiences (Ingold 2000; Mol 2021).

This is arguably a different way of understanding knowledge than positivist ways of knowing that treat scientific facts as superior to local knowledge (Taylor and de Loë 2012). Ingold and Kurttila (2000) and Taylor and de Loë (2012) argue that it is extremely important to account for different ways of knowing within the formation of land management strategies and policy. To find synergies between different groups of stakeholders would require respect and consideration for difference as a starting point. Burgess et al. (2000) assert that 'the extent to which these different knowledges, experiences and actions can be brought together in a management scheme depends on the abilities of the different actors to accommodate and make sense of each other's worlds' (Burgess et al. 2000, p. 122).

Therefore, part of the intention of this study is to highlight the differences and similarities between ways of knowing and relating that conflict in the contested space of foraging. It will also be part of the assemblage approach to situate these ways of knowing and relating within multispecies entanglements and in wider institutional and political movements. This, in turn, will help in the understanding of where certain knowledges come from and how they are produced, in order to develop mutual understanding as well as suggesting synergies

and the development of new ways of relating to benefit all stakeholders, including the nonhumans.

The next section explores some of the current work within the field of more-than-human geographies on conservation knowledges. Firstly, I explore what scholars have noticed about the way conservationists relate to nonhumans, and how this links to wider theory. I then examine work which has situated conservation knowledges within wider socio-political contexts and assemblages. This helps to give context to some of the conflicts between foragers and conservationists in this study and present certain concepts that I further develop. I examine research looking at other ways of perceiving, knowing, and relating to the more-than-human world, such as indigenous ontologies and local knowledges.

2.4.1 Conservation

Within the geographical sciences, there has also been some investigation into the knowledge practices and paradigms informing conservation and wildlife management strategies. Researchers within this field are interested in the different knowledge paradigms and ways of knowing that conflict within the field of wildlife conservation. Behind much of this work is an understanding that the lives of humans and nonhumans are inherently controlled and entangled within political and institutional frameworks (Rutherford and Rutherford 2013).

For example, Lorimer (2015) argues that the concept of biodiversity 'happens in an assemblage', shaped by particular 'knowledges, habits, instruments, territories and practices' (Lorimer 2015, p. 58). Biodiversity, according to Escobar (1998), is a historically produced discourse, which can be traced back to times of plant collecting during colonialism. However, he argues that this discourse has shifted significantly, and is leveraged and used differently by different stakeholders. In the context of international governance, for example, it is often used for resource management – although this has shifted alongside a growing use of the term by non-governmental organisations (NGOs) and activists who link the term to formations of territory, rights of nature, and cultural heritage. He suggests that the term is 'resisted, subverted, or recreated to serve other ends' (Arturo 1998, p. 56), in the contexts of networks and movements.

Similarly, studies from the field of geography have shown how people's perceptions of what constitutes the rural and what is wilderness have shifted throughout history (Whatmore and Thorne 1998; Buller 2004). Whatmore and Thorne (1998) suggest how ideas of wilderness are inherently tied up with socio-political narratives, movements, and forces. Moreover, more-than-human studies have explored the historical processes that have contributed to the formation of the concept of rewilding, again pointing to how it is produced and reproduced in situated political assemblages (Lorimer et al. 2015). This approach to conservation generally aims to restore ecosystems as holistic entities rather than focusing on individual species (Lorimer et al. 2015; Wynne-Jones et al. 2020). Yet, Lorimer et al. (2015) show how the term has a variety of meanings, depending on the baseline on which an ecosystem is judged, which there is some disagreement about. Rewilding projects encounter political, social, and ethical challenges as they conflict with other land management strategies, such as agriculture and more traditional forms of conservation (ibid 2015). For example, O'Mahony shows that where some people are in favour of wild boar in the New Forest under the agenda of rewilding, others see these animals as feral and a threat to land management practices such as farming (O'Mahony 2020). Again, this shows how conservation and land management strategies are inherently fraught and contested, as different worldviews and knowledges conflict in these contexts.

The link between conservation knowledges and wider political agendas and forms of control has also been explored within the broad field of biopolitics (Srinivasan 2014; Hodgetts 2017; O'Mahony 2020). In his book *Wildlife in the Anthropocene*, Lorimer argues that biodiversity conservation is a form of biopolitics that monitors, records and controls which species thrive and which are neglected. The term biopolitics was inspired by the work of Foucault, who argues that humans and nonhumans are confined and governed within flows of power (Wynne-Jones et al. 2020). Lorimer (2015, pp. 63-64) identifies 'four arenas' that come together to form the assemblage of UK species-based biodiversity conservation; species described; species surveyed and researched; status evaluated, and species prioritised; species action plan implemented. Different species are evaluated through these arenas as a conservation framework. These arenas involve certain scientific tools and monitoring processes, as well as a measure for establishing which species are endangered. If a species is considered endangered, it is given conservation status.

Furthermore, Lorimer (2015, p. 31) shows how the knowledge practices of 'orthodox' conservationists, tend to centre around the taxonomy and mapping of different species and the demarcation of protected areas. In practice, this informs the way species are categorised within official legal and institutional frameworks (ibid 2015). Orthodox conservation knowledges also result in advocation of or storytelling about rare or endangered species (Hinchliffe 2008), bringing them to public awareness, and also the creation of habitats such as nest boxes (Adams 2004).

Feeding into these ideas and knowledge practices, Lorimer (2007; 2015) argues, is the 'charisma' of certain species. It is the charismatic species - the ones that are noticed and researched - that have the chance to receive this political status in the human realm. Species can be charismatic in different ways, namely aesthetically (for their appearance), corporeally (the emotive effect of the interaction between the conservationist and species), or ecologically (material properties of the organism) (Lorimer 2007,2015). Lorimer (2007) argues that knowledge practices and socio-political values are often behind the way humans view a species as charismatic or not.

Similarly, Robin (2017, p. 109) shows how what 'we conserve or care about' changes in line with political narratives. For instance, she suggests that the emergence of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species results in a culling of invasive species in favour of native species. This, she notes, is often at odds with the opinions of animal rights activists, as it involves the culling of certain species. She explains that 'what belongs and does not belong in the wild is contested, and filtered by these prejudices, and about how we value the wild itself' (Robin 2017, p. 111).

Researchers have linked conservation agendas to wider socio-political assemblages (Krause and Robinson 2017), such as neoliberalism (Adams et al. 2014). For example, Adams et al. (2014) suggest that large scale conservation zones, managed by both government bodies and closely aligned NGOs, are part of a political agenda in the UK (Adams et al. 2014). This conservation agenda is produced by an assemblage in which science, governance, and economics come together, with the ultimate aim of setting aside large-scale territories for the purposes of conservation. The establishment of conservation zones is framed by the Department of Environment, Farming and Rural Affairs (DEFRA) as the 'foundation of sustained economic growth' (cited in Adams et al. 2014, p. 574). There is political

recognition that biodiversity is necessary for a thriving economy, and phrases such as 'ecosystem services' are part of the political agenda, as well as the blending of state and non-state institutions (Adams et al. 2014, p. 584). The way biodiversity loss is seen as an economic problem in the very first line of a report by Natural England would suggest that this is the case:

> *Nature loss harms human health and well-being and undermines our economy. Ecosystems are being degraded and biodiversity is being lost at alarming rates around the world, and declines are continuing in the UK. These losses matter: we no longer have a sustainable natural system that can provide reliable supplies of clean water, purify our air, regulate our climate, or secure our food supplies. More than half global GDP is put at risk by losses to nature (Natural England et al. 2021, p. 10).*

More recently, Adams (2020) has explored the various dimensions of territory marking in conservation practices, and how this links to environmental governance, which is often at odds with local knowledges, practices, and land use. He views the boundary-making process (Adams 2020), whereby large-scale areas are reserved for nature, with the exclusion of humans, as contributing to the privatisation of land and the marginalisation of local communities. The demarcation of certain areas, he argues, is also a process of branding – linking to neoliberal forms of power and coercion. However, he explains that conservationists may be unaware of these larger fields of power behind their activities. He also acknowledges that there are other forces and social movements that produce different forms of mapping and counterclaims, although these are often marginal up against larger political forces.

Furthermore, there has been a strong critique of conservation practices by some academics, who argue that they reproduce the ideology that humans and nature are separate (Ingold 2005; Lorimer 2015; Petitpas and Bonacic 2019). Ingold (2005) for example, argues that the concept of nature is inherently political – nature is what humans make it out to be, drawing a boundary between themselves and the other. He explains that this dichotomy is produced and reproduced by the formation of conservation territories that are put aside for nature.

Similarly, Petitpas and Bonacic (2019) argue that in Northern Chile, there is a clear nature-society dichotomy which is clear among conservationists, which doesn't exist for local

people. He explains this difference through the theoretical trajectory of political ontology – examining how, to conservationists, the nature of reality is inherently different to the locals who live among the species that they are trying to protect.

It has been argued that this fundamental difference in worldview is also behind the controversy around land sparing and land sharing (Loconto et al. 2020). This debate, although predominantly about the way food production is managed, is relevant to this topic because it links to different ways that biodiversity is encouraged. Land sparing refers to 'separating intensive agricultural land from biodiversity-rich wildlife spaces', whereas land sharing involves 'integrating biodiversity-rich practices into agriculture, but with lower yield per hectare hence a priori less 'pure' wildlife spaces left elsewhere' (Loconto et al. 2020, p. 1). Behind the land sparing paradigm is the idea that humans and nature are separate, and that nature needs protecting from humans (ibid 2020). On the other hand, land sharing encourages humans to be part of nature, and to cohabit with other species. Jiren et al. (2018) find that land sharing preferences are often related to traditional farming knowledges in Ethiopia, whereas land sparing preferences often come from international conservation rhetoric.

In contrast, some scholars have examined the conflicts and contention between different forms of conservation, rather than treating conservation as a homogenous practice. For example, Lorimer (2015) goes beyond describing more orthodox approaches that focus on protecting certain charismatic and keystone species, to examine other forms of conservation which look at landscapes through a more holistic, ecosystem approach.

Furthermore, Dempsey (2021) finds that there are several different models of conservation practised in the UK. He explains that in general, conservationists in the UK are against a natural capital approach, which considers the economic value of the environment over its other qualities (Dempsey 2021). There are clear nuances in the way different conservationists practise, which he splits into three broad categories. The first, 'Management of Changing Nature' (ibid 2021, p. 1) involves a formalised monitoring of species and landscapes but with an openness to changes. The second perspective on conservation he observed in the UK is 'Innovation in Nature' (ibid 2021, p. 1), which involves experimental approaches to mitigate biodiversity loss, such as species reintroduction. The third perspective, 'Protection of Threatened Nature' (ibid 2021, p. 1), sees the environment

as needing to be protected from human activities and prioritises a high level of management of landscapes.

Therefore, it is important to consider nuances in conservation approaches when understanding the differences and synergies between foraging and conservation practices. Indeed, Hodgetts (2017) argues that the traditional understanding of places as static, in need of conserving, has shifted to incorporate more about connectivity in conservation, for instance the interest in wildlife corridors.

Overall, this section has shown a variety of work situating conservation knowledges in broader webs of power and politics. For this study, it will be necessary to consider the context in which conservation practices that may conflict with foraging are produced and reproduced, as well as considering what this says about ways of relating to nonhumans. It will be important to look for nuances in conservation practices, rather than viewing them as homogenous, and understanding the perspective of the individuals who are involved in the contested space of foraging.

2.4.2 Local knowledges, indigenous ontologies and TEK

There has been a great deal of work promoting the incorporation of local knowledge and TEK into conservation strategy, to take account of other ontologies and ways of knowing (Drew 2005; Posey and Balick 2006; Yadav et al. 2012; Toncheva and Fletcher 2022). Ontology refers to an assumption about what exists and the nature of reality (Blaser 2013). It has been argued that indigenous ontologies and knowledges, for example, are fundamental to the success of conservation projects (Maass 2008). Maass (2008), for example, examines the concept of biodiversity, acknowledging that this is a political concept, and highlights the knowledge practices of the Q'eqchi peoples of Guatemala whose land overlaps with conservation territories and how they view things differently, advocating for an incorporation of these ways of knowing into conservation strategy. Other studies have shown successful incorporation of TEK and local knowledges into conservation projects which actually promote biodiversity, arguing that including local communities creates more resilience, adaptability, and deep knowledge of landscapes into land management practices (Becker and Ghimire 2003; Ruiz-Mallén and Corbera 2013). It has also been argued that citizen science projects can be beneficial in incorporating local and TEK into land

management projects, including communities in monitoring and decision making (Tengö et al. 2021).

Although TEK can be treated as an encyclopaedic knowledge of local species and their culinary and medical uses (Turreira Garcia et al. 2015), there are also many studies showing how the knowledges of indigenous communities adapt to circumstances. Even though there are underlying worldviews that can be different from Western scientific worldviews (Dinero 2013; Tristan et al. 2015), these worlds are not seen as distinct but entangled with each other and in a socio-political context.

This research sits alongside the broader field of academic work which explores indigenous worldviews and ontologies, and local knowledges. For example, Ingold's (2000) phenomenological anthropology book *Perception of the Environment* is an influential piece of work in this field. Ingold (2000) explores worldviews of hunter-gatherer peoples, explaining that, although there is no distinctive hunter-gatherer worldview, the commonality between different groups, in contrast to many Western and scientific conceptions, is that there is no distinction between nature and society or mind and nature (Ingold 2000). He also examines animism and totemism as ways of perceiving the more-than-human world (Ingold 2000). Ingold (2000) argues that it is important to consider multiple views of the more-than-human world and to question assumptions and conceptions about nature and society. This is especially important in controversies and contested practice, so as not to treat the dominant viewpoint as real and the other versions as constructions.

In more recent years, the concept of 'political ontology' has been developed to take seriously the existence of multiple ways of seeing the world, and also to show the limits of 'modern ontological assumptions' that can dominate Western thought (Blaser 2014, p. 547). The aim here is to encourage local and indigenous ontologies to be taken seriously within conflicts and also to suggest that there is a 'pluriverse' – rather than believing there is a single reality 'out there' and that everything else is a construct (Blaser 2014, p. 55).

In a similar way, researchers have tried to represent or story the viewpoints of small-scale farmers. There has been some work on how to incorporate the viewpoints and knowledges of small-scale farmers into policy, particularly surrounding issues such as development and climate change (Wagner et al. 2019; Ogunyiola et al. 2022; Jabik 2023). In this way, this field

of work is often aligned with a postcolonial approach, which takes seriously multiple ontologies and ways of seeing the world (Jackson 2014).

However, by using words or phrases such as traditional knowledge or indigenous ontology, there remains a danger of romanticisation or essentialisation. The concept of tradition has evoked much critical reflection in the last few decades. However, postcolonial critics have aroused an awareness about how it is possible to trap people in the past through the use of such concepts (Fabian 2002). Indeed, the term tradition can be used to romanticise places, food, and ways of life, and offers images of purity and goodness (West and Domingos 2012; Abbots 2014; Billiard 2017). Moreover, tradition can be invented or reinvented to improve the marketability of certain products and ways of life. For example, Musalkova (2018) shows how traditional foods were invented to attract tourists in Silesia. Furthermore, traditional foods are often considered to be 'tasty, healthy, and in harmony with nature' and 'many of these attributes are rooted in memory and imaginary' (Sebastia 2017, p. 2), pointing to a romanticised view of the past that can be used and constructed by governments and tourist boards. In this way, it is important to be aware of multiple ways of seeing the world while also questioning categories and uses of terms such as tradition.

Overall, it seems important to consider how different knowledges are valued when it comes to land management. It is necessary to try to understand how foraging knowledges are different from conservation knowledges and could be integrated into, or inform, land management practices. As this section has shown, incorporating local knowledges into resource management and land management decisions is important to respect different worldviews and experiences, and to promote decolonisation. As in examples where TEK has informed land management decisions, incorporating foraging knowledges into conservation projects could potentially reduce contentions in this space. However, first it is important to understand how they are different and where there is potential for overlaps.

2.4.3 Entangled Knowledges

Overall, in this section, I have explored literature which shows how knowledges are inextricably entangled in socio-political assemblages. Knowledges are not only contentious but they show how certain people perceive the world and relate to nonhumans. It therefore seems fundamental to examine the knowledges and ways of relating that surround foraging

as a contested space, to dig a little deeper into what underlies conflicts of interest. In the next section, I build on this by turning to recent work that has explored and conceptualised the concept of care as inextricably linked to ways of knowing and relating to nonhumans. Since knowing, relating, and caring are all interlinked (Puig de la Bellacasa 2012), this theme seems particularly pertinent. As Despret shows (2004) knowing about something can be a prerequisite for caring. This is the final conceptual field I explore before presenting my framework and research questions.

2.5 Caring

'In worlds made of heterogeneous interdependent forms and processes of life and matter, to care about something, or for somebody, is inevitably to create relation' (Puig de la Bellacasa 2012, p. 198). What we have learned to attend to (Ingold 2000), and thus what we have learned to care about, is a central part of the way we, as humans, live in the world. It involves a navigation of expectation, responsibility, and need, and it changes according to the situation. It is also an important concept when thinking about how we can live better on the earth (Tsing et al. 2017).

Indeed, caring is a analytical concept which, again, can show how humans are part of assemblages (Lien 2015), entanglements (Puig de la Bellacasa 2017) or networks (Law 2008) of caring with human and nonhuman subjectivities. Drawing from affect theory, arguably, what moves people to care about or for something, such as foraging or conservation, is very much impacted by material and relational forces that are assembled around an encounter. As Mol and Hardon (2020) explain, caring is 'a particular way of engaging with self, others, and surroundings' that focuses on the improvement of a situation (Mol and Hardon 2020, p. 199). It is an activity which is complex, circumstantial, and processual. It involves a local understanding of what is considered good - an understanding that can change based on the particular configuration of actors and circumstances. It also ties into the values that people have and how they have learned to relate to nonhuman others (Ortiz-Przychodzka et al. 2023).

Hence, 'engaging in caring does not serve an unequivocal, common good' (Mol and Hardon 2020, p. 197). Law describes care as 'multiple' (Law 2008, p. 9) and Mol and Hardon (2020,

p. 199) as ‘full of tensions’. In a similar way, geographers have set out to understand topologies of care (Hanrahan and Smith 2020). Hanrahan and Smith (2020), for example, explain that geographers can understand these topologies by focusing on ‘the spaces inside and between the actors and objects of care, where engagement and negotiation, actualisation and failures of care are enacted’ (ibid 2020, p. 232).

Caring about nonhuman others, then, can be viewed as a navigation of a network of different, and often competing agendas (Law 2008; Evans and Miele 2012; Mol and Hardon 2020). In the killing of an animal, for example, care has to be practised ‘for the animals in life, the animals at the point of death, and the animals after death; pastorally, for the farmers; for their own sensitivity to slaughter and suffering, and the necessary self-protection that goes along with this in order to retain sanity; for an abstract collectivity; the national herd; for the neighbours; perhaps for the meat trade, for the national economy, and on some versions, the political fate of the government’ (Law 2008, pp. 8-9). Law (2008) demonstrates that caring for the vet, for example, may also be coterminous with caring for the animal or the farmer.

Other studies that demonstrate how care for nonhumans can be contentious include those by Pitt (2018) and Heath and Meneley (2010), making this concept yet more relevant to foraging as a contested practice. In her study of a community garden, Pitt (2018) finds that activities such as gardening, which encourages more intimacy and ‘connection’ with nonhumans, doesn’t necessarily foster ethical concern (Pitt 2018). She creates three typologies of relating - enemy, stranger, and friend - to show the nuances in the way gardeners relate to nonhumans. Arguably, this can be linked with concepts of charisma and value to humans – not all nonhumans are cared for equally.

Heath and Meneley’s study (2010), on the other hand, shows how the production of Foie Gras, which can be viewed as harmful, is viewed by those involved in the industry as engendering an ethics of care. The authors argue that while the practice can be representative of ‘the murderous world of meat production’, they also see ways in which the practice, on a small scale, can include a caring ethos which involves attentiveness, and learning from, the ducks (Heath and Meneley 2010, p. 448).

In this way, Miele et al. (2005, p. 169) show how there is an 'ambivalence' and 'asymmetry' when it comes to human-animal relations. Although the concern for sentient farm animals has meant that legislation has been created to ensure farming practices reduce pain and distress, the nature of farming means that humans have a level of disconnection with their sentience to allow them to kill them for food. This can be applied to harvesting food or shellfish, as the very nature of harvesting and eating involves a certain level of ambivalence when it comes to care.

Indeed, activities that may be beneficial to the wellbeing of humans may be exploitative towards nonhumans, or at least the benefit to them might be unclear. Indeed, Gorman and Cacciatore's study (2023) of care farms explores how humans heal through connecting with animals on these farms. While they explain that there may be therapeutic benefit to the animals as well as the humans, this is not a given and must be considered (Gorman and Cacciatore 2023). There is a complexity involved when considering nonhuman wellbeing alongside human wellbeing.

Overall, examining what people care about and how they enact care, and the knowledges and values behind this, should contribute to the understanding of foraging as a contested practice. Through paying attention to how stakeholders navigate care, an understanding of why foraging is contentious could be revealed. This could inevitably be linked to socio-political assemblages and certain perceptions of best practice. As expressed in section 2.5, following Haraway (1988), I view knowledges and relationships as situated within wider fields of power and history. This helps to avoid the pitfalls of polarised thinking of good and bad, instead offering a way of talking about relationships and practices through the lens of different values and the navigation of care.

Nevertheless, seeing ways of relating and knowledges as situational does not mean that humans are not responsible for their actions. Since humans dominate the landscape, it is our responsibility to try and act with care for the more-than-human world (Ingold 2005). Seeing knowledges and practices as situated also means they are contingent and malleable, based on new knowledges and circumstances. Building new ways of relating is both timely and important.

As humans, we cannot ignore the fact that the way we are living on the planet is detrimental to other species as well as ourselves. As Tsing et al. (2017) articulate in their book, *Arts of Living on a Damaged Planet*, the way humans have been living on earth has been detrimental to ecosystems and biodiversity. In this research, I will acknowledge that some of the practices produced and reproduced in the spaces of foraging and conservation can be detrimental to the ecosystems of which we are a part. In doing so, I acknowledge my own 'involvement in perpetuating dominant values, rather than retreating into the secure position of an enlightened outside who knows better'(Puig de la Bellacasa 2012, p. 197), as Puig de la Bellacasa notes. Indeed, 'Multispecies justice emerges within fields of power where who is in the world, and whose world counts, is at stake. Any project that aims to achieve justice in multispecies worlds should thus ask: justice for whom or what?' (Kirksey and Chao 2022, p. 6). Therefore, in the discussion I comment critically on who benefits from certain decisions and practices. This isn't an attempt to demonise anyone involved in this research, but instead to show how 'our personal lives are affected by what society values' (Puig de la Bellacasa 2010, p. 164), and thinking about how we might use these insights to create ways of relating and acting that might benefit multiple species.

It is also important to acknowledge the inevitable ambivalence when it comes to eating and caring (Miele et al. 2005). Although foraging may be practised in a way that is minimal impact, and even beneficial in some ways, it is also a practice which is potentially damaging. It is interesting to observe how foragers justify their actions, and what measures and codes they put in place to limit the harm that they could cause to another species.

2.5.1 More-than-human caring

Within the field of posthumanism, and the sub-field of more-than-human geographies, there has been an emergence of critical work which analyses certain practices and ideologies, drawing out the opportunities they provide as a basis for new ways of relating to nonhuman others which is less human-centric, and doesn't separate humans and nature (Puig de la Bellacasa 2010; Tsing 2010; Lorimer 2015,2017; Krzywoszynska 2019). These studies examine the historical trajectories of these practices, looking at the knowledges and infrastructure that contribute to their development. Without putting certain practices on a pedestal, these authors try to highlight what opportunities they offer for the formation of an

ethos which considers health, development, and wellbeing as multispecies, rather than human-centred, projects.

For example, Lorimer (2017) examines the practices of rewilding and worming, which he frames within a broader 'probiotic turn' in late modern modes of governance (Lorimer 2017, p. 40). This turn brings nonhuman others into closer contact with humans, as a way of benefiting planetary and personal human health – acknowledging the benefit of forms of life that the 19th and 20th century political projects would have tried to banish from human worlds. He argues that this turn has been influenced by natural and life sciences, which suggest that resilience and immunity requires ecosystem health. Although he acknowledges that this turn is inherently embedded in violent colonial and political presents, he also tentatively suggests that rethinking relationality with nonhuman others, like wolves and worms, offers an opportunity for encouraging more-than-human forms of hospitality in a human-centric world.

In a slightly different way, scholars have also highlighted potential opportunities embedded in certain practices. For example, Tsing's (2010) study refers to the 'arts of inclusion' as a practice of noticing and learning from other species that she sees among mycologists and fungi enthusiasts (Tsing 2010, p. 192). For Tsing (2010), this is how to 'love' in a 'time of extinction', by paying attention and asking how we can learn from past mistakes in the way we manage land and treat other species (Tsing 2010, p. 200). Again, Tsing (2010) advocates for attention to be paid to species that are not just charismatic, but to those, such as fungi, that we sometimes try to remove from our environments (Tsing 2010). Arguably, this form of 'noticing' that Tsing (2010, p. 200) describes is more than just witnessing or observing a nonhuman other – there is a particular quality to 'noticing' which recognises that we are part of an interconnected and entangled web. It requires what Puig de la Bellacasa (2010, p. 164) calls 'naturecultural meaning of care ethics'. Naturecultures, as a concept, is also used in critical posthuman scholarship that advocates for a framework which doesn't separate nature and culture (Haraway 1997; Castree and MacMillan 2002; Heath and Meneley 2010; Tsing 2010; Latimer and Miele 2013; Bruckner et al. 2019; Puig de la Bellacasa 2017).

Similarly, Krzywoszynska (2019) talks about how soil care requires a certain attentiveness by farmers. Attentiveness, she argues, is 'key to the ethic and practice of care' (Krzywoszynska 2019, p. 4), as it embodies a commitment to the needs of the other. She advocates for this

attentiveness to be adopted by more than just farmers, as she sees soil care as something fundamental to the health and survival of humans and the more-than-human world in which they dwell. Other studies have similarly explored themes such as responsibility and care within practices such as dog walking in the countryside – and the importance of knowing codes of conduct and having anticipatory knowledges (Brown and Dilley 2012), the practices of attentiveness and attunement in bird-watching (Just 2022) and the way that humans can learn from other species (Desai and Smith 2018).

Puig de la Bellacasa (2010, 2017), on the other hand, studies the way permaculture is practised and the opportunities that this affords for the ways humans relate to the more-than-human world. She describes the ethos of permaculture as 'alterbiopolitical' – 'an alternative path in the politics of living with care in more than human worlds' (Puig de la Bellacasa 2017, p. 130). The word 'alter' refers to 'alternative' as this ethos is presented by Puig de la Bellacasa as an alternative to dominant biopolitics, which is human-centric, colonial, and 'capitalocentric' (Puig de la Bellacasa 2017, p. 165). Ethos, she finds, is generally a more useful term than ethics as it is less imbued with connotations linking to normative ideas of morality, and binary ideas of right and wrong. It also encourages a focus on a situated and relational engagement in the world in which values, cares and concerns play out in a constant negotiation, or practice. This is consistent with a relational, assemblage approach.

The alterbiopolitical ethos of permaculture includes viewing the world as a more-than-human 'collective' and builds an obligation of humans to be responsible in the way that they live alongside nonhuman others (Puig de la Bellacasa 2010, p.160). It requires an awareness that human activities can impact nonhuman others, and can cause pain, death and extinction. Overall, Puig de la Bellacasa (2010) highlights the opportunities permaculture as an ethos affords, and advocates for this ethos to be extended beyond the niche of those practising it. More recently, Still (2021) has drawn on this concept of alterbiopolitics to analyse collective agriculture, finding the ways that this practice situates humans in an interdependent, multispecies world.

I find that these studies are useful and interesting because they go beyond simply criticising and analysing certain ways of relating, to suggest how a certain ethos can afford opportunities beyond the niche in which it is currently practised. Importantly, these studies

are realistic about the limitations to certain practices and the contexts through which they emerged.

2.5.2 Care as situated

This section of the literature review has shown that while knowledges are important to the study of contested practices, looking at care is equally beneficial. Knowing, thinking, caring, and relating are all interconnected, and can all be seen as ongoing processes rather than fixed. Therefore, looking at knowledges, as well as how foragers and conservationists show care, will be insightful in the study of foraging as a contested practice.

Moreover, thinking of knowledges and ways of relating as changeable and situated also means there is potential for change. Many researchers in the fields of more-than-human geographies, STS, and extinction studies, argue that this is a crucial academic enquiry in the context of the Anthropocene and large-scale environmental damage (Puig de la Bellacasa 2012; Braidotti 2013; Probyn 2014; Tsing et al. 2017; Beacham 2018). Arguably, examining controversies that are related to resource and land use, eating, and relating to nonhumans in embodied and direct ways, like the ones explored in this thesis, demonstrate the kinds of conditions which create intimacy, responsibility, and care. It also helps to produce an understanding of the kinds of conditions and material and relational forces that feed into unsustainable practices, such as overharvesting or environmental damage.

In the following section, I present my chosen framework and research questions developed in the context of this literature review.

2.6 Framework and research questions

Building on the material outlined thus far, my approach is based around some of the key themes that I have highlighted in posthuman studies of controversies and contestations surrounding land use and relationships with the more-than-human world.

Firstly, I have chosen to work with the ethos of assemblage mentioned by Anderson and McFarlane (2011), which treats assemblages as constantly changing agglomerations of multiple agencies. In this way, I utilise themes of coordination (Gan and Tsing 2018) and territorialisation (Deleuze and Guattari 1987; Bear 2013; DeLanda 2016), to explore the

material and relational forces that come together to produce and reproduce foraging as a contested practice in the UK. This requires attention to be paid to multispecies interactions and entanglements, as well as socio-political forces and histories, and the effect they have on space, place, and multispecies relationships. It also requires an analysis of the ways in which instability and change can create conflict. In relation to this, I have developed the first research question:

Research question 1: What kinds of material and relational forces coordinate to make foraging become a contested practice?

Using assemblage as an ethos to answer this question requires a level of thick description and a focus on the liveliness of different species (Anderson and McFarlane 2011). Therefore, I observe how foraging as a contested practice plays out in everyday practice and ordinary events. I treat the ordinary as a 'shifting assemblage of practices and practical knowledges, a scene of both liveliness and exhaustion' (Stewart 2007, p. 1). In this way, I focus less on the controversies in the public eye in the way ANT scholars have done, and more on smaller-scale events and moments in which foraging becomes contested in practice. Although I present some media stories to show public disquiet, I focus on the way different relational and material forces come together in everyday practice to form these sorts of events, paying particular attention to nonhuman beings.

In response to the criticism that boundaries of assemblages are typically hard to define, I do not see this as a threat to research integrity but instead as an opportunity to embrace the uncertain and the transitory within my approach. I look at wider movements, forces, and beings enmeshed within certain foraging controversies and conflicts, without claiming to be exhaustive or fully representative. I examine the kinds of forces that materialise while recognising that my perspective is partial and limited.

Furthermore, I attend to how assemblages are held together, come together, and what kind of material and relational forces affect this. Affect, which is a key concept within both ANT and assemblage, is an underlying theme in this research, as it is critical to the way assemblages hold together and disintegrate (DeLanda 2016). This involves drawing on relational materialism and sociological works that theorise taste as both social and biological (Bourdieu 2010; Colebrook and Miele 2017; Hennion 2016; Roe 2006-a, b). What people

perceive as desirable to eat, as a way of being in the world, is shaped by opinions and feelings that resonate among multiple bodies and become a shared identity and practice (Hayes-Conroy and Martin 2010). The chemical compounds of certain wild foods are arguably made to matter through culinary practices and collective enjoyment. In this way, affect is central, as different bodies merge and come together, and meaning is sustained and created (Mol 2008).

As explained earlier in this chapter, knowledge practices and socio-political assemblages are part of the multispecies coordinations that create controversies. Therefore, the following research question should also provide useful insights into what underlies foraging as a contested practice:

Research question 2: What are the knowledges, values, and ways of relating that are embedded in foraging as a contested practice?

To answer this question, I draw on the concept of nonhuman charisma (Lorimer 2007) to show the different ways human stakeholders value and relate to nonhuman others, and how this relates to broader political agendas, while also acknowledging the multispecies entanglements that, in turn, shape these agendas as processes. I also combine this with the concepts of commodification (Ortiz-Przychodzka et al. 2023) and salvage accumulation (Tsing 2015) to bring in the way commercial foragers might value the same species. I show how certain forms of charisma, such as corporeal charisma, may cause a certain species to be commodified. I also look for other reasons for valuing nonhumans, relevant to this research.

To avoid making my research too broad, which is one of the pitfalls of assemblage approaches (Kinkaid 2019), I refer to particular movements in space and time in relation to wider webs of regulation in the contested space of foraging. However, I present my research through a storytelling approach to create an atmosphere, or idea, of what aspects might be coming together to make foraging a contested practice. In this way, I examine ways of relating and thinking about what force-relations might be influencing them. Moreover, following Gan and Tsing (2018), I also place myself within the research encounters so that I am not hidden from view (Chagani 2014). This gives a sense of transience which is significant in assemblage theory, as it focuses on the temporary formation of order from chaos (Kleinherenbrink 2015).

Furthermore, Tsing's (2015) study uses a storytelling method to show the 'patchiness' of the worlds of mushrooms, harvesters, and industry that she is trying to describe (Tsing 2015, p. viii). She is not afraid to make claims about how the capitalist system influences behaviours and ways of relating, but she also acknowledges that this is inherently complex and her perspective is somewhat partial.

Another criticism of relational approaches is that they can cause the researcher to bypass unequal power relations between different bodies in favour of a more generalised account (Tolia-Kelly 2006; Chagani 2014; Braidotti and Bignall 2019). If thinking about this from a posthuman perspective, it would be possible to analyse how humans relate to nonhumans without thinking about ways in which this could be improved. Therefore, I adopt a critical posthuman perspective. I do not stop by pointing out the ways of relating underlying foraging as a contested space but instead use the findings of this research to think about the threats of certain foraging practices becoming more widespread. I also examine potential synergies between foraging and conservation projects that could inform land management strategies. Indeed, assemblage approaches do lend themselves to critical studies, as the core ontology is that political orderings, and thus ways of relating, are contingent (Müller and Schurr 2016). As Tsing (2015, p. vii) explains, 'in order to live at all, we need new modes of living together.'

As Latour (2005, p. 115) asserts, researchers must learn to 'feed off' controversies. Researchers present insightful situations from which to explore different 'worlds' and encourage an openness to new possibilities (Callon et al. 2011, p. 28). In this case, through exploring the affects and assemblages within controversies and conflicts around foraging, I provide insights into the different ways people relate to and know other species, and how this, in turn, shapes their practices and what they care about.

Furthermore, although I look at the practices of foraging and conservation with a critical eye, I also look for the potential for collaboration and development within these practices. To do so, I develop Puig de la Bellacasa's concept of alterbiopolitical ethos and draw on the concepts used by scholars such as Tsing (2010), Krzywoszynska (2019), Just (2022), and Brown and Dilley (2012) to explore the role of particular practices and what they could afford within a wider ethos.

Taking inspiration from literature mentioned in section 2.4, it was pertinent to include multiple forms of knowledge in land management strategies and the promotion of biodiversity. This research, therefore, aims to understand the different knowledges which surround foraging as a contested space and considers the synergies and mutual understandings that could benefit land management practices and policy. This is captured in the following research question:

Research question 3. What are the threats and opportunities that foraging offers to land management and conservation projects?

Overall, this chapter's review of the literature has provided a framework through which to attend to the contested practice of foraging. It has contextualised foraging as a contested space in the UK and has identified different theoretical trajectories which have been used to study contestations and controversies. Based on this review, I have developed a unique approach to studying foraging as a contested practice, bringing together assemblage approaches to analyse how foraging becomes contested, and who and what is involved. I use this as a basis for developing a critical posthuman discussion about foraging and conservation practices, making use of Puig de la Bellacasa's (2010, 2017) alterbiopolitics to explore synergies and potential for collaborations in the context of land management.

The next chapter explains the methods I chose to gather data and answer my three research questions, based on the critical posthuman assemblage approach.

Chapter 3: Methodology

The previous chapter established the conceptual framework I use to explore foraging as a contested practice in the UK. In this chapter, I describe my methodological approach and research design.

In accordance with a critical posthuman approach, I begin by exploring posthuman methods of research. I find that multispecies ethnography enables me to take a flexible approach in which I can include nonhuman subjectivities, while also conducting interviews which focus on human values and opinions. I describe how I go about collecting, analysing, and writing up my results based on this approach to research.

3.1 Posthuman methodologies

Since 'posthumanism involves profoundly different ways of thinking about research design' (Ulmer 2017, p. 3), I first examined the ways other researchers had gone about representing and including nonhuman subjectivities. For example, some researchers have used photography and video to capture movements of animals through landscapes (Evans and Adams 2018) or human and nonhuman interactions (Brown and Dilley 2012; Charles et al. 2024). Some researchers have tracked animals through the landscapes, observing their behaviour (Wels 2020), while others have spent time observing and drawing nonhumans in engaged witnessing (Bell et al. 2018). These different methods stem from the assumption that embodied behaviours and interactions can provide data which helps story the worlds of nonhumans (Charles et al. 2024).

Other posthuman research has involved collaborations between the researcher and ethologists, natural scientists, gardeners, and indigenous communities (Miele and Bear 2022). For example, Pitt (2015) draws on the expertise of gardeners as a way to know and represent plants, and van Dooren draws on natural science (van Dooren 2022). In a similar way, researchers have also included the ontologies of indigenous communities to story the life worlds of nonhumans (Vannini and Vannini 2020).

There are multiple ways to include nonhuman subjectivities within research, and to conduct a multispecies ethnography. However, I needed to find data collection methods which would

lend themselves to analysing muti-species coordinations that made foraging a contested practice, in order to answer question one. I also needed methods that would enable me to explore human values and knowledges as well as witnessing how they related to nonhumans, for questions two and three.

When considering my research goals and questions, multispecies ethnography seemed an appropriate approach to investigate the way that humans and nonhumans are entangled in foraging practices and regulations. It is compatible with assemblage theory, which examines the more-than-human grouping surrounding certain acts and performances, forming the foundation of my conceptual framework. I also needed a methodology which would take account of the messiness of reality (Law 2004), since foraging as a contested practice seemed to be nuanced, and complex, rather than a homogenous field. Ethnography has been highlighted as a method which enables the researcher to draw on various forms of knowledge and to highlight complexity and mess within research (O'Mahony 2019).

Ethnography is a dynamic and often contested practice used by social scientists, which usually involves the researcher participating in the daily lives of the human participants over an extended period of time (Atkinson and Hammersley 2007). During this time, data is typically collected in everyday, informal contexts, using a mixture of participant observation and informal conversations (ibid 2007). What takes place during the research is largely 'opportunistic' (O'Reilly 2005, p. 126) rather than thoroughly planned, as the researcher responds to situations presented in the fieldwork location. Ethnography is often chosen by researchers because it allows them to observe people's practices in action, rather than focusing on their own description of what they do (Gans 1999; Flick 2018).

Multispecies ethnography, on the other hand, first named by Kirksey and Helmreich (2010), is a posthuman approach to ethnography which encourages researchers to look beyond human words and worlds to the assemblages and entanglements of different species within certain situations and contexts (Kirksey and Helmreich 2010). This practice is largely influenced by the fields of STS, animal studies, and environment studies (ibid 2010). Multispecies ethnography 'includes examination of the subjectivity and agency of nonhuman organisms that are inextricably linked to human worlds' (Remis and Jost Robinson 2020, p. 460). It is a useful tool which can bring together social and biological

anthropology, blurring the boundaries of nature and culture (ibid 2020), which is consistent with a posthuman approach.

Furthermore, multispecies ethnography as a broad methodological approach encompasses a variety of data collection methods, which enabled me to take a flexible approach. My first and second research questions required different kinds of data and modes of analysis. Where question one required a holistic, assemblage approach, questions two and three required a more in-depth understanding of the nuances in knowledge practices and values of the human participants.

My research design, then, resonates with the metaphors of 'tracking' (Wels 2020, p. 345) and 'foraging' (O'Mahony 2019, p. 112) that have been applied to the ethnographic research process. Indeed, I was following trails of information, building up a picture and sense of foraging as a contested space in the UK iteratively and reflexively, responding to situations, interviews, and new information throughout. I used a variety of research methods under the broader methodological approach of multispecies ethnography to understand foraging as a contested practice, using different sources of information. In this way, different research encounters also required different approaches. For instance, some of the situations I came across, which highlighted foraging as a contested practice very well, had happened in the past, whereas foraging also became contested through conversations in the present (during interviews or when discussing my research). These differing situations, therefore, required different methods of data collection and analysis. In the following sections, I explore my research design, explaining how I used various methods to gather data to answer my research questions.

3.2 Research Design

In looking at how other researchers had studied coordination and assemblage, I found Bear (2013), for example, used documentary sources about the Cardigan Bay fishery, and the movements and processes from outside that affected the bay. Gan and Tsing (2018), on the other hand, used walking interviews, photographs, and drawings to analyse multispecies coordinations. Inspired by these studies, I decided to use a mixture of these two approaches. More specifically, I began by collecting online documentary sources about foraging as a

contested practice, which guided my enquiry. Based on this, I conducted walking interviews with stakeholders I identified as practising or regulating foraging. I also used audio-visual methods to observe certain species and to see the embodied interactions between humans and nonhumans. As Gan and Tsing (2018, p. 120) explain, 'we observe trees and fungi, rather than stopping with advocates' ideas about nature. We also pay attention to the conditions of knowledge production.' In this way, although I aimed to draw my knowledge from experts through walking interview, I also observed the wild foods through using visual methods. Indeed, Pitt (2018) explains that it is valuable to experiment with methods that treat nonhumans as experts.

Nevertheless, natural history and science information also helped me to make sense of nonhumans in ways that I wouldn't be able to by simply observing them in-situ, so I incorporated case studies and species to guide my exploration of natural science and history, using reference books and interviewing scientists. I also decided to incorporate autoethnography into my research enquiry, which has been shown to be beneficial in multispecies approaches (Gillespie 2021) and enabled me to be clearer about my own positionality.

Below is a summary of my research goals and questions and the methodology I have chosen (Figure 1).

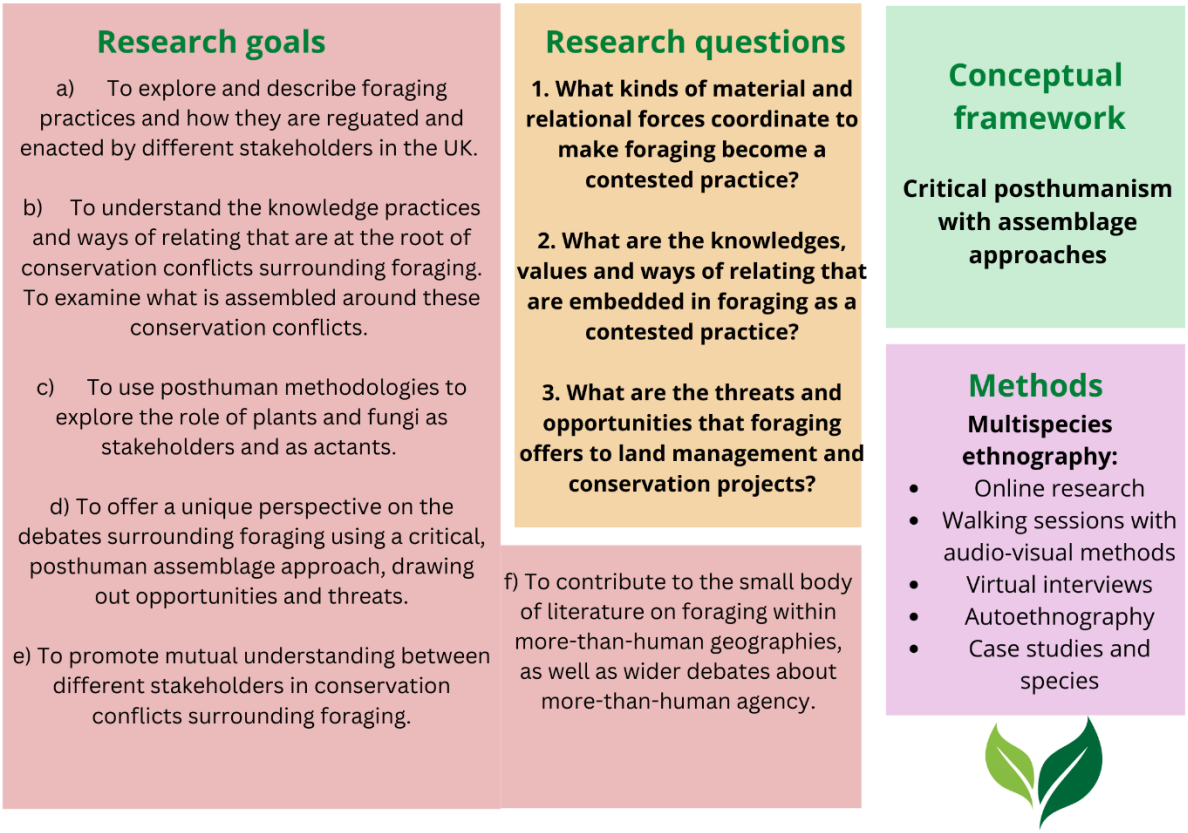

Figure 1: Research Design Diagram (created by author)

In the following section, I explore this in more detail, outlining why and how I used the different forms of data collection as part of my research design (section 3.2.1). I then move on to discussing my choice of field sites (section 3.2.2), participant recruitment (section 3.2.3), how I went about my analysis and writing (section 3.2.4) and the ethical considerations I made when planning and delivering this research (3.2.5).

3.2.1 Data collection

Gathering online sources

Online articles, blogs, and websites provided a way for me to scope out my research in the initial phase and continued to inform the direction of my study throughout. For this part of my research, I was influenced by ethnographic content analysis (ECA) as a method of research. ECA is a style of qualitative content analysis which involves a reflexive immersion in relevant documents to explore 'aspects of culture, including other communication and mass media materials that are part of the cultural context' (Altheide and Schneider 2013, p. 26).

Specifically, attention is paid to who writes the documents, and what knowledge practices they participate in.

Indeed, internet resources, such as blogs, can complement traditional in-person ethnographies, as they are 'public and spontaneous representations of everyday practice' (Bean and Arsel 2013, p. 376). As Blommaert and Jie argue, we 'live our lives largely in an online-offline nexus' (Blommaert and Jie 2020, p. 87) and this needs to be integrated and considered in ethnographic research. It is part of our social life to live somewhere between online and offline, and this is reflected in my research design.

I began by collecting and analysing online documentary materials that pointed to foraging as a contested practice, such as newspaper articles and blogs. There is a large amount of information for the general public about foraging on social media, blogs, and webpages. For example, the Woodland Trust includes foraging guidelines and tips on its website (Woodland Trust no date-b) . Some professional foragers also share knowledge of plants and recipes on their own websites, blogs, or on YouTube. They often include sections on their websites about the laws and regulations surrounding foraging, as well as tips for best practice (Northern Wilds no date; Pippin and Gile no date). It is evident that online sources provide a wealth of information about foraging practices, regulations, and the knowledge practices and values behind them. This information is publicly available, and it is often where the general public discover and learn about foraging. This gave me some preexisting knowledge about the issues at stake and clues about who to contact.

In this way, I used online sources for scoping potential issues around foraging as a contested practice, as a talking point for interviews at the beginning of the research, using search terms such as 'foraging and sustainability', 'foraging and conservation' or 'foraging and illegal'. As a starting point, I also used news articles that lead me to study this topic, which identified foraging as a contested practice, as well as articles I had been sent by colleagues and friends on the subject. The majority of these initial materials were blogs, which were written by individuals (sometimes part of larger foraging organisations) or newspaper articles written by journalists. These sources gave me a good indication of the kinds of situations that arise in the contested space of foraging, as well as people's feelings about them, and indicated certain organisations or individuals that would be beneficial as participants for my research.

Indeed, ‘blogs provide a significant amount of personal data’, which can suggest a great deal about certain knowledges, values, and opinions that surround a subject such as foraging (Gaiser and Schreiner 2009, p. 84). Although scholars have warned that a limitation of using blogs is that they can be ‘misleading’ or ‘fictitious’ (ibid 2009, p. 84), and it can be difficult to track where the information comes from (Blommaert and Jie 2020), the data I gathered from these sources was not taken as fact but rather informed discussion about opinions, values, and knowledges. I always asked people during interviews how they felt about particular online opinions and found individuals who had been involved in controversial events to expand on this. I was also very clear in writing my ethnographic vignettes when I found certain information online, to be transparent and clear about this. In this way, my vignettes reflect how ethnographic research in these times is inherently informed by online information.

I continued to find online materials iteratively throughout my fieldwork, which supported or challenged the themes and ideas I uncovered through interviews. For example, it was a participant I interviewed who first made me aware of the ‘look, don’t pick’ advice in the New Forest (see Figure 22). I then looked for articles online to understand the situation on a deeper level. Subsequently, I contacted people in the New Forest who I was then able to interview while walking in that location (see section C.2).

In addition, I also used online sources to explore the way nonhumans are known and valued among conservationists and foragers. I had identified several case study nonhuman species (as explored in this section under Case studies and species) that emerged throughout my research encounters. I then used search engines to find what was written about these species online, focusing on conservation websites or foraging blogs, to see how these species are known in the conservation world (whether they are protected, endangered, etc.) and how they appear in recipes or conversations around the sustainability or conduct of foragers. These searches were focused and targeted on those particular species, and websites of blogs by particular kinds of stakeholders.

Overall, online sources proved essential to the way I scoped out and developed this research, allowing me to access information and opinions that I wouldn’t have been able to access without the internet. In my vignettes in the following chapter, I make it clear which of the opinions and information I accessed were from online sources, and how this led to other

research encounters. In this way, online spaces provided a space to forage for information and track events and stories that were related to my research topic – making a profound impact on the issues that I focused on and who I engaged with as a participant.

Walking sessions

Following on from my initial online scoping research, I wanted to gather primary data from talking and meeting with stakeholders that I had identified. In-depth interviewing is considered an effective method for studying people's perceptions and motivations (Hennink et al. 2020), and ethnographers often use informal and formal interviews as part of their data collection (Murchison, 2010). As I went about designing my research, interviews seemed appropriate for studying people's knowledge practices, motivations, and values, and could also be targeted to specific stakeholders rather than larger samples of the general public (Flick 2022). However, considering that I was planning a multispecies ethnography, although I wanted to hear people's opinions and motivations, I also wanted to see how they related to nonhumans, and how they practised, monitored, or regulated foraging. So, I looked into walking methods as a potential option for this study.

Walking methods are becoming increasingly popular among geographers interested in sensuous and embodied ways of knowing (Ingold and Vergunst 2008; O'Neill 2020). Walking methods have been employed by sensory ethnographers and feminist scholars, focusing more on the ways bodies move through particular landscapes (Springgay and Truman 2018). Together, participants and researchers explore what it means to move in a particular location and the affective geographies of particular landscapes (Springgay and Truman 2018). Walking can be political, as there are places people can and cannot walk, which links to power hierarchies, inequality and control (ibid 2018). Walking immerses the researcher in the more-than-human world as they move among different species, and experience the weather and the topography (Evans and Jones 2011).

Considering this, I concluded that interviews were a suitable method for gathering data to answer research questions two and three as I would be able to witness firsthand how foragers, conservationists, and landowners related to nonhumans, while also being able to ask them where their knowledges came from and about best practice foraging. I could also get a sense of how nonhuman forces such as the weather would affect human activities.

However, Vannini and Vannini (2017) explain that often walking interviews can become 'interviews on the go' (Vannini and Vannini 2017, p. 193), rather than a sensory and exploratory practice, becoming overreliant on narratives and text. They argue that researchers should 'go somewhere to feel a place, sense a landscape and its weather, and encounter a human being with whom we choose to walk' (ibid 2017, p. 193). They encourage researchers to make walking interviews 'more sensuous' by using complementary methods to encourage alternative ways of knowing than through talking and writing, such as audio-visual (ibid 2017, p. 181). Many researchers have suggested that visual methods are a beneficial method for capturing human and nonhuman encounters as there is less reliance on verbal communication (Lorimer 2010; Wilkinson et al. 2011; Dowling et al. 2017).

Therefore, I decided to integrate audio-visual methods with walking interviews - which I refer to as walking sessions. The walking sessions themselves were somewhere between a traditional, semi-structured walking interview (Evans and Jones 2011) and shadowing; following and witnessing the participant doing one of their routine activities in an embodied way (Czarniawska 2018). Arguably, shadowing is an appropriate ethnographic method for this study because there is no fixed field site (ibid 2018). Czarniawska (2018, p. 58) argues that shadowing is a more appropriate form of ethnographic fieldwork for modern times, capturing 'the ways of living and working of people who are quickly moving from one place to another' in a transient society. Shadowing involves following the participant as they work or as they live their life, observing what and how they do things (ibid 2018).

I walked with my participants in a location of their choosing (whether a foraging site or conservation site that they worked in or frequented). These walking sessions allowed me to observe how my participants were affected by certain edible species, exploring what thoughts and feelings these interactions initiated, and they also enabled me to see how they responded to plants in a more embodied way. Although I asked a few basic questions at the outset, to set the tone, about their backgrounds and how they felt about foraging, the interview was more of a conversation and response to what was happening around us, and what they were showing me. I used my camera to film and photograph how they were moving in the landscape; how they would harvest wild foods, for instance, to show their embodied skill and knowledge. During the walking sessions, I also recorded the conversation for the entire interview on an audio-recorder, which I later transcribed. This enabled me to

analyse my data thematically as well as looking at the videos for information about embodied behaviours.

There were elements of these walking sessions that would reflect the approach of sensory ethnography, as described by Pink (2009). Sensory ethnography 'entails our multisensorial embodied engagements with others (perhaps through participation in activities, or exploring their understandings in part verbally) and with their social, material, discursive and sensory environments' (Pink 2009, pp. 25-26). Sensory ethnography is a tool that invites researchers to attend to sensations and sights, as a way of engaging in the same environment as participants. It also encourages the researcher to acknowledge how their own materiality and intersubjectivity shapes and becomes shaped by the research process (Pink 2009). Since I was walking in the elements with participants, sometimes touching, and at other times eating plants, shellfish, or fungi, naturally my in-person research encounters had a sensory aspect. Through these engagements, I was able to reflect on impacts of the weather, and certain flavours and sensations, which connected me with the other participants, and informed a more intimate way of knowing (also linked to autoethnography, which I describe later).

Furthermore, since audio-visual methods have been highlighted as a particularly useful method for exploring the worlds of nonhumans (Bear et al. 2017), I also took photographs and videos of the nonhumans which were mentioned in the interviews, particularly focusing on the way humans interacted with them. This enabled me to get a better sense of the nonhuman actants involved in contestations around foraging and provided me with some primary data for answering research question one.

It is inherently difficult and complex to include nonhumans, especially plants, as participants in more-than-human research (Pitt 2017). I considered carefully what I would focus on when photographing and videoing plants. Following Brice (2014, p. 944), I decided to view 'planty agencies' from a relational perspective – in the entanglement between humans and plants. Therefore, when including wild foods as agents in my research, I was interested in how they moved and affected humans. This requires attention to be paid to human and plant 'cohabitation', and shared territories (Brice 2014, p. 946). Therefore, during walking sessions I focused on recording the ways in which the plants affected the human participants, and how they, in turn, were affected by the interaction. This resulted in the human participants

guiding me towards the nonhumans to focus on, rather than me selecting them before the session. In this way, my approach was somewhat similar to Ginn (2014), who interviews gardeners in their gardens to witness and observe their interactions and relationships with nonhumans. Through his iterative research, slugs became the focus of his study, having been present in many of the garden sessions (Ginn 2014).

Virtual interviews

Although virtual interviews, via Zoom in this case, were not part of my initial plan, I incorporated them into my research once I realised that some participants were not able to meet in person for walking sessions. Since my research took place just after the COVID-19 related lockdown, some people were nervous to meet in person due to the contagious nature of the virus and felt more comfortable to meet online. Furthermore, several employees of large-scale landowners and conservation organisations were only able to spare an hour and preferred the virtual format. Indeed, video conferencing as a research tool has been highlighted as a method which allows the participant privacy and their own space, especially in the context of a pandemic (Khan and MacEachen 2022). Another advantage is that it is also cost-effective because it doesn't involve travel by the researcher or participant, therefore being more inclusive and accessible as a method (ibid 2022).

In some cases, we had an initial conversation on Zoom before arranging to meet in person at a better time of the year for foraging. This format turned out to be beneficial as it meant I could focus less on talking and more on shadowing during our walking sessions.

I recorded all of the virtual interviews and later transcribed them using the software program Otter AI. In a similar way to the walking sessions, the virtual interviews were 'semi-directive' (Gaudet et al. 2018, p. 97); I asked particular questions towards the beginning of every interview about the participant's background and their perception and engagement with foraging. The interview then became more like a conversation as I'd pick up on topics in their initial answers that were interesting in the context of my research, which we would then explore further. The semi-directive interview is more about facilitating the participant to talk about themselves, and listening deeply to encourage them to talk freely (Gaudet et al. 2018). I had a list of topics I wanted to cover with each participant, which I edited and made specific to the interview. Apart from questions about their background and

engagement with foraging, which were common to all interviews, the other questions I asked were specific to the individuals; a certain contestation they were linked with, the responses of their particular organisation, or one of the case study nonhuman species that they were an expert in.

Weller (2017) notes that establishing rapport is crucial for a successful interview, especially when they are semi-directive or non-directive interviews that rely on a flow of conversation. It was more difficult, in general, to establish a rapport on Zoom than during the walking sessions, as the virtual interviews were generally shorter and more intense, During the walking sessions, rapport was built by moving in the landscape together, making shared responses, commenting on the weather, and opening gates. For this reason, I always began the virtual interviews in a fairly informal way before introducing the questions, asking how the participant was feeling that day or talking about something unrelated such as the weather, to relax them. Nevertheless, sometimes connection issues did interfere with the quality of the rapport built, as well as with the recording. This is a general limitation to video calls as an interview method, although it has been argued that some people feel more comfortable in their own home and will talk more openly (Weller 2017) (which may well have been the case considering the context of COVID-19).

In this way, the location of an interview can have a large impact on the data that emerges, as different locations will impact how the participant behaves and the dynamics of the interview (Leverentz 2023). Leverentz (2023) argues that observing a participant in an environment they are familiar with during an interview gives the researcher an understanding of the way they relate to others and to landscapes, as I was noticing during the walking sessions. It was difficult to get a sense of place or interactions from a virtual interview. Furthermore, the sensory aspect of these interviews was less obvious than in the walking sessions, and it was not possible to witness interactions between humans and nonhumans. However, virtual interviews enabled me to reach more participants than I would have been able to in person, and in particular, those involved in organisations that had a link with a contestation or controversy around foraging. It was also very important that the participants felt safe and comfortable during the interviews, which was facilitated by them being able to stay in their office or home.

Autoethnographic journalling

'Autoethnography takes the ethnographic lens and turns it directly inward' (Poulos 2012, p. 39), examining the lived experience of the researcher in relation to a certain activity or situation. It involves the author reflecting on their own relationships, sensations, and opinions surrounding a certain topic. This method is visceral and embodied, and has been identified as useful when researching the themes of embodiment, identity and desires in relation to material culture and consumption practices (May 2011). It is often used to give voice to underrepresented groups, being able to explore topics such as gender, race, and class from a first-hand perspective (Ellis et al. 2011). Indeed, it requires a transparency about the positionality and identity of the author, showing how the background of the author influences the framing of the project. It has also been used to explore personal issues around food consumption and body image (Longhurst 2012).

I felt that, due to my positionality as an amateur forager as well as researcher, I wanted to make sure that my voice was present in the research as much as possible. Having conducted autoethnography before (King 2020), I knew the value of this approach. In this way, it becomes clearer to the readers how my own interests and practices influence the outcome of this research. Since I view research as performative (Law 2004), I wanted to situate myself within it to show how I was part of the multispecies coordination that was taking place during my research encounters. Gan and Tsing (2018) have shown how situating the self within research vignettes can be beneficial when working with assemblage approaches with these means.

Gillespie (2021) shows how autoethnography and multispecies ethnography can be combined to create a rich and provocative method for exploring ideas around how humans are implicated in the lives and deaths of other animals. She uses the method in two ways, firstly to analyse her experience of rearing chickens in relation to the socio-political context. She explains that, although useful for revealing certain political dynamics that often shape race, class, and exclusion around raising chickens and eating eggs, the approach is still somewhat anthropocentric. She therefore experiments with a second approach, analysing the power dynamics in the relationship between her as a chicken rearer and egg eater, and the chickens themselves – acknowledging the implications of her desire to eat eggs.

As an amateur forager, always keen to learn more, I kept an autoethnographic journal between September 2021 and November 2022 to explore how I was learning about foraging, what sources I used, and how they influenced me – and further, how my interactions with participants effected my foraging practices. I wrote in the diary every time I went foraging, saw an interesting post on social media which influenced me, or had a particularly insightful conversation or interaction about foraging. Autoethnography focuses on the processes in which people figure out how to make sense of certain situations in their lives. With this in mind, the approach helped me to elucidate the process of learning and sense-making through embodied action. This is consistent with posthuman epistemologies such as affect theory, as I 'learn to be affected' (Latour 2016, p. 205) by ideas, knowledge practices, sensations, and material interactions. It also enabled me to reflect on, and write about, how my own interests influenced this research.

I used these journal entries to write my vignettes in Chapter 3, being able to include feelings that I had during my interviews and how I came to know and learn about different areas of the research. Following Gillespie (2021), I also reflected on power dynamics between myself and the nonhuman wild food sources, adding these as footnotes to my vignettes. As Gillespie (2021) shows, multispecies autoethnography can be used as a method to highlight or question multispecies (in)justice. These footnotes are intended to be provocative – highlighting ambivalence, messiness and complexity surrounding power dynamics when eating and killing, which will be addressed in Chapter 5.

Case studies and species

The case study is usually 'asked to perform a heroic role: to stand for (represent) a population of cases that is often much larger than the case itself' (Seawright and Gerring 2008, p. 294). Often case studies are particular geographic locations or situations (ibid 2008), however, I chose specific events that highlight some of the contentions surrounding foraging in the UK, which appear in many different locations. These events help me to demonstrate the entanglements of humans and nonhumans, and enliven specific themes that reoccur throughout my research. As we saw in the literature on assemblage theory, it is important to locate research in particular spacio-temporal events in order to draw out the different actors that surround it.

Furthermore, works such as Tsing's *Mushroom at the End of the World* (Tsing 2015) and van Dooren's chapter on snails in *Animal Remains* (van Dooren 2022) are examples of how the researcher can focus on specific species when talking about how humans and nonhumans are entangled in political and environmental concerns. I focus on engaging with certain nonhumans that were present during my research encounters, which highlight something about how foraging becomes contested. As previously mentioned, the case species I attend to were iteratively chosen through walking sessions and online research as species that were part of a contention around foraging, including wild garlic, sea kale, porcini mushrooms and many more. I also include nonhumans who are assembled around foraging and conservation conflicts, such as certain trees, birds, and habitats.

To gain an understanding of each species, I draw on scientific knowledge provided by experts. As Pitt (2015) shows, being guided by experts who are familiar with nonhumans is one of the strategies employed by researchers. Through this interaction with experts, researchers can learn how to attend more closely to nonhuman participants (ibid 2015). For example, Pitt (2017) suggests that researchers can learn 'planty knowledge' through becoming entangled in relations with plant communities, guided by these experts (Pitt 2017, p. 92). I therefore virtually interviewed biologists and mycologists who were experts in case study species.

However, I also looked for other sources of knowledge, seeking out information about their role and part in the ecosystem, their protected status, the history of their consumption, the way they are harvested, the kinds of foods they co-create, the regulations surrounding their consumption, and whether there are contentions surrounding their harvesting. I used other academic references and online content from conservation organisations as well as foraging and natural history books.

It is important to mention that due to my chosen method, being guided by scientists and preexisting texts, that my understanding and representation of nonhuman species is mostly within the parameters of natural science. Representing nonhumans is fraught with difficulties and researchers must acknowledge the limitations of their practice (Bastian et al. 2017). Furthermore, in the interests of decolonising research, it is the responsibility of the academic to be transparent about the knowledge traditions that form the basis of their

claims (Arday et al. 2021). Therefore, I find it important to acknowledge that my own understanding of nonhumans is based on these knowledge practices.

There are many other ways to know nonhumans, including indigenous worldviews (BawakaCountry. et al. 2016) and folklore. Lay knowledge, personal experience, and folklore did indeed make their way into my personal experience and conversations about foraging. I have included some of these knowledges in my vignettes, pointing to where they came from – to paint a picture about the ways different humans relate to these nonhumans. Indeed, in this way, my descriptions of the nonhumans present during my research encounters is established through what Yardley (2019) calls a *bricolage* of different types of knowledge. Thus, I enliven and deepen the text in this thesis by including different types of knowledge as well as different types of data. Within my thesis, I am careful to be explicit about where and how different knowledges inform my writing.

3.2.2 Field sites

Although anthropologists usually conduct ethnographic fieldwork over an extended period of time in the same location, some researchers have shown how an ethnographic approach can be adapted for studies that move between spaces and different communities (Cattell et al. 2008). For example, Cattell et al. (2008) conducted short-term research on wellbeing in various public spaces, undertaking a mixture of interviews, observations and focus groups, which they described as an ethnographic approach.

I chose to focus on South Wales and southern England for my primary data collection, for several reasons. In general, I found that most of the media articles that viewed foraging in a negative light were from southern regions, and I imagined this was due to different population densities and the legal restrictions around foraging. The population density in England and South Wales is higher than in North Wales and Scotland (Welsh Government 2020; Office for National Statistics 2022), which may put more pressure on wildlife and resources. Furthermore, in Scotland the laws surrounding trespass and access are different to those in England and Wales, which I felt would complicate matters somewhat if I was to use Scottish examples (Wright 2010). I also do not find any online articles about foraging in Scotland being contested.

In addition, I lived in Gloucestershire - in the Southwest of the UK - during my field research year, so had easier and more affordable access to southern regions of England and Wales for in-person interviews and visits. I travelled to any location in the south where I was able to arrange an interview with someone I had identified as fitting my criteria. I conducted in-person walking interviews in Devon, Somerset, Cornwall, London, Gower Peninsula, Hampshire, Oxfordshire, and Gloucestershire, with further interviews conducted online with those working from Kent, Carmarthenshire, and Sussex, as well as the locations mentioned above.

3.2.3 Participant recruitment

Human participants

To make my research project more focused and achievable, I chose four types of stakeholders involved in foraging and its regulation: conservationists/land managers (staff from large organisations such as the National Trust and the Woodland Trust and both governmental organisations and NGOs, foragers (professional, commercial, and amateur foragers), scientists, and nonhumans via case studies. While there are more stakeholders involved (e.g. lay people, journalists etc.), I present these as the most important and influential stakeholders for this topic.

In terms of how I categorised different kinds of foragers, I used the following criteria: anyone that harvests wild food is considered a forager for personal use (amateur forager), as opposed to a foraging teacher (professional forager) or someone who harvests for the wild food industry (commercial forager). I decided to mark out these differences, as the level of knowledge and skill required to teach foraging (professional), for instance, is quite different from picking blackberries in the autumn (amateur). Furthermore, since commercial foraging is often criticised in the media (as I explain in the literature review), it seemed worthwhile to include commercial foragers, where possible, in this research.

Furthermore, I interviewed scientists that helped me to understand the life worlds of certain species, including ecologists, botanists and mycologists. This helped me to formulate a better understanding of the knowledge practices that surround certain conservation efforts, as well as informing a deeper insight into the behaviours and impacts of foraging on different species.

Human participant recruitment involved reaching out to individuals and organisations via email or phone, explaining my project and asking for an interview. My style of sampling was therefore purposive as I consciously chose a sample which I felt would be theoretically significant to answer my research questions (Mabry 2008; Gerring 2017). I set about contacting professional foragers who I found via the internet, as well as conservationists and landowners that were representatives of large-scale national organisations. I focused on recruiting more professional and commercial foragers than amateur foragers, although I met amateur foragers along the way and then asked them if they might like to be included in my research. Overall, professional foragers and conservationists/land managers working for large organisations were the easiest to access. Therefore, these two groups represent a large portion of my sample.

During the research process I discovered that the boundaries between the different stakeholders was not as clear cut as I initially thought. Forager and conservationist are useful categories to a certain extent, as they do encourage an understanding of difference. However, these categories classify the humans involved in this research by their employment, rather than acknowledging the nuances in their values and practices. Many people who forage also care about or practise conservation – and many people involved in conservation also forage. These are practices, with a nuanced set of tools that individuals embody in different ways, rather than binary or homogenous categories. In my analysis, therefore, I try to make this clear and attempt to draw out the nuances and synergies between and amongst the different types of stakeholders.

Another issue I faced was the limited diversity of the group of foragers I had access to. Due to the nature of my sampling method - choosing professional foragers that were practising publicly and those employed by conservation organisations - I did not reach a widely diverse group, for example minorities or people working illegally as commercial foragers. Since I did not ask participants about their age, gender, or social class, I do not include analysis of this as part of my thesis. However, I acknowledge that all of my participants are white, and the majority are of British origin. Many of them were university educated and lived in an affluent part of the UK. Furthermore, it has been argued that large sectors of the population, including minority groups and those with low socio-economic status, are often

underrepresented in online materials (Hewson et al. 2016). Therefore, this was also a limitation when using online blogs and articles to scope out my research.

Many people that rely on commercial foraging for at least part of their income and would therefore fit my criteria. However, due to the complicated legal status of commercial foraging, some groups of commercial foragers were not accessible to me using my method of sampling. Therefore, I make it clear that my discussion about commercial harvesting is often based on media articles and anecdotes, as well as information from four participants that said they currently or previously harvested wild foods for either their own company or another.

Despite these limitations, I managed to interview 39 people, including stakeholders from each of my target categories. To be transparent about my sample, I include a table below to show how I categorised different stakeholders and how they were involved in the research (Table). I used pseudonyms for most participants, unless they specified that they would rather be named.

	Name/Pseudonym	**My categorisation**	**Walking session/virtual interview/both**	**Location**
1	Jacky	Professional Forager/Conservationist	Walking session	Dartmoor
2	Adam	Professional Forager	Walking session	Dartmoor
3	Megan	Professional Forager	Walking session	Gower
4	Thomas	Professional Forager	Walking session	Gower
5	Fi	Professional Forager	Walking session	Dartmoor
6	Jeremy	Professional Forager	Walking session	Gloucestershire
7	Kate	Amateur Forager	Walking session	Gloucestershire
8	Malcolm	Commercial forager	Walking session	Gloucestershire
9	Trevor	Professional Forager	Walking session	Gloucestershire
10	Florence	Professional Forager	Virtual interview	Cornwall
11	Justin	Commercial Forager	Virtual interview	Kent
12	John	Commercial Forager	Walking session	Gower

13	Eric	Former Commercial Forager	Virtual interview	Cornwall
14	Fred	Amateur Forager	Walking session	Oxfordshire
15	William	Amateur Forager	Walking session	Glamorgan
16	Barry	Professional Forager	Virtual interview	Gower
17	Mike	Conservationist	Walking session	South Wales
18	Jessica	Conservationist	Walking session	Dartmoor
19	Anna	Conservationist	Walking session	Dartmoor
20	Sarah	Conservationist (government department - marine)	Virtual interview	Devon
21	Owen	Conservationist	Virtual interview	New Forest
22	Rachel	Conservationist/Amateur Forager	Walking session	Somerset
23	Henry	Conservationist (marine)	Virtual interview	Cornwall
24	Shelley	Conservationist	Both	Cornwall
25	Derek	Conservationist (government department – forestry)	Virtual interview	N/A
26	Steven	Mycologist	Walking session	New Forest
27	Neil	Land Manager	Virtual interview	Epping Forest, Greater London
28	Bo	Conservationist/Land Manager	Virtual interview	Oxfordshire
29	Kenneth	Conservationist/land manager/professional forager	Both	Central London
30	Lesley	Mycologist	Virtual interview	Cardiff
31	Peter	Biologist	Virtual interview	Norfolk/Suffolk
32	Jacob	Conservationist (government department)	Virtual interview	South Wales
33	Marcus	Conservationist	Virtual interview	Cornwall
34	Linda	Conservationist	Virtual interview	Cornwall
35	Heather	Conservationist	Virtual interview	Cornwall
36	Jack	Biologist (marine)	Virtual interview	Cardiff
37	Simon	Biologist (marine)	Virtual interview	Cardiff
38	Robert	Ecologist	Virtual interview	Devon

39	Diana	Conservationist (government department)	Virtual interview	Kent

Table: Participant List (created by author)

Nonhuman participants

As mentioned in the section entitled Case studies and species, I chose my nonhuman participants iteratively though my research encounters as did Ginn (2014). Those who were mentioned and interacted with during walking sessions, virtual interviews, and in online content, became my focus as case species. Once they had come up in my research, I chose them based on their perceived relevance to foraging as a contested practice. To mark out which species are case study species (the ones I have taken a particular interest in and researched in more depth, and spoken about in analysis), I have given them a designated section and used a Latin name in the title of that section. Species mentioned in passing but which are not case study species are referred to only by their common names.

3.2.4 Analysis and writing

As explained in the previous sections, I incorporate many different kinds of research methods and types of data to inform a deeper understanding of the contested space of foraging in the UK and the opportunities it provides. This, however, meant that my analysis took various forms, responding not only to my research questions but also to the types of data. To meet this challenge of pulling together various types of data in different ways, I used a version of thematic analysis.

Thematic analysis is a several-staged, inductive approach which identifies themes in the research (Braun and Clarke 2012; Fugard and Potts 2019). I found that this was the best method of analysis for my research because it can be applied to written texts (online materials and interview transcripts) as well as certain forms of behaviour captured by audio-visual methods (Fugard and Potts 2019). Likewise, it can be applied to many different epistemologies (Braun and Clarke 2012), including posthuman, materialist, and assemblage frameworks.

Following the inductive process of thematic analysis, I observed recurring themes during the early stages of the research process, which then guided the later stages of the data collection (Fugard and Potts 2019). For example, when someone mentioned there were signs in the New Forest advising people not to forage, I looked into this through online searches and found participants who were knowledgeable about this topic. This allowed me to confirm certain ideas that had come from earlier interviews, as well as challenging them, allowing me to draw out the nuances. It was noticing the recurring themes in the research that enabled me to choose certain examples and species to write about.

Once I had conducted all my primary research, I collected various forms of data – videos, photographs, journal entries, and interview transcripts (transcribed using Otter AI software). To be able to analyse all of these types of data thematically, drawing out sub-themes and, later, meta-themes (Braun and Clarke 2012), I converted everything into text, as recommended by Gibbs (Gibbs 2018). For the videos and photographs, I watched the videos and wrote observational notes (Glaser and Strauss 2012), commenting on the embodied skills and knowledges I observed from my participants, and what the nonhuman species were doing, and who was there.

Subsequently, I went through each transcript, observational note, and autoethnographic journal entry in turn and used open coding to make notes of repeated ideas and concepts within the texts, beginning with sub-themes, which then became meta-themes (Braun and Clarke 2012). I did not use coding software for this but highlighted different themes in the transcripts using digital colours in Microsoft Word. I then looked over the different texts and took out quotes from the different theme headings and presented them in a Microsoft PowerPoint slide. This required me to look over every text at least twice, which I found to be beneficial for gaining intimacy with the data.

The sub-themes were based on topics that emerged from research question two, such as ‘code of conduct’, ‘opinion about commercial foraging’, ‘monitoring foraging’, ‘foraging skill’, or ‘conservation practice’, whereas the meta-themes usually referred to concepts in assemblage theory or critical posthumanism that were more related to research question one or three. For example, I found situations in which the concepts of territorialisation and deterritorialisation were relevant and could be applied to my data.

For research question one, I also found that although the themes in interviews could provide a starting point, my analysis relied on other sources such as books and online articles, mostly to give political and ecological context. This moved my analysis beyond traditional thematic analysis as I was involving sources of data that were not my primary research outputs. Overall, I found that this method particularly aligned with a posthuman approach, as I was able to look beyond what people said to include nonhuman agencies that were entangled in my primary research encounters. Alongside my observational notes, other literature informed and enabled me to tell stories of different species and their interactions in a similar way to van Dooren and Rose (2016) in *Lively Ethography*. Into my empirical chapters I interweave natural history, science, politics, and folklore to enliven particular events or conflicts. The history of human and nonhuman interdependence, cuisines, and land rights, and biopolitics arguably affect our relationship with nonhumans, and therefore sit alongside my research encounters.

Indeed, assemblage approaches require a certain way of looking at situations. Bear (2013, p. 36) explains that, in his study, 'the sea is not simply water, and the fishery is not simply the relationship between fishermen, fishing boats and scallops; they are instead defined by relations of exteriority, wherein they are not totalities but constantly emerging assemblages'. I have also looked at the contested practice of foraging in a way which brings in exterior forces that were not immediately obvious from my interviews, such as the movements of certain species, the laws around foraging, or historical forms of land use, as part of the emerging assemblages.

Therefore, my analysis is influenced by my epistemological viewpoint and background reading, and it is important to acknowledge this. Researchers inherently have preexisting ideas and assumptions that inform how they analyse their data (Braun and Clarke 2012). In this way, my research can be considered performative (Law 2004), as I have produced a new version of reality through my research encounter. Law notes that research is a 'process of crafting and bundling' (Law 2004, p. 144), in that it brings preexisting ideas together in new ways. Arguably, this is an unavoidable outcome of research, and not necessarily a limitation if reflected on with awareness.

In order to show my positionality within the research process, and how my background influenced my results, I include myself in an autoethnographic 'layered account' writing style

in Chapter 4 (Poulos 2012, p. 42; Adams et al. 2015, p. 85), a method of writing which presents the author's experience among the analysis and theory, most commonly used by autoethnographers (more on positionality in section 3.2.5). Layered accounts often combine personal experience and theory in a stream of consciousness (Adams et al. 2015). In my writing I present autoethnographic vignettes about my ethnographic encounters (walking sessions, discussions, and online research) using thick description (Geertz 1973), which also include my own opinions and feelings. Inspired by Stewart's (2007) style in *Ordinary Affects*, these sections are not intended to get to the truth of the matter but instead to be provocative. These vignettes provide material for further discussion in Chapter 5, where I bring events and themes together to answer my research questions.

In this way, my research encounters are written as a series of disparate events, all related to the topic of foraging as a contested practice. Instead of working thematically, I present these events based on the time of year they occurred, working with the structure of the seasons to bring the nonhuman agency to the forefront. As Ingold reminds us, 'to inhabit the open is not to be stranded on the outer surface of the earth but to be caught up in the transformations of the weather-world' (Ingold 2007, p. s19). The climate, and our entanglement in it, then, is central to everything in our life world. In the UK, what is available to forage is based very much on the season. Most foraging guides, unless they are season or species specific (such as fungi), include a calendar or explain what time of year you can find certain species. Many of my foraging friends purchased a book called *The Forager's Calendar* (Wright 2020) during my fieldwork period, explaining that it was useful to know exactly what could be found each month. Furthermore, particular spacio-temporal conflicts surrounding foraging practices only came about at certain times of year, corresponding with the species in question. These species are edible and visible to humans at certain times of the year, depending on their life cycle and interactions with the weather and climatic forces. Lifecycles and seasonal cycles, therefore, are inevitably implicit throughout this discussion.

In this way, I story my research encounters around the seasons, situating myself within them and describing some of the force-relations that coordinate to form the controversy or conflict. In line with my theoretical framework, I show how these stories are the results of coordinations (Gan and Tsing 2018), the meeting of agencies, territories, and knowledges at a particular moment in time. As Gan and Tsing explain, 'coordinations make assemblages

historically consequential, even as they are made through the frictions and contingencies of assemblages' (Gan and Tsing 2018, p. 103). Assemblages, then, can only be accessed through the emergence of events of situations. My writing of these events also happened because the conditions were right.

Influenced by posthuman approaches, to create symmetry between my representations of humans and nonhumans in a similar way to Callon (1986), I sometimes refer to humans collectively. This is particularly when I am storying a coordination of force-relations around a certain controversy or event, introducing humans as just one part of the bigger picture. Nevertheless, more often I draw out the nuances in the way different people practise or regulate foraging, and discuss the opinions and practices of individuals involved in my research through anecdotes and quotes.

Chapter 5 is where I discuss in greater depth the theoretical themes that emerge from the storytelling chapters and answer my research questions, presenting a section per research question. In the first two sections, I focus on assemblage theory, knowledge practices, and values, discussing how and why foraging becomes contentious and how it is regulated. In the third section, I apply a critical lens, thinking about possibilities for mutual understandings and new ways of relating in a more-than-human world. As Gillespie notes:

> *'For multispecies autoethnography, one of the core political questions at the heart of an anti-anthropocentric approach to the methodology is what this can do for other species to make a more just, gentle, and caring world for those who are so routinely subjects of normalized violence, instrumentalization, and dispossession' (Gillespie 2021, p. 2101).*

Again, the theme of care is utilised among researchers working at the forefront of critical posthumanism to examine the way humans relate to other species, and subsequently offer insights into how news ways of relating might be formed (Probyn 2014; Lien 2015; Puig de la Bellacasa 2017; Beacham 2018; Just 2022). Questions about what it means to care for other species are central to section 5.3.

To answer my third research question, I looked back at the textual data and found overlaps and synergies between different stakeholders, thinking how different knowledges practices could be integrated. Based on my results, I considered how Puig de la Bellacasa's (2017) concept of alterbiopolitics could be applied to the activities of foragers. I recognised how, in

a similar way to how permaculture ethics sees humans as part of a web of complex relationships and co-vulnerabilities, some foraging practices and ethics involve decentring the human. Like permaculture, this involves seeing the world as 'naturecultural' (Puig de la Bellacasa 2017, p. 127), and practising these ethics as doings, in which the personal is seen as part of the collective and the concept of health is extended beyond the individual, to the ecosystem. I then found synergies and possible mutual projects between foraging and conservation practices, discussing how the foraging ethos could inform land management practices.

In this way, I used the concept of alterbiopolitics as a way to promote mutual understandings, highlight synergies, and analyse opportunities for the practices of foraging and conservation for land management strategies. My analysis required me to be critical and creative, suggesting new ways of relating and new synergies, rather than simply drawing out what was already there in the research. This is an approach taken by researchers in the field of critical posthumanism, who look at the research data with an eye to how relationships between humans and nonhumans could be improved (Latour 2004; Tsing et al. 2017; Krzywoszynska 2019).

3.2.5 Ethical considerations

For this study, I received ethical approval from Cardiff University in accordance with its guidelines. In this section, I explain how I navigated ethical issues posed by this research endeavour.

Consent and anonymity

It is now considered best practice to give research participants as much information during ethnographic fieldwork as possible (O'Reilly 2009). Historically, anthropologists often worked covertly, and ethnography has been criticised for involving white lies and deceit (ibid 2009). For this reason, I always informed participants about my role as a researcher and the topic of my study. I ensured they have read my participant information sheet (Appendix A) and given informed consent (Appendix B) before we began the official walking session or interview. They were able to choose how they would like our encounter to be recorded and how their data was used. On my participant information sheet, I also included a section to show how I intended to store all my research data. I stated clearly that they have the right to withdraw from the study at any point before publication.

During the walking sessions, consent issues may become a problem because there may be other people that enter the scene (Bechhofer and Paterson 2000). In order to deal with this, I made my definition of a participant very clear – someone who is fully informed of my study and who has signed a consent form. Everyone else present during the interaction was not considered a participant, their identities were not revealed in my description of the event, and they were not captured in my audio-visual outputs. Nevertheless, this can clearly only be applied to the human participants in my research, showing a clear limitation of the more-than-human endeavour.

When it comes to nonhumans, the issues of consent are much more complex (Bastian et al. 2017). As Oliver (2021) explains, although the ethics of working with nonhuman animals is considered in scientific research, it is often overlooked within social science. She argues that posthumanism encourages researchers to 'subvert and radicalise our responses to these ethical reviews to consider who matters as ethical and geographical actors' (Oliver 2021, p. 624). Reflecting on my own interactions with nonhumans during this research, in some of the walking sessions and in my autoethnographic foraging sessions I actually harvested, and killed, nonhuman others for the sake of research (and of eating). This behaviour was not questioned when I applied for ethical approval, which indeed suggests that social science ethics review systems have not yet caught up with posthuman methodologies. I cannot say I have a solution to this, or any justification for my actions, apart from the research topic and what it required of me. This could be an area of future research and discussion within more-than-human geographies of activities such as hunting, foraging, fishing, gardening, and forestry.

Furthermore, ensuring participant consent when conducting online research is 'much less clear-cut compared to traditional research methods' (Beninger 2016, p. 57). For example, there is a difference between public information on websites and posts on private accounts (ibid 2016). It might only be necessary, or possible, to gain consent and anonymise data when using information from private accounts. However, copyright issues can then surface when taking sections of online materials without consent (ibid 2016). As a result, Beninger (2016) recommends applying ethics using a case-by-case basis when working online, rather than planning in advance. I was careful about which information was public and which was private, for example, posts on social media. I made the conscious decision not to include any

private posts in my online research so that I was not obliged to contact any individual authors.

To ensure the privacy and anonymity of research participants (Creswell 2014), I have de-identified all participants in the written thesis using pseudonyms where appropriate, unless they have specifically stated otherwise. Furthermore, since I had originally intended to use the visual data for making a short film, I also accounted for this on my consent form. Indeed, consent is a more complex issue when using visual methods (Warr et al. 2016). De-identifying participants, such as blurring or pixilating faces, is used by some researchers, however it can be considered deceptive (Jordan 2014). Therefore, on the consent form I asked them specifically if they minded me publishing the audio-visual data in future outputs. While it was not possible to make a film during the timeframe I had to produce a written thesis, I may still make use of this visual data in the future and have consent to do so from some participants. The participants were able to choose to either be fully identifiable in audio-visual outputs or to be anonymous, with their data used for the sole purpose of analysis.

However, the autoethnographic part of the research raised further issues about consent and anonymity. I had to consider whether I needed consent from people I observed and wrote about in my autoethnographic journal and would later describe in my vignettes. It is particularly difficult for autoethnographers to discern who is and who isn't a participant and they often have different approaches to consent, some choosing to remain covert (Adams et al. 2015). Despite this criticism, I made the decision not to inform anyone that I was conducting this autoethnography. It would have been highly impractical to have to contact and obtain consent from all those I encountered during my foraging experiences. In any case, I sometimes did not know I would include certain events until I realised that they were useful for exploring a certain theme.

Having chosen not to tell anyone about the autoethnographic element of my research, I had the ethical responsibility to protect them from being identified (Creswell 2014). I decided to de-identify everyone that I referred to in my journal and in the written vignettes. This involved changing names, places and contexts. While the main details of the event and my reflections stayed the same, the participants would not be able to recognise themselves or

each other. Furthermore, if I mentioned anything I saw on social media, I would not reference who it was or which social media platform I was looking at.

Protection from harm

Protecting participants from harm is also an essential ethical consideration for researchers (Oliver 2010). I did my best to create a relaxed environment so that participants do not feel judged for their actions or opinions about foraging. Warr et al. (2016) explain that visual methods can expose participants to criticism, and thus potential psychological harm. I was, therefore, careful to explain at the beginning of the interviews or walking sessions that if they chose to remain identifiable, they should take care to only share information that they were willing for wider audiences to see and comment on. Furthermore, I did not knowingly work with anyone considered vulnerable by the Economic and Social Research Council (ESRC), such as children, older adults, or anyone with learning disabilities[2].

Furthermore, the practice of autoethnography also raises concerns about personal wellbeing. Autoethnographers take 'risks' (Adams et al. 2015, p. 63) by disclosing information about their lives in their written work. In order to overcome this challenge, I did not disclose any personal information such as my address. Yet, I often revealed personal information such as how I felt, and mistakes I had made in the past when foraging. Autoethnographers, especially when dealing with sensitive topics, can feel vulnerable during the research process and on publication (ibid 2015). However, since I do not find the topic of foraging particularly sensitive or challenging, I do not feel that this applies to me in this case.

O'Reilly (2005) shows that ethnography has been viewed as exploitative and can often result in othering the research participants. Researchers, in general, can often repeat colonial dynamics in their research, extracting knowledge from participants without including them in the planning, analysis, or publishing of their work (Barker and Pickerill 2020). With this in mind, I provided all the participants I interviewed with any written material which referred to them specifically, before publication. They had a chance to comment on these materials and were reminded of their chance to withdraw.

[2] Guidance from ESRC https://esrc.ukri.org/funding/guidance-for-applicants/research-ethics/frequently-raised-topics/research-with-potentially-vulnerable-people/ [Accessed 13/05/2021].

One of my participants did decide to withdraw from this study. I sent them the empirical and discussion chapters, giving them their pseudonym, to check they were happy with how they had been represented. This participant, a professional forager, was outraged by some of the other foraging practices described in this research and decided to withdraw, not wanting to be associated with them. For me, this was confirmation that I was on the right track studying foraging as a contested practice! However, according to my ethical framework, and honouring their right to withdraw, I needed to remove all information they provided from this thesis. Since I had drawn on this participant's interview data many times throughout my discussion and in a vignette, I decided to read back over my data analysis, looking for similar themes. I found data from one participant whom I hadn't referred to in great depth previously, which enabled me to write a new vignette based on similar themes. This meant I did not have to drastically change my discussion but was able to remove the information provided by the disgruntled participant.

Positionality

It is important to acknowledge that my positionality inherently influences my research outcomes. Indeed, 'qualitative researchers…call for more self-refection to avoid reproducing inequalities in qualitative investigations and in ethnographic accounts' (Reich 2021, p. 578). Acknowledging our own power as researchers, and the biases we might have, is an important part of this process (ibid 2021).

As feminist scholars have argued, ethnography and qualitative methodologies are conducive to reflective/reflexive practices within research (Naples 2003; Day 2012). This requires an acknowledgement of how 'relationships in the field blur what counts as "data"' (Naples 2003, p. 37). Feminist scholars encourage attention to be paid to ways in which domination and oppression are reproduced in the course of research (ibid 2003). Without claiming that knowledge is solely produced by the reflexive researcher, which also puts the researcher in a position of power, Day (2012) argues that it is important to look at the social contexts and relationships through which knowledge is produced.

My approach to ensuring transparency around positionality was to situate myself within the research, which is one of the benefits of using autoethnography as a method. Autoethnography emerged in response to a growing awareness about the importance of positionality and acknowledging power dynamics in the late 1990s and early 2000s

(Anderson 2006). In this way, I make my own feelings around foraging explicit in my vignettes, being clear about how I am part of the coordination that produces my research encounters. I place myself within my own category of amateur forager and as a stakeholder in this research. I tell stories of my own foraging mistakes and include how certain events make me feel.

Furthermore, based on my autoethnographic journal entries, I include footnotes to reflect on the power dynamics between myself and nonhumans that I observed during my autoethnographic encounters. Inspired by Gillespie (2021), I find that this technique adds reflexivity and acknowledgement of positionality to posthuman research.

Nevertheless, my position as a researcher working with a critical posthuman approach produced an additional dilemma in terms of positionality. Researchers in the field of critical posthumanism are working with certain values and agendas, such as seeking multispecies justice in the context of the Anthropocene (Kirksey and Chao 2022). There is an inherent assumption here that new ways of relating and behaving by humans towards nonhumans need to be established (Braidotti 2013). I acknowledge that by working within this field I am taking a moral standpoint, and this requires judgement over which ways of relating are beneficial and which are threatening.

Yet, as Day (2012, p. 61) argues 'feminist critique of qualitative methodology also problematized the notion of value-free research, arguing that ideals of objective knowledge were not only impossible to attain, but also undesirable'. Indeed, the values of the researcher inherently shape their results, and while this poses a danger of ethnocentrism and moral positionalism (Caduff 2011), as Day (2012) asserts, it is important to acknowledge and reflect on moral positionality rather than to overlook it. Therefore, to be transparent about my own moral positioning, I reflect on how my own viewpoints inevitably shape my conclusions. This is something I view as unavoidable in this type of research, which is performative (Law 2008) rather than objective. I do not intend to downplay or disguise this – I make a point of it in the way I have chosen to write this thesis, by situating myself within it. The next chapter presents my research, in this way, through a layered account of autoethnographic vignettes and case studies.

Chapter 4: Foraging conflicts through the seasons

This chapter presents the empirical data I gathered, which I explore through the lens of assemblage and affect. I begin each section with an autoethnographic vignette, telling stories about my research encounters, using thick description to create atmosphere (Geertz 1973; Anderson and McFarlane 2011), and including my feelings and memories.

A. Spring

Spring is the time of new growth in the UK. The days become longer, snow on the hilltops melts, and the air and ground get warmer (Ketley 2022). This signals to many plants, trees, and insects that it's time to emerge from hibernation, to begin the annual cycle of reproduction. Trees blossom, and plants begin to shoot and flower. Spring is a time looked forward to by many foragers, as suddenly edible plants begin to emerge, and warmer days encourage people out to the beaches to collect shellfish.

A.1 Wild Garlic and commercial foraging: A media controversy in Cornwall

This first section sets the scene by introducing one of the key case study species in this research - wild garlic. I describe a situation that I discovered during my fieldwork, in which wild garlic foraging became contentious in Cornwall. I examine the material and relational forces that I observed that coordinate (Gan and Tsing 2018) to produce this conflict.

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Wild garlic causes a flurry of excitement in springtime among amateur foragers in Stroud. There seems to be a sudden collective urge to make pesto. I went to a party in the spring of 2022, only to find that three people had brought along a dish made with wild garlic – two of them being homemade pesto. One of my friends, knowing it was my first spring in the area,

shared with me the place where she finds it. Soon, I was also part of the wild garlic pesto brigade and slathered it on everything I ate[3].

During this time the woodlands smell pungent. I recently read that wild garlic is also known as stink bombs, stinking nanny, and stinking onions (Mabey 1996). It's a nostalgic smell for me, as wild garlic was the first plant I had ever foraged. This is fairly common, according to an article in The Irish Times entitled *Why wild garlic is the gateway drug for the novice forager* (McMahon 2018).

When I was twenty years old, one of my undergraduate friends told me about wild garlic, and, after trying her homemade pesto, I had to get some. Another friend and I went into the woods with three netted bags and filled them all. On returning home, we set to work making pesto using the recipe our friend had given us. I toasted some pine kernels, chopped some garlic, grated some parmesan, added a little olive oil and a few handfuls of wild garlic leaves, and whizzed it up – and there it was, a bright, green, pungent smelling bowl of deliciousness. I was aghast when I realised that we had only used about a quarter of one of the wild garlic collection bags. We had made about three jars of wild garlic pesto already. I panicked and sent all my friends a message that I had spare wild garlic, then spent the next couple of days delivering wild garlic to homes across town. It was our ignorance and lack of experience that had led to our mistake, and I realised that I should have asked my friend how much I would need rather than assuming it was bag loads. I thought about that woodland and felt that we had probably taken more than our fair share, possibly damaging the ecosystem – definitely causing a noticeable change in the appearance of the place.

More than ten years later, I am still picking wild garlic every season, but with more understanding of how much I need. I browse a few of the plants in the forest, like a large mammal, a bit from here, a bit from there. I take only the amount I need for one or two jars of pesto, as a jar tends to go off after a couple of weeks. Some people freeze it, but I don't have a freezer and think it's better to just enjoy it while it's in season.

[3] In my autoethnographic journal, I reflected on my sense of entitlement when it comes to wild garlic. A spring wouldn't be spring without it. Why do I feel that eating this plant is my right? I also reflected on the feeling that, in some ways, it feels like the plant has a power over me.

*

In March 2022, I received an email from a colleague with a link to an article in The Guardian newspaper about wild garlic in Cornwall, entitled '*It's trendy': wild garlic foragers leave bad taste in mouth of Cornish residents* (Morris 2022) (Figure 2). This piqued my interest. It seemed that some people in Lostwithiel were unhappy about the state in which foragers had left their local wild garlic patches. I gulped and thought of my twenty-year-old self.

After some investigation, I realised that local people suspected that this was a larger operation than a few inexperienced foragers. Fingers were pointed at a local commercial foraging company, which was known in the area.

The article quotes a local woman, who said, "I was walking down the lane and saw a young man with a knife and very large bag and he was filling it up with garlic" (Morris 2022, para 4). She assumed he was a restaurateur and asked him where he was based:

"He said up near Bodmin, which is about seven miles away. I asked, wouldn't it be easier to get your garlic from closer to home? Why are you here? He laughed and said: 'We've destroyed it all.' I gave him a look and told him: 'Try not to destroy our garlic'"(Morris 2022, para 5-6).

'It's trendy': wild garlic foragers leave bad taste in mouth of Cornish residents

Patrols suggested as residents say foragers collecting large bags of wild garlic are ruining annual supply

Figure 2: Screenshot from The Guardian article (Morris 2022) – 'Local residents Rachel Fisher (L) and Joannie Muskett, who shared their concerns online' (Weeks 2022).

The locals I interviewed agreed with the woman quoted in the article - they were unhappy. Florence, a foraging teacher from Cornwall, for instance, expressed her dissatisfaction with the way commercial companies approached harvesting, disrespecting the landscape and land access laws. She explained:

“Commercial foraging is quite a contentious issue. You might have heard about the wild garlic in Cornwall? So we, as in the association (AoF), we've got like a little group chat - we have an idea who was behind this is and they are well known for trespassing and for really bad practices. This person in the article had a bin bag was literally ripping up wild garlic by bulb and there was a couple of people in the village said, you know, what, what do you think you're doing? He said, “oh, well, we've totally trashed our patch in Bodmin”. And so the person was like, “Well, don't come and trash ours”. On further questioning, they said they were going to be making something like wild garlic pesto for the Royal Cornwall show. So yeah, it's really bad.”

A.1.A Wild garlic (*Allium ursinum*)

‘The first call of spring awakens dark green leaves from their bulbs. Their scent, released with each crunchy footstep through still dormant woods, is a vanguard for the royal carpet soon to appear’ (Hughes and Owen 2018, p. 13).

Wild garlic is first apparent in woodlands and along roadsides and banks during the early spring. The leaves are a lush and vivid green, and slightly shiny. The plants infuse the air with a fragrant aroma of garlic. At this time of year, I notice them everywhere; in the woodland where I walk daily, along the road on my walk to the pub, and also in my neighbour’s garden.

It is a perennial plant and a member of the allium family (along with common garlic, chives, and onions), and grows in many parts of the UK – preferring damp ancient woodlands in the eastern regions as well as hollow lanes, streambanks, and roadside hedgerows further west. Mabey (1996) points out that it can even be found on sea cliffs in Cornwall and Pembrokeshire.

In the early spring, usually February, the previously dormant bulbs of wild garlic send up their first leaves of the season to capture the light. They intend to reproduce, to grow flowers to spread their seeds, and to gather energy from the sunlight and the soil to split their bulbs to further colonise. They reproduce in multiple ways, through self-seeding, bulbs and bulbils (Gardenia no date; Woodland Trust no date-c). This means that they do not just rely on spreading their seeds when their leaves die down and their flowers dry, but they can also spread rhizomatically through their bulbs cloning above ground (bulbils) and underground (bulbs). Although it is more unusual for wild garlic to spread through seed dispersal rather than rhizomatically (Woodland Trust no date-c), they spread seeds to create new plants through sexual reproduction as well as cloning themselves. This may be an evolutionary strategy to increase their resilience and genetic diversity.

Their star-shape flowers blossom in May and June (Figure 3), attracting pollinators which aids them in their reproduction (Wright 2010). The flowering of wild garlic happens at different times in different parts of the country, responding to local environmental conditions. Their star-shaped white flowers give them away to humans not previously alerted by the pungent smell they give off.

Figure 3: Wild garlic (taken by author)

If their reproduction is successful, the flowers become fertile seed heads around April or May (ibid), to be dispersed into the soil as the plant withers in late June. Once the plant has achieved its annual springtime ritual, the leaves turn from green, to yellow, to brown and, eventually, any evidence of the plant above ground disappears. During the rest of the year, the root system lives dormant underground, waiting for the new cycle to begin.

The smell that the wild garlic plants give off when they are damaged is mostly due to the chemical compound allicin, which is known by herbalists to be antifungal and antibacterial (Herbs and Helpers 2020). When a plant is damaged, enzymes are released that convert sulphoxides in the leaves into different chemical compounds, which is the plants defence from predators (ibid 2020). Wild garlic indigestible for many different species of animal and insect (Wright 2010).

The smell of wild garlic means that it is identifiable to humans among its toxic lookalikes[4]. The plant has had such an impact on humans that several places are named after it in the UK. For example, Ramsey Island, Ramsbottom, and Ramsdell are words stemming from the Old English 'hrmsa', the root of the word 'ramsoms' (another name for wild garlic) (Mabey 1996, p. 417). Those who go foraging know wild garlic for its distinctive, garlicky smell and flavour.

It is known among herbalists for its medicinal properties, helping assist humans in the 'purging of winter phlegm' and 'quickening of blood' (Hughes and Owen 2018, p. 16). In folklore, wild garlic was thought to protect humans from vampires and evil spirits, provide courage for soldiers, and to imbue the eater with sexual potency (Hughes and Owen 2018; We are the Salt Box no date). The most common recipe I could source online was wild garlic pesto – this can often be found on restaurant menus in the spring. Like me, many foragers go out into the woods during springtime with the ultimate goal of wild pesto in mind, stopping at a supermarket to stock up on the other ingredients.

As relational materialists argue, wild garlic becomes appealing to humans in relation to the other ingredients and tools that transform it from its raw leaf form into dishes, such as pesto

[4] The early leaves of lily of the valley and lords and ladies both look similar to wild garlic and can be found in similar habitats – both plants are toxic to humans (Wright 2010).

(Roe 2006-b; Colebrooke and Miele 2017). Therefore, the human desire for wild garlic can be contextualised in its relation to parmesan cheese, a variety of nuts, olive oil, salt, and occasionally ingredients like nutritional yeast and chilli. Sometimes people add a milder leaf to pesto, such as nettle or spinach, to make the garlic flavour a little less intense. Yet, this flavoursome assemblage would not be possible without the assistance of a human-made pestle and mortar or blender, as well as the social media tools which help to share the recipe and excitement and doubtless the history of pesto originating from Italy. Where pesto is concerned, knowing wild garlic is knowing how to use it in a way to make it taste good.

In this way, wild garlic has gained popularity as a wild food in the UK and appears on some restaurant menus. This is arguably linked with a commercial industry that supplies the restaurants – as suspected in The Guardian article (Morris 2022) and supported by the experiences of participants of this study. The reproductive cycle of wild garlic, and its chemical compounds, are material and relational forces that coordinate with human taste buds, the social aspects of taste, culinary and herbalist history, the economy, the law, and the media.

A.1.B Commercial foragers

I was informed by Eric, someone who had worked in the industry as a commercial forager in Cornwall, that commercial harvesting can result in unsustainable harvesting practices due to time restrictions and quantities needed. For example, in his experience, harvesters may be taught by the company operators how to identify a certain plant then sent a pin via text to show them the exact location of the plant on Google Maps. They are paid per kilo, which makes them try to gather as much as possible in the time they have, rather than moving between many spots to ensure a sustainable harvest. In this way, the commercial forager values the plant in relation to what it is worth per kilo. They know the plant for its economic value and its identifying features but they do not necessarily attend to the conditions that ensure its longevity in a particular area.

On the topic of overharvesting, Justin, a commercial forager working for an organisation that sells wild foods to restaurants and produces products available online, explained that the likely reason the patch of wild garlic in Bodmin stopped growing was that a chef had gathered all the wild garlic seeds to make a particular dish. He said that this is a mistake a

company only makes once – as they would hope to continue using the same spots for years to come. Knowledge of plants is cumulative and embodied, he assured me, but behind that, there needs to be an attentiveness to the life world of the plant and the impacts of harvesting. I could relate to this, reflecting on my first ever wild garlic harvesting as a young adult.

It seems that certain forager chefs and business owners know the value of wild garlic, and know how to prepare dishes such as the highly prized wild garlic pesto. Some claim to know how to harvest sustainably, but the industry and the embodied activities it relies on can conflict with the territories and values of others, such as the local people in Cornwall.

A.1.C The law and the media

As well as worries about their own supply of wild garlic, locals in Lostwithiel expressed their concerns about unfair conditions, such as modern forms of slavery, arguably faced by those harvesters who were gathering the wild garlic. From my online research, the concern that gangs were running commercial foraging operations, which illegally trafficked harvesters, was not uncommon. There are a number of articles about these reported gangs operating in different parts of the country, targeting different species (Carrington 2014; Greenfield 2019; Reporter 2020; Welford 2022). Arguably, the local people's witnessing of the harvesters coordinated with certain knowledges that they held, informed by the media and the legal system, local knowledges about what was happening in the county, about justice and sustainability.

Lee (2012) explains how foraging rights are complicated and generally overlooked by the legal system in the UK. There are a number of different regulations that overlap, making foraging law and regulations complex. As Wright puts it, it has 'never been an entirely settled matter' (Wright 2010, p. 25). For instance, it is necessary to get permission from a landowner to forage on their land (Countryside and Right of Way Act 2000), yet it is not considered a crime unless you uproot a plant, which is judged as theft (Theft Act 1968) (Lee and Garikipati 2011). There is a common right for people to collect 'fruit, flowers, fungi, and foliage' (Theft Act 1968) for personal use, as long as it is growing wild (Wright 2010, p. 26). However, foraging without landowner permission is an act of trespass, a civil offence rather than a criminal offence, and landowners are allowed to remove foragers from their land by

force if necessary (Countryside and Right of Way Act 2000) (Wright 2010; Lee and Garikipati 2011). Therefore, although foraging is mostly legal, the activity is impacted by land and property laws and foragers can be penalised for committing a civil offence if they do not own the land or ask for necessary permissions. Commercial foraging, on the other hand, is illegal (Theft Act 1968).

Reports of commercial foraging activities, like the one written about in The Guardian (Morris 2022), then, take on a new significance and interest when there is an element of criminality. For example, in the Lostwithiel case, criminal activities in the form of modern slavery and theft are key themes. The locals quoted in the report urge anyone who sees foragers in the woodlands to report car registration numbers to the police (Morris 2022).

The Guardian article, in this instance, represents the world of the media. The media run articles, such as this one, to spark readers' interest. Just like people consume wild garlic, people consume drama and news in the form of online articles. The journalist, in this instance, must have been in the right place at the right time to hear about this event in rural Cornwall, and will have decided that it would be interesting for their readership. Affect is at work: criminality and the popularity of foraging come together to make an interesting story.

In summary, wild garlic attracts a great deal of attention in the spring, creating conflicts as well as cuisines. The key theme in this chapter has been coordination (Gan and Tsing 2018), as I have explored the way different material and relational forces, human and nonhuman, come together to make foraging a contested practice – including the law and the media, the market, taste, and, of course, the seasonal rhythms and chemical compounds of nonhuman beings. This example is referred to in the larger discussion about multispecies coordinations in Chapter 5.

A.2 Lapwings on the lane: A conflict of interest in South Wales

This section explores a specific conflict between a conservationist and commercial foragers in South Wales that emerged during my research. This example shows how different priorities and responsibilities can create tensions between stakeholders. It also introduces the concepts of nonhuman charisma and deterritorialisation, which are developed in the discussion.

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I was out with a National Trust ranger, Mike, and we were driving slowly down a dirt track towards a large beach on the south coast of Wales. This track is off limits to the public, and only National Trust staff are permitted to drive on it. It is particularly bumpy, and a 4-wheel drive vehicle is needed to access the beach for monitoring checks. Mike showed me that there is a locked gate, which is frequently vandalised, and the keys are often stolen from a key safe that is accessible for the holiday lets on the site. He blamed the cockle and mussel industry – explaining that cockle and mussel pickers, who did not have a commercial licence for the open fisheries (this one was closed), sometimes come to this bay to harvest. He showed me marks in the sand that suggested people had been driving down onto the beach, illegally crossing through the gated entrance.

Indeed, as we were talking on the beach, we saw several groups of cockle and mussel pickers on quad bikes (Figure 4). I also revisited during the following summer to see a vehicle driving through the National Trust land in broad daylight. When I asked the driver what they were doing I was told that the gate lock had long been broken and they were accessing the site to pick shellfish.

Figure 4: Quad bike on the beach (taken by author)

Mike showed me a spot, just to the side of the track, where lapwings nest. Lapwings, he explained, are ground nesting birds that usually choose meadows, small crops on farmland, and lowland pastures as their nesting sites. In this instance, they had chosen an area of grassland near the sand dunes, very close to a track down to the beach, to lay their eggs.

According to Mike, and from what I witnessed first-hand, the cockle and mussel pickers drive over that area to avoid the bumpy road, not realising that the lapwings nest there. He has found nests destroyed and eggs smashed. He was saddened to see this, and concerned for their species longevity among human industrial developments. For him, the shellfish harvesters were exemplary of a wider problem of human lack of awareness about other species in the goal to meet their own needs.

For Mike, foraging itself isn't a problem – he said he'd be more than happy to see walkers on the site picking blackberries and nettles. It's the unforeseen impacts that are a problem, such as the damage to a protected species. He explained also that often people pick up driftwood to make crafts, seeing it as a free resource. This is a problem because the wood is a habitat of a rare species of beetle, the beachcomber beetle. He showed me some signage he had made to ask people not to pick up driftwood on the beach.

Mike is a conservationist, but I heard foragers also air these concerns about the consequences of foraging on rare species. For example, Wright (2010, p. 25) writes:

'Foraging is not only harmless but positively beneficial. But, of course, with a bit of effort, it is still perfectly possible to turn yourself into a walking ecological disaster. For example, picking Blackberries is clearly a benign activity, but trampling over lady slipper orchids to do it is not. Always tread carefully where there might be delicate organisms that could be damaged.'

A.2.A Lapwings (*Vanellus vanellus*) and beachcomber beetles (*Eurynebria complanate*)

Lapwings (Figure 5) are nesting in this particular area because they know what conditions they need to thrive, usually nesting in coastal areas or arable land. In general, they stay away from humans when choosing a home, looking for grassland or crop land, rather than concrete or brick. They will alarm-call when humans, or other perceived threats, come too close. I have experienced the dive bombing of lapwings and other coastal ground nesting birds when walking too close to their nests. They live alongside humans but preferably not too close to their feet or wheels.

Figure 5: Lapwing incubating its eggs (Badham Lodge 1895)

They are transitory beings as they migrate – so while they are present on the meadow by this beach for a time, their presence is not constant like that of the shellfish. During the late spring, the breeding season, they prefer meadows and grasslands like this for their nests, but then move to pasture and ploughed fields for the winter months (RSPB no date-a). This spring, they had chosen to lay their eggs in the grassy meadow, by the beach, that the shellfish harvesters were driving over. They don't always choose the best place to lay their eggs and some consequences are unforeseen. It seems that the commercial shellfish harvesters and the lapwings were unaware of each other's territories, tracks, and movements until it was too late.

Lapwings are known to be in decline in the UK and the species has recently been added to the IUCN Red List, as well as being protected under the Wildlife and Countryside Act 1981. Similarly, beachcomber beetles (also called strandline beetles) are also on the Red List (Buglife no date). These beetles are very specific about their territories, choosing driftwood on the strand line for their habitats. Their decline has been attributed to the removal of driftwood and the overuse of beaches by humans (The Species Recovery Trust no date). Again, territories collide between humans and nonhumans, particularly when it comes to human harvesting of resources.

Following Lorimer (2007, 2015) lapwings and beachcomber beetles can be considered charismatic species to conservationists, for they have been chosen as species to be protected. This may be due to their appearance (aesthetic charisma) or their ecological niche and the way they can be categorised (ecological charisma). Either way, their status in the conservation arena arguably contributes to the way Mike monitors them and feels responsible for their protection.

A.2.B Mike (the Ranger)

Mike's passion for ecology led him to become a ranger for the National Trust. His father was a botanist and family holidays involved looking for birds and plants. He explained to me that to be good at conservation, you need to be passionate. During his annual leave, he comes back to the site to look for wading birds, hoping to see something rare. "You can't master

plants if you just work from 8 till 4 – you also have to go out at weekends and holidays to observe and learn", he explained.

Mike's background means that he is able to identify many different species and knows about their behaviours and habitats. He also has knowledge about which species are rare and protected under legislation, for example the Red List. His concern for the lapwings and the beachcomber beetles comes from a place of wanting these species to thrive. He knows that in order for that to be the case, their territories and habitats must be protected. Rare species arguably engender a form of charisma – observing a rare species is considered a special event – and protecting them part of the responsibility of the conservationist.

Mike's responsibilities as a ranger (conservationist) are shaped by both his passion for ecology, the remit of the National Trust as an organisation, and international and national legislation, such as protected species status and policies on invasive species, for example. In this case, he is also impacted by the shellfish industry and the licensing system, forces which come from outside of his area of management (the land leading up to the beach).

A.2.C Monitoring and licensing

This beach falls under the Cockle Fishing Management and Permitting Order 2024, managed by the Welsh Government, and is currently closed as a fishery. The order states:

'Prohibition

3. No person may fish for or take cockles or knowingly allow or assist another person to fish for or take cockles—

(a)from a closed cockle bed, and

(b)except and to the extent authorised by a permit issued under Part 3'…. (Senedd 2024, p. 5).

'Exemptions

14. The provisions of this Order do not apply—

(a)to a person who takes, by hand, no more than 5 kilograms in live weight of cockles in any one day for personal consumption' (Senedd 2024, p. 10).

Since it is a closed fishery, this beach is not monitored by Natural Resources Wales (NRW) and has no associated licensing requirements. Under this order, it seems that it is legal for people to harvest up to 5kg for personal consumption. Natural Resources Wales is responsible for overseeing the monitoring and licensing system in South Wales. In an interview with Jacob, a member of staff at NRW, he told me that as well as managing shellfish stocks, the licensing system was put in place to make sure there was food for overwintering birds, such as the oystercatcher. Jacob said that they advise coastal landowners and fisheries on weight limits to ensure that harvesting by humans is kept in balance with the needs of oystercatchers. When a fishery is closed, it is to let the stocks recover, or to benefit the ecosystem.

A.2.D Oystercatchers *(Haematopus ostralegus)*

There are many different species of oystercatcher across the world, but the Eurasian oystercatcher is the predominant species in Europe, and the species to which I refer here. When visiting many of the beaches in the UK, it is possible to hear the distinctive *bidibidibidi* call of the oystercatchers. Oystercatchers are wading birds that live on the UK coast year-round, breeding in the summer and feeding in the winter, joined in the winter by birds from Norway, escaping the cold temperatures. According to The Royal Society of the Protection of Birds (RSPB), there are 95,000 pairs breeding in the summer and 305,000 birds wintering in the UK (RSPB no date-b).

Oystercatchers are black and white birds with long orange beaks to crack open and reach inside shells and deep into the sand (Figure 6). They feed on mussels and cockles on sand flats and rocks, and sometimes on worms that live in the sand. They adapt their territories based on the availability of foods, which changes over time and in line with the tides (Moody et al. 1997).

They breed in the summer, mating with the same partner year after year, usually laying their eggs in the same spot on the ground among the rocks on the coastline. Some birds have been reported to be laying their eggs inland, on river estuaries and in farmers' fields, which has been attributed to changes in conditions on the coast or lack of space (Heppleston 1972; RSPB no date-b).

As another charismatic species, oystercatchers are protected under the Wildlife and Countryside Act 1981. Considered somewhat endangered in the UK (RSPB no date-b), they are monitored by conservation bodies such as NRW. Since they feed on cockles and mussels living on the sand flats and rocks of the coastline, conservation bodies try to ensure that cockle and mussel beds are not overexploited by humans, as this is the only food source for oystercatchers during the winter months. On their website, the RSPB explain that overexploitation of mussel or cockle beds by humans can result in a lack of food available for the birds (ibid).

Figure 6: Oystercatcher (Wietschorke 2018)

On this particular beach, however, no licence is required. This means that cockle harvesters not able to access a licence for the adjacent beach can harvest here, necessitating access through the National Trust site. Despite it being illegal to sell cockles to the industry without a licence, regulation is difficult because harvesters can claim they are taking them for themselves and their families.

The fluidity of territories and how different sites and landscapes are interconnected is evident here. For example, the fact that there are closed fisheries (with the aim of protecting

humans from toxicity, and birds from starving) means that harvesting activity can move to other beaches where harvesters do not require a licence. One of those beaches happens to be located next to the site that National Trust employee Mike manages. In turn, shellfish harvesters disturb and damage habitats of lapwings on this site, probably unknowingly. This resonates with the work of Bear (2013) who observes that forces outside Cardigan Bay influence what happens in that space. Mike, then, is affected by the way that land is marked and managed beyond the borders of his site, and there is a knock-on effect of the licensing system that aims to protect coastal dwelling birds.

A.2.E Shellfish harvesters

Gathering shellfish is a long-standing tradition in South Wales, especially in Penclawdd and Burry Inlet (History Points no date). During the late 1800s, when the railways were established, the industry went beyond household use to export to other parts of the country and internationally (ibid). Shellfish export is now a key industry in South Wales and many fisheries are monitored by NRW, and licences are required to gather.

Figure 7: Harvesting cockles (taken by author)

John, a shellfish harvester I spoke to, told me that supplying the industry with cockles and mussels was his main source of income to feed his family – it meant he could work outside rather than in an office, and work when he wanted to rather than when a boss told him he had to work. When I spoke of legality and access, he shrugged and explained that he did what he needed to do to survive economically. He explained that harvesters often use nets or sieves and rakes to access the cockles below the sand (Figure 7). The use of the net/rake means that the smaller ones fall through and are not harvested - there is a certain size the industry will accept.

John is navigating different responsibilities to Mike in their overlapping territories, which causes a conflict of interest. John does not focus on the ground nesting birds as his priorities include his livelihood and, in his words, “freedom” from an office job. Arguably, he was completely unaware of the birds’ existence. Mike, on the other hand, is tasked to protect certain species and habitats on this site. Overall, their competing priorities conflict in this instance, coordinating with the migrations and lifecycles of certain charismatic birds as well as legislation on protected species, making foraging a contested practice. This is key to the differences in values and knowledge practices that are discussed in Chapter 5.

A.3 Monitoring, regulation, and commoners’ rights: ‘Trigging’ on a Cornish beach

This section explores the complexity of monitoring and regulating shellfish harvesting, looking at the different responsibilities that a conservationist must navigate, as well as the many unknowns. The weather and the climate become evident as material and relational forces that impact foraging as a practice and contribute towards it becoming increasingly contentious.

*

It was a bright, sunny, late May morning – there were a few people on the beach, although not many. Underfoot were clusters of blue mussels, empty cockle shells, and the occasional razor clam shell.

I was shadowing a conservationist, Shelley, on one of her monitoring walks. As a conservation group coordinator, she is responsible for monitoring the activities on the beach, making sure there are no threats to the ecosystem, and then reporting back to the team which manages it as a Special Area of Conservation (SAC). I walked behind her as she approached three parties who were gathering shellfish. She said that she would usually just have a friendly chat with them, asking what they were doing and making a note of what they had found.

The first person we approached was a small woman in protective clothing. Shelley asked her several questions but she didn't seem to understand or speak much English. She told us she was picking for someone else but due to the difficulty in communication, she was unable to express who for, or why, or whether they would be sold. I peered inside her bucket and saw that the woman had harvested about five razor clams.

Figure 8: Shellfish on a Cornish beach (taken by author)

Shelley told me that this beach (Figure 8) is a hotspot for razor clams. There used to be many more but the population is shrinking due to overharvesting. She blames commercial operations. As well as population decline, on a personal level Shelley said she was also concerned about the food safety standards of unlicenced, commercially picked shellfish. She explained that if shellfish go into the food system during the summer and the water quality hasn't been checked, food poisoning can result. The combination of a busy tourist season and warm waters means that toxin levels in the water can be high.

Next, we came across three men. When asked, they told Shelley they were digging for bait to go fishing - razor clams mostly. They said that anyone with a fishing licence can come to this beach to dig for bait. They had fishing tackle with them and were planning to fish for bream later on.

Shelley said that it was sometimes difficult to tell if people were digging for bait commercially or for personal use. In this instance, it would seem to be for the latter but if they were to sell their catch of fish, I wondered, would that count as commercial fishing? Maybe even if they had a commercial fishing licence, the bait digging itself wouldn't be counted as commercial harvesting? Shelley said the landowners had a general rule here that people could take cockles for a meal but nothing more. I wondered where fishing came into that.

The next group of people we met said they were, indeed, gathering for a single meal. One of the men said that they come here for a week every year on holiday and gather cockles and mussels about twice during their stay. He said that he learned cockle picking and cooking from his mother; it was part of their life growing up and he always enjoys it.

As we left the beach, Shelley told me about trigging – a tradition that happens once a year around Easter on Helford Beach. Upon doing some research, I read that trigging is a modern word which comes from the Cornish 'trig, treag, treeg-meat' meaning shellfish; trigging is to 'hunt for such sea-creatures', which is an 'ancient Cornish custom' (Turk and Tompsett 1994, p. 1). In the 19th century, the custom was practised on Shrove Tuesday and involved gathering limpets. In recent times, both the date and the shellfish of choice has changed – the event takes place on both sides of the Helford River on Good Friday, and these days people prefer to harvest cockles (ibid 1994). In the past, landowners tried to prevent the

trigging tradition at Helford Passage but were met with ‘brawney Cornish women, armed with stones’ (ibid 1994, p. 2).

Throughout history, in order to preserve the ecosystem on beaches such as this one, people were only allowed to gather shellfish on this single day (Burton 2021). It seems that people are able to gather at any time of year for personal consumption these days.

Those currently participating in trigging, Shelley explained, are usually not tourists but locals. She described families coming to the beach from the local towns with their barbeques and buckets to make a day of it. Some of them don’t even enjoy eating cockles but just come for the enjoyment of spending time with family in nature, and of course the obligatory visit to the pub afterwards. I felt that it sounded wholesome as an experience, but I wondered what it did for the population of cockles.

Shelley said, “It doesn’t seem to harm the populations as far as I can see. I think it’s a lovely tradition that brings people together and is good for their connection to nature.”

She also explained that people were advised not to (and knew not to) take cockles that were smaller than a twenty pence piece. An online article showed this to be common knowledge and in support of the ecosystem and reproduction rates (Burton 2021).

The following year, on Good Friday, I decided to investigate the event. I headed down to the same beach with two friends and we observed the local tradition.

Figure 9: Trigging (taken by author)

Locals came out to the beach, equipped with buckets, rakes and wellies (Figure 9). Indeed, there were many more people digging for shellfish on the beach than when I had walked with Shelley the previous spring. My friends and I were rather ill-prepared to participate, but we wanted to join in – Tara was wearing trainers, and I had brought a gardening fork with me instead of a rake. Still, we managed to successfully gather enough cockles for a decent meal[5]. We followed the instructions in an outdoor cooking guide, cooking the cockles in seawater with butter, parsley, and some three-cornered leek that we had foraged on the path on the way to the beach (it was very abundant) (Figure 10).

[5] In my journal, I wrote of the ambivalence involved when it came to harvesting, cooking, and eating a live creature. Although the fact that I was killing something was in the back of my mind, I prioritised my taste buds, nutrition, sense of adventure, and curiosity. We had the power here. The argument that plants benefit in some ways from being harvested could not be applied. I was taking a life and I didn't feel remorse.

Figure 10: Cooking cockles (taken by author)

It was a delicious meal, but alas, two hours later there I was, on my haunches, vomiting into the ocean. The two friends I went with were fine – so it seems that I had drawn the short straw and had eaten the bad one(s). I laughed to myself, thinking about what Shelley might say if she knew. I felt like an amateur and realised that local knowledge involves more than knowing where to dig for cockles, including what equipment to bring and how to prepare them. Shelley also mentioned that local people's gut bacteria was more used to the kinds of germs that might be found inside the shellfish. I could appreciate her concerns about these creatures entering the food chain, unregulated.

On reflection, I could see the confusion surrounding shellfish harvesting on that beach. I ascertained that it wasn't just local families gathering for themselves once a year at this Good Friday event – the gathering took place year-round and by various kinds of gatherers; locals harvesting for their dinner, tourists getting a local flavour, bait-collectors, and arguably illegal commercial harvesters. What is acceptable and what is sustainable is clearly a grey area, and obviously very difficult for Shelley to monitor. She explained that the only power

she had was to talk with people and try to educate them to harvest ethically and responsibly.

In this way, the conservation group for this area, represented by Shelley, must balance several different responsibilities, concerns, and ideals related to foraging and conservation. As mentioned above, Shelley wants people to have access to the site, to enjoy it, and to be able to forage for personal consumption, especially on trigging days. However, it is part of her responsibility to protect the ecosystem and the species that dwell there, and to prevent overharvesting or other activities that might endanger the fragile ecosystem. She is also concerned about the water quality and that if shellfish are illegally harvested, without being officially tested, this could lead to food poisoning in humans. While the conservation group is not officially responsible, she feels that it would be negligent to ignore this risk to human health.

A.3.A The shellfish

In the photograph below (Figure 11), the shells of at least three kinds of shellfish can be seen: cockles, mussels, and razor clams. Razor clams and common cockles were key agencies involved in this research encounter, and I therefore focus on them in the following sections.

Figure 11: Shells of cockles, mussels, and razor clams (taken by author)

Razor clams (*Ensis siliqua, Ensis arcuatus, Ensis ensis*)

The first time I properly saw a razor clam harvested was during trigging. I witnessed a man pour a healthy amount of table salt down a hole in the sand near the tide line, only to see a razor clam, disgruntled by the concentration of salt, pop up a few moments later. The man grabbed it firmly and pulled it out before it had a chance to disappear back down the hole.

Razor clams, also known by humans as razor shells, are bivalve molluscs that live buried in the sand near the low-tide mark and below, feeding on plankton and detritus in the water (Cornwall Wildlife Trust no date). They make their homes in estuaries and on sheltered beaches by anchoring themselves into the sand using their foot, and can also come to the surface and swim horizontally along the bottom of the seabed (Fraser et al. 2018). They live about 60cm below the seabed but use a siphon, which stretches up to the surface, to filter for food (ibid 2018). Unfortunately for them, the hole made by the siphon gives away their presence to predators, and sometimes humans pour salt down it. This causes the razor clams to come up to the surface, towards the grabbing hands of humans. They are also eaten by sea birds and crabs (ibid 2018) who excavate razor clam holes with their beaks or claws. They spawn in the late spring and summer.

There are three species of razor clams in the UK, none of which are specified as endangered. However, they are reportedly vulnerable to overexploitation and, according to foragers and biologists alike, require careful monitoring and management (Wright 2009; Fraser et al. 2018). In North Wales in particular, authorities are worried about the intensity of harvesting by organised groups, and have noticed a decline in population numbers (Fraser et al. 2018).

Professional forager Megan, one of the foraging teachers in this study, mentioned her worries about the decline in the numbers of razor clams, having seen large groups of people spraying salt water (which brings them to the surface) to harvest them at scale. Similarly, Barry, another professional forager and coastal foraging teacher, has noticed cockles tend to be smaller these days on his local beaches. Both felt that this was due to overharvesting by humans.

Therefore, the human desire for razor clams is clearly present here. There are many recipes online that demonstrate how to turn razor clams into a meal (Stein 2022). Once in the food chain, razor clams might become assembled with other raw ingredients such as onions, garlic, and panko breadcrumbs. Their popularity as food may be something to do with their decline in numbers on the UK's coastline, although razor clam mortality has been attributed to trawling and storms (Fraser et al. 2018), suggesting that it is a mixture of human and nonhuman force relations that is endangering the populations of these creatures.

Common cockles (*Cerastoderma edule*)

Common cockles are the neighbours of razor clams, also living in the sediment just below the low-tide mark in sheltered bays and estuaries (Wright 2009). Being bivalves, they also dig themselves into the sand using a foot, which protrudes from their rounded shells, and siphon water from the seabed to filter feed (Natural History Museum 2020).

I learned more about cockles during my visit to South Wales and Cornwall, digging them up from just under the surface of the sand. Some were small and some were quite large, and once or twice I confused them with clams. Their empty white shells – empty homes - were also strewn all over the beach.

Like razor clams, they are creatures that spawn in the late spring and summer (Wright 2009), however they live closer to the surface as their siphons are shorter. Therefore, they are even more accessible to humans, who often find and sort them using tools such as rakes, sieves, and spades. Their empty shells can often be seen littering the sand in estuaries, the living ones still buried just below the surface reachable by simply by digging around with your hands. In the south of the UK, along with seabirds, humans are one of the main predators of cockles, assembling them with other nonhuman ingredients such as shallots, pancetta, and basil (Rankin no date) – or in our case, seawater, butter, parsley and three-cornered leek.

Methods such as hydraulic dredging (also used to harvest razor clams) have been developed to collect cockles commercially (Wright 2009). However, The Wildlife Trusts recommends when sourcing cockles from retailers that you choose ones that have been hand gathered rather than dredged, suggesting dredging is not the best approach for the ecosystem (The Wildlife Trusts no date-a).

According to Wright (2009):

> *'Cockles live life on the edge. Although they may live for 4 or 5 years, such aged individuals are quite rare and 2 years is more common. Predation, parasitism, pollution and bad weather all conspire to make life difficult for them. But sometimes they appear too eager for the next world and will perish in their millions. These mysterious die-backs, as they are known, occur quite frequently in the spring – and will usually consist of last year's recruitment, which will be a year old and just about big enough to collect. These events can be catastrophic for those whose livelihoods are linked to Cockle's wellbeing, but quite why they occur is, at the time of writing, unknown'. (Wright 2009, p. 115)*

Even though we speculate, it is just not possible for us to know why other species behave in certain ways. Cockles appear to be quite sensitive creatures.

A.3.B Weather and climate

It has been suggested that a rise in global temperatures is a huge threat to biodiversity because species are not able to adapt fast enough to the changes (Leal Filho et al. 2019). Furthermore, in the case of shellfish, if sea temperatures rise there will be more algal blooms, meaning fewer shellfish will enter the human food chain. It is pertinent to consider what impact climate change will have on the way natural resources are managed, as well as the kinds of issues that arise around foraging and conservation. Despite the conservationists' desire to keep things boundaried and stable, climate change poses great uncertainty in relation to how things will be and look in years to come.

Marcus, a conservationist working for The Wildlife Trust in Cornwall, was very concerned that climate change may put pressure on shellfish stocks which are already struggling due to inadequate fisheries management. He mentioned the spread of the "non-native invasive species" pacific oyster as a result of temperatures rising, and the depletion of native oyster stocks. He believed that heavier rainfall could also be a cause of increased runoff of agricultural chemicals into water systems, which is having negative effects on marine life. Although he enjoyed foraging as a child, he said he was firmly against any kind of shellfish harvesting while the future of these populations is so fragile.

Overall, this concern for the depletion of shellfish populations was shared by other conservationists I spoke to in Cornwall. The contributing factors included commercial

foraging (including bait collecting), climate change, and invasive species. Nevertheless, there were different feelings among them about the level of harvesting that could be sustainable – some felt foraging in general was a problem while others were concerned only about large-scale commercial harvesting. However, as was evident on the walk with the conservationist Shelley, distinguishing between commercial foragers and amateur foragers can be difficult. Themes of uncertainty, suspicion, and complexity are explored further in Chapter 5. This section has highlighted the competing responsibilities that a conservationist must navigate when it comes to foraging.

A.4 Ecology and passion at the centre: managing foraging in a city park

This section moves the focus away (temporarily) from exploring the tensions that exist surrounding foraging as a practice, instead exploring how foraging has been integrated with conservation in a park management plan at Tower Hamlets Cemetery Park in London. This hints at some of the synergies that can exist between foraging and conservation, which is discussed in Chapter 5.

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In the spring of 2022, I met with Kenneth, the manager of Tower Hamlets Cemetery Park, for a walking session. He explained that he had always been passionate about wildlife and held a degree in environmental biology. He had been the manager of the park for 20 years and was keen to promote biodiversity there, and how it attracted film crews and schools to visit, as well as its cultural heritage.

We walked around the site and our conversation turned to foraging. He pointed out many wild foods among the gravestones, such as lady's smock and three-cornered leek. He explained to me that he was a forager himself and had taught himself to harvest sustainably. I was happy; the way he pointed out plants, some of which I hadn't known were edible, made it feel like my own private foraging lesson! Naturally, he explained, when someone is

interested in plants, they are also often interested in which ones you can eat and make into medicines and other useful things.

The wild garlic and three-cornered leek were looking luscious – seemingly thriving in this wooded, inner-city environment. Kenneth explained that spring was the time the wild foods were most prolific and most sought after. As Kenneth said, unlike other parks that cultivated grassy areas and flower borders, wildness was appreciated by the managers of this site. Edible plants, in particular, were prioritised by the park managers for their interest to humans. Those with strong flavours such as garlic mustard, three-cornered leek, and wild garlic were particularly popular with foragers. In this territory, it seemed to be an advantage to be a plant with a chemical composition making its aroma and flavour appealing to humans. In other places, these qualities are often not favoured or noticed. Wild foods are prioritised in Kenneth's conservation strategy; he lets wild foods grow in abundance and carefully manages the ways in which they are harvested.

We then came across a sign among the wild garlic, saying Foraging (Figure 12). The sign stipulated that foraging was not permitted on site, unless you had written permission to harvest.

Figure 12: Foraging signage, Tower Hamlets Cemetery Park (taken by author)

Kenneth explained that since around 2012, they had been organising foraging walks on site to educate people about botany and wildlife, to share their passion and to raise money. As a result, the park has become known for its many wild foods, so, to protect the area from being "ransacked", he felt it was best to manage the situation by asking people to apply for a permit.

"We show them information about the foragers' code, we send them YouTube links on plant origins, we give them links to our courses, and we ask them to donate," he said.

He also explained that, at times, commercial foragers working for restaurants would approach him to ask for a permit. He would be able to assess each situation, asking which

species they were interested in. Often, he would provide them with weight limits, advising them how and where to harvest rather than prevent them from doing so. This, he felt, balanced the need of the community with the potential damage.

He explained that one of the outcomes of the permit system was that foragers would be encouraged to harvest over a larger area so it was less intensive. They would also go further into the wooded areas rather than just harvesting next to the paths. He was content with the way that foraging was practised on site.

Despite not having written permission, Kenneth allowed me to harvest some three-cornered leek before I left; verbal permission seemed to be enough in this case. I carefully harvested a few leaves from here and there, determined to leave minimal trace. When I arrived home, I used it as a garnish on a soup – excited to try out an edible plant new to me.

Kenneth inspired a joy and curiosity around foraging in the way he talked about it, which was contagious. Wild foods, he explained, require management and care, just like any other plants. Although the park has a wild feel, much effort goes into keeping it diverse and preventing certain plants taking over. Managing human behaviours on site seemed to be part of this, although part of the team's ethos was to give people access to a wild place in the city to improve their mental health and wellbeing.

Indeed, many other land management/conservation organisations, such as The Wildlife Trusts and the Woodland Trust, have online blogs encouraging people to forage as a way to connect with nature and for their wellbeing. Often there is the caveat that people must learn to harvest responsibly (The Wildlife Trusts no date-c; Woodland Trust no date-a; Woodland Trust no date-b).

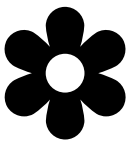
Kenneth spoke fondly about his upbringing and the curiosity it created for ecology, botany, and wild foods and medicines. Passion was a key aspect of why Kenneth (like Mike and Shelley, the conservationists in the previous sections) feels a sense of responsibility and care for nonhuman beings. Indeed, this resonates with Tsing's (2010) feelings that passion plays a part in fostering care for fungi. A curiosity and interest in nonhumans, fostered early in life, was often the foundation for why professional foragers and conservationists chose the career they did. Indeed, family traditions and influences were often referenced by professional and amateur foragers. They explained that they were influenced and educated

by their elder family members and continued to develop these skills in their adult lives. Thomas, a foraging and bushcraft instructor, reminisced about harvesting mussels and blackberries with his grandfather on our foraging walk, explaining that he was inspired to continue the tradition, and took it further by learning about many more wild edible species. Seven other professional foragers and five other conservationists also told me about the importance of family influence in the development of their interest in the environment.

Overall, this research encounter showed me what was possible in terms of where conservation and foraging could complement each other as practices. Kenneth's passion for plants made him both curious to learn and keen to teach how plants can be used by humans, while also promoting their growth. His conservation strategy necessitated balancing the desires of humans with the protection of nonhumans. Since Kenneth is both a forager and an ecologist, promoting biodiversity and conservation on his site, the boundaries between my chosen categories are somewhat blurred in this case. Kenneth's strategy is central to the discussion about the potential of foraging and conservation as complimentary practices in the establishment of an alterbiopolitical ethos in Chapter 5.

B. Summer

For many species, summer is the peak of the growing year in the UK. Temperatures are usually at their highest and rainfall at its lowest. Many plants go to seed and fruit begins to set on bushes and trees (BBC no date). Foragers are able to harvest leaves, seeds, fruits, and roots as plants grow and progress through their lifecycles.



B.1 Foraging on SSSIs: A legal case

This section discusses the legality of foraging on protected sites and describes a particular legal dispute in which a foraging company had, according to Natural England, caused damage to the ecosystem. Knowledge practices conflict, as do multispecies territories. Sea kale, which is harvested in the late spring and summer, is central to this conflict.

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After carefully cutting marsh samphire (*Salicornia europaea*) (Figure 13) with my foraging knife, I looked around the bay at the beach goers passing by. A few glanced over curiously whereas others just ignored me squatting on the salt flats. There was a gentle breeze and the sun was on my face. I couldn't wait to light a fire and cook the marsh samphire with some eggs for dinner. Cooking outdoors makes me feel extremely happy, especially when there are some wild foods involved. I could have gone the whole way and foraged for mussels or cockles in Gower, where I was staying, but I had read in the guidebooks that shellfish are breeding during the summer and should not be disturbed.

Figure 13: Marsh samphire on a SSSI (taken by author)

Later that evening, my friend Callum came by after his kayaking trip to a different bay with a handful of rock samphire – a completely different species (which I feel tastes a bit like soap). Still, it was edible nonetheless so was also cooked. I noticed that in his hurry to get back before dark, he had uprooted the plants, which made me feel uneasy. I knew that the bay

was a SSSI, and that what Callum had done was illegal. I had seen Facebook posts shaming foragers for uprooting plants, evident in their photographs. I didn't feel like shaming my friend but I gently told him that if he took a knife next time, he could avoid uprooting and allow the plants to grow on. I didn't mention the SSSI status. After further research, I realised that the place where I had picked the marsh samphire was also a SSSI. I felt a little ashamed but conflicted; surely, picking just a little wouldn't do any harm, as long as we weren't uprooting anything?

Indeed, it is unlikely that someone harvesting a few shoots would be caught and penalised for foraging. Yet, I had heard of disputes over foraging in SSSIs. One such dispute that had come up in my research several times involved a legal case so I endeavoured to find out what had occurred. I began researching online the controversy surrounding the commercial harvesting of sea kale (Figure 14) on a SSSI.

Figure 14: Sea kale (Knight 2013)

In April 2017, Natural England won a court case, and a stop notice was issued against Forager Ltd., one of the UK's biggest commercial foraging companies. The stop notice prevented Forager Ltd. from harvesting sea kale on a protected site in Dungeness, Kent (a

SSSI). Natural England argued that the foraging activities were damaging to the coastal ecosystem. According to Natural England, Forager Ltd. did not seek the required permissions from the owner/occupier to harvest the sea kale on the site it manages.

Justin, a commercial harvester involved in the dispute, held a vastly different opinion. He felt that Forager Ltd. was doing no damage to the plant or ecosystem. He argued that Natural England had given the company no opportunity to modify its behaviour prior to the court case. He also felt that his company was doing a service to the general public by connecting them with nature through food. In the following section, I present the viewpoint of several participants in this dispute, as well as the nonhuman beings that were involved.

B.1.A Vegetated Shingle

Vegetated shingle, as a habitat, is a micro-assemblage that is entangled in the Dungeness case. In Kent, shingle is composed of flint eroded from chalk cliffs (Kent Nature Partnership. no date). This geological feature becomes a habitat, called coastal vegetated shingle, home to certain plants (such as sea kale), birds, and other species (ibid).

Dungeness is a site designated a SAC, in part because of this coastal geological feature (Joint Nature Conservation Committee no date-a), which is considered both rare and a finite resource in the UK. Dungeness is thought to be the only example of vegetated shingle in the UK that supports fen and open water species, such as the protected great crested newt (Joint Nature Conservation Committee no date-a). The unique habitat, which has also been impacted over time by human activity, also provides a breeding ground and winter home for many species of protected birds and water voles. There are also populations of four vascular species of plant that are protected under Schedule 8 of the Wildlife and Countryside Act 1981, and populations of two invertebrates protected under Schedule 5. Taken together, the presence of these species was the reason an area around Dungeness and the nearby coast, known as Ramsar, was designated a SSSI (Natural England no date); the shingle, the plants, the depressions, the presence of the great crested newt and protected birds, the water voles, etc. give the site a special significance. SSSIs, although owned and occupied by private landlords, are managed by Natural England, a governmental conservation department.

Territorialisation (DeLanda 2016) is arguably relevant here. Dungeness can be unpacked and analysed as an assemblage of forms and materials, which then becomes the territory of

multiple species – some of which are charismatic (sea kale, as a pioneer, for instance). In turn, this becomes a SSSI, managed by Natural England – in which certain human activities are restricted. Despite this, Forager Ltd. still practised foraging at Dungeness, creating a conflict of interest and, in turn, a legal dispute.

B.1.B Sea kale (*Crambe maritima*)

It's summer, and sea kale is out on the British coastlines in full splendour. Its white flowers, produced to appeal to passing pollinators, create the possibility of reproducing and expanding the population.

I have never tasted sea kale but apparently it is delicious pickled. It can be harvested from spring through to midsummer. Living in Stroud, Gloucestershire, I have had few opportunities to find this plant, which grows in a very specific vegetative shingle habitat. Reading John Wright's description made me curious to see some sea kale:

> "Sea kale is my favourite plant, not because it is good to eat but because it looks so unlikely. A monstrous cabbage, incongruously sitting on a pebble beach, a single plant may be up to 1.5 m wide and tall, and it grows anew every year from deep and robust roots." (Wright 2020, p. 88).

Although sea kale isn't a protected species in Dungeness, it is protected on some sites (Wright 2009, p. 39). Sea kale is selective about its habitat, only growing on pebble beaches or on shingle (ibid 2009). Since vegetated shingle and pebble beaches are fairly uncommon, so, too, is sea kale. Sea kale is considered a pioneer species, able to withstand the unusual conditions provided by the shingle (University of Sussex no date) Being a pioneer species makes it interesting for conservationists – another charismatic species. In this instance, the rarity of the habitat - vegetated shingle - makes the plant as a pioneer species also rare and interesting for conservationists and ecologists.

An article in The Guardian claimed that sea kale is one of the few species that thrives in hostile environments (such as vegetated shingle) where other plants would suffer, due to its resistance to salt (Brown 2022). The article also claimed that in the UK, throughout history, humans have pickled it and eaten it as a prevention against scurvy, due to its high mineral content. The writer ends with the sentence, 'Let us hope fashionable chefs do not rediscover it' (Brown 2022, para. 4). Too late, it would seem. His concern speaks to the protectiveness

many people feel towards certain species of plant, and the portrayal of the 'fashionable chefs' as the enemy.

B.1.C Natural England

A staff member at Natural England, Diana, explained that they were worried that overharvesting and trampling of sea kale would cause a decline in the species and have a knock-on effect on the protected habitat. Indeed, Wright (2009) warns that trampling on pebble beaches by humans can cause disturbance and uprooting of small plants.

Natural England, as a governmental organisation, is responsible for managing the implementation of governmental acts and policies based on principles of conservation of certain habitats. This also links to global agendas and responsibilities faced by the UK government. Behind these priorities and ideas are particular knowledge practices, based on academic understandings of ecology and conservation. For example, conservationists draw on the knowledge practice of taxonomy, categorising different species, and surveying them using particular identifiers and measures (Lorimer 2015). This scientific knowledge, combined with the knowledge of certain criteria that count towards a species being protected (which is based on national and international legislation, processes, and knowledges), forms the basis of their understanding.

Bringing this analysis back to sea kale and the Dungeness case, the Natural England department responsible for this site noticed Forager Ltd. harvesting sea kale, and became concerned about these activities, which was the catalyst for the legal case. Emotions, as well as sanctions, were triggered, as members of the Natural England team witnessed the activities of foragers on its territory. Staff at Natural England have learned to attend to, and to care for, sea kale and its habitat.

B.1.D The Regulations

The foraging of certain protected species or in certain areas is illegal. For instance, under the Habitat and Species Directive, byelaws to protect specific habitats and species can be created (Lee 2012). This means that it is illegal to damage or harvest any protected species on a SSSI or a species under Schedule 8 (Wildlife and Countryside Act 1981) (Wright 2010).

(6) A person (other than a section 28G authority acting in the exercise of its functions) who without reasonable excuse—

(a) intentionally or recklessly destroys or damages any of the flora, fauna, or geological or physiographical features by reason of which land is of special interest, or intentionally or recklessly disturbs any of those fauna, and

(b)knew that what he destroyed, damaged or disturbed was within a site of special scientific interest,

is guilty of an offence and is liable ***[****F8 on summary conviction, or on conviction on indictment, to a fine****].***

[*F9 (6A)A person (other than a section 28G authority acting in the exercise of its functions) who without reasonable excuse—*

(a)intentionally or recklessly destroys or damages any of the flora, fauna, or geological or physiographical features by reason of which a site of special scientific interest is of special interest, or

(b)intentionally or recklessly disturbs any of those fauna,

*is guilty of an offence and is liable on summary conviction to a fine not exceeding level 4 on the standard scale.****]*** (Wildlife and Countryside Act 1981)

Natural England made use of this piece of legislation, among others, arguing that Forager Ltd. was intentionally or recklessly damaging the protected habitat, as the commercial foragers could have trampled and disturbed the habitat and the birds who may have been nesting there[6]. Natural England also drew on the Theft Act 1968, which explains that those harvesting for commercial purposes must seek permission from the landowner.

B.1.E Forager Ltd.

In this instance, Forager Ltd. appears to have threatened the equilibrium of Dungeness as a conservation territory. The foragers didn't ask for permission to forage sea kale at Dungeness and by the time they wanted to negotiate, there was no stopping the stop notice. Although Justin argues there was no evidence that they were damaging the site, they were already playing a dangerous game by foraging for commercial purposes without landowner

[6] The tribunal decision of Forager Limited vs. Natural England [2017] can be accessed online: https://www.gov.uk/administrative-appeals-tribunal-decisions/forager-limited-v-natural-england-2017-ukut-148-aac

permission. Their activities were driven by their desire to produce products from sea kale, and, in Justin's words, "to connect people to nature" through access to wild foods. Justin is passionate about wild food – he cares about it very much, wanting to see more of it available and to see more people foraging. He believes that this is a way for people to connect with their instincts and human rights. His understanding comes from a belief in a way that humans should be relating to plants – by eating them, rather than making "museums" of plants.

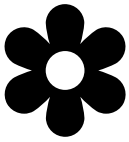
As was evident with the wild garlic pesto, the knowledge practices of chefs who specialise in wild foods play a part in this event. Again, the market for wild foods and the ingredients that can be combined with sea kale to make it marketable, sit beside this foraging and conservation conflict. Its flavour and texture are appealing - 'sweet with a pleasant hint of cabbage' (Wright 2020, p. 90). It also embodies a hint of novelty and uniqueness, being a species that is available only at certain times of the year and in very particular habitats. A novelty for any restaurant-goer who is interested in trying new flavours and connecting with Britain's diversity of plant species through a culinary experience. A book I have at home by Gill Meyer includes a recipe for sea kale with capers, rosemary, parsley, and cream (Meyer 2020). Again, a nonhuman becomes an ingredient, in relation to others.

Furthermore, the influence of well-known chefs, such as Gill Meyer and Rick Stein entices people to introduce new ingredients into their meals – and in this case, inspires an interest in wild food. The social aspect to taste is evident here (Hennion 2016) – sea kale may be edible, granted, but it is the social influence that makes it a desirable commodity. In a similar way to the acceptance of alternative proteins (Sexton 2018), when imbued with qualities such as ethical, sustainable and wild, raw products become not only edible but desirable.

Furthermore, commodification (Ortiz-Przychodzka et al. 2023) as a concept can be applied here - the process through which a raw material becomes a valued commodity. In this case, I have argued that the way companies such as Forager Ltd. and popular chefs promote certain wild foods transforms them from a raw material into a valued commodity on the market. Arguably, the sea kale growing near Dungeness was taken from an ecosystem that some feel needs protecting (Natural England on behalf of the government). Tsing's (2015) concept of salvage accumulation refers to this process, as human harvesters salvage edible species from

damaged or rare ecosystems in the hope of economic accumulation. These themes are developed and discussed in Chapter 5.

Overall, different agendas compete and conflict here. While the staff at Natural England know and value sea kale for its ecological niche, Forager Ltd. arguably value it for its corporeal charisma (its utility for and material affect on humans) (Lorimer 2015) and its marketability. This different way of relating is arguably central when it comes to what makes foraging a contested practice.



B.2 Plant knowledge and the law: A walk in South Devon

This section is based on the themes that appeared during a walking session in South Devon with a professional forager. It explores the theme of knowledge in more depth, looking at the kinds of knowledge practices valued by professional foragers, and how this can be at odds with legislation.

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It was early summer and the plants were vibrant green. I was in Dartmoor on a foraging walk with Adam, who is a foraging and bushcraft instructor.

Just as we began our walk, Adam exclaimed, in a disappointed tone, that one of the thickets of plants he was going to show me had been strimmed; a very short, grassy meadow replaced one of previously tall plants and flowers.

Nevertheless, he said, there was some new growth. In general, he was in support of cutting back vegetation to promote new growth and biodiversity – a technique used in regenerative agriculture. Similarly, certain harvesting techniques also promote new growth, such as if you harvest nettles in a certain way they grow back with double heads. He explained that many 'prunus' species benefit from annual cutting back – although this very much depends on the

species and the relationship between those competing in a certain area. Likewise, picking berries and cutting shoots can potentially benefit plants.

He bent down and showed me a small hogweed plant (Figure 15).

“Hogweed,” he said, “A lot of people are nervous about this plant because of its alleged phytotoxic properties – and that it can burn your skin. But, in my experience, that doesn’t really happen unless you are picking absolutely loads of it – then you should wear gloves. But just a little bit is fine – you can fry it in butter for your lunch. And if this hadn’t been cut down it would be much larger, and certainly tough and you wouldn’t want to eat it.”

Cutting off the tops of certain plants or cutting them back can encourage growth into the summer months, which can be beneficial to foragers.

Figure 15: Being shown the new hogweed shoots (taken by author)

Next to the hogweed was hemlock water dropwort, one of the most poisonous plants in the UK. He reminded me that a big part of foraging knowledge is to know what not to eat as well as what to eat.

“It’s a shame that the burdock has been cut back here because by this time of the year it is just getting big enough that you can wrap fish in it for fire cooking. You can also eat the roots, but only at certain times of the year.”

I asked about uprooting plants.

“It’s not legal to dig up plants. Laws protect landowners and laws protect products, such as domesticated crops. I try not to think too much about the legality and more about the sustainability. From my experience, if you don’t take too many from one spot you don’t damage the health of the population.”

He showed me a patch of wood avens, explaining that their roots taste like cloves and they were historically substituted for cloves in dishes (cloves being a very valuable and rare commodity). Adam seemed to be interested in the history and traditions around eating wild foods.

Then he continued, “Having said all that, uprooting right is very complex, and the knowledge extends beyond that of a hobbyist forager.”

He went on to explain that uprooting could actually cause invasive plants to spread. However, it could also be a way to control certain invasive species, such as Japanese knotweed, which, though invasive, has shoots that are a “delicacy.”

During the walk with Adam, I began to understand the level of experience and knowledge needed to practise foraging with care. The way he talked about the complexity of uprooting plants and which benefited from being harvested showed that he possessed an in-depth knowledge about the ecosystem and the responses of different species to harvesting, cutting, and uprooting.

At the end of the walk, he also demonstrated his knowledge of how to make wild foods taste good - he had brought a collection of preserves and pickles along.

“You wouldn’t just pick a leaf of iceberg lettuce, eat it raw and say, that’s delicious,” he explained, “you need to know how to dress it…and that’s exactly the same for wild foods.”

B.2.A Burdock (*Arctium minus*)

Burdock was one of the plants Adam mentioned during the interview, and it is a perfect plant to explore in the context of knowledge practices and the topic of uprooting and the law.

Burdock is a biennial plant, meaning that it has two different growth cycles, one in the first year and one in the second year of its life. In the first year, the leaves reach out in the spring and summer to capture the sunlight to store energy in the root. In the second year, the plant's energy goes into producing a flower to attract pollinators, to reproduce, develop seeds, and to drop them in the hope of creating the right conditions for the next generation of burdock to grow.

A forager must engage with this botanical knowledge, as different parts of the plant are edible at different stages of the cycle. In the first year, the young leaves (in the spring), and later the root (summer through to winter) are edible to humans (The Wild Foodie 2019). In the second year, the plant produces fresh leaves, which are edible, and flowers and seeds (which are not usually eaten) for reproduction, before it dies back which means that the roots are not eaten, since the energy of the plant goes into flowering (ibid 2019).

Humans have been known to use the root for various dishes, including the traditional dandelion and burdock drink (Mabey 1996). Burdock roots can also be oven-cooked as a root vegetable (Grow Forage Cook Ferment 2021). Several professional foragers mentioned burdock as one of the best wild sources of carbohydrate during interviews. As Adam said, however, it's not a case of simply pulling up the roots – it is necessary to learn how to cook it to make it palatable.

Burdock is a common species that is not under threat in the UK (The Wildlife Trusts no date-b). In legal terms, burdock is protected from being uprooted by unauthorised foragers by the Wildlife and Countryside Act. However, it can be dug up by the landowner (this must often be the case as burdock is probably considered a weed by farmers) or by those who have gained permission. Wild Food UK asserts that 'you must have the landowner's permission to dig up burdock roots but if you ask any farmer, they might laugh at you but they don't usually mind you digging up persistent weeds for them' (Wild Food UK no date, para 1). In the *Hedgerow Handbook*, Wright (2010) argues that the conservation law is:

'perfectly reasonable…until one tries to imagine the problem it was intended to solve. It does not, of itself, prevent a farmer from ploughing up a field containing plants, rare or otherwise, as the farmer would be an authorised person. Foragers, on the other hand, have never been a threat to wildlife when collecting Dandelion and burdock roots…Now the roots of common plants are out of bounds and the absurd situation exists where an annual plant can be cut off just above ground level, effectively killing it, but pulling it up by the roots is a criminal offence….The answer, such as it is, is to become an authorised person and obtain permission from the land owner.' (p. 28)

From Wright's (2010) tone, it seems that the legal situation is as sticky as the burdock seeds, causing some foragers to feel exasperated. Plants such as burdock are certainly entangled in land use laws as much as humans.

B.2.C Foraging knowledges

The way that professional foragers, such as Adam, understand burdock is representative of the wider knowledge practices that are necessary for foraging. Beyond culinary knowledges that have been mentioned in previous sections, he explained that foraging requires a deep botanical knowledge, learned through books and first-hand experience. This involves building a relationship with wild foods through harvesting and observing their response. Another professional forager, Thomas, described this as "trial and error" in our walking session. Adam often used the phrase "in my experience" to indicate that he had refined his foraging practices through experience. Similarly, on its website, as part of the 'Principles of Practice', the AoF explains that:

2.4 We undertake to observe how species respond to harvesting methods. Where a harvesting method is beneficial or neutral to a species and/or location we will share that knowledge among interested parties and other foragers. Similarly, in the event of a particular harvesting technique proving detrimental to a species and/or location, we will alter our practice accordingly and share that knowledge among interested parties and other foragers (Association of Foragers no date, para. 10)

All of the nine professional foragers I interviewed agreed that this knowledge takes a while to develop, and that is why foraging teachers are necessary. Arguably, this level of knowing and care involves an attentiveness to plants, being able to notice subtleties in how they are

growing, which allows them to respond – which can also be seen in birding practices (Just 2022) and in agriculture (Krzywoszynska 2019).

When it came to uprooting, Adam similarly explained that a high level of knowledge and experience is necessary to discern when uprooting might be appropriate. Regardless of it being illegal to uproot plants without landowner permission, this seemed somewhat irrelevant to many professional foragers who felt that their discernment would instead be based on their experience and knowledge. Five of the professional foragers I spoke to felt that the blanket laws against the uprooting of any plant, and in favour of picking others above ground, are inappropriate because they don't take account of the way different species respond to human harvesting. They argued that laws were not created for the conservation of species, rather that they were created with private property in mind, favouring the wealthy, landed gentry. Similarly, they felt that the idea that you could overharvest certain species, just by picking them, was based on a stigmatisation or criminalisation of foraging rather than on the evidence. Foraging laws, capitalism, and conservation paradigms were seen as barriers to having a deeper knowledge and understanding of plants. Malcolm, for example, a commercial forager, felt that his knowledge of local species superseded any laws or conservation rules in his local area, as he had a long-term relationship with the species he was harvesting, and felt that harvesting them in a certain way was not damaging to the ecosystem.

In her book *The Hunter-Gatherer Way* (Campbell 2012), wild food teacher and author Ffyona Campbell goes further to argue that uprooting plants can be beneficial to the species, as it makes space for young ones to grow. However, to get this right, as Adam said, one needs a deeper knowledge than a "hobbyist" forager – some plants are invasive and spread if you dig them up, while others such as orchids, he told me, could be damaged. Both Adam and Fi (another professional forager in Dartmoor) explained that they sometimes choose to dig up certain species to plant them in more appropriate locations, or in their gardens, encouraging the species to spread. Thomas, on the other hand, explained that he would only uproot a plant like burdock if its roots had already been exposed by a falling bank, or something similar.

According to Luczaj et al. (2021), this experiential type of knowledge, which involves an intimate relationship with plants, is considered a form of TEK. This language was used by

several foragers I interviewed, including Justin who works for Forager Ltd., explaining that foraging requires an intimate and embodied knowledge of the landscape, which is what our ancestors would have had. TEK, in this context, is less a set of facts than a way of interacting with the environment. This viewpoint is reiterated in an online article which explains that foraging is a way to bring back traditional knowledge, and to see oneself as part of nature rather than separate (Mihail 2023). Within this ethos is an inherent understanding that if one is part of nature, it is best not to do damage, and care will be taken to ensure a sustainable harvest. Indeed, several amateur and professional foragers mentioned the book *Braiding Sweetgrass* by Wall-Kimmerer (2015), in which the author discusses indigenous worldviews and the concept of the honourable harvest. She explains that an honourable harvest involves a relationship with the natural world interacting and observing – looking at ways in which humans can subsist from wild foods in a way that is harmonious with the ecosystem in which they live (Wall-Kimmerer 2015). Bringing in scientific research, Wall-Kimmerer (2015) refers to botanical experiments that have shown that harvesting certain species such as sweetgrass in a certain way is beneficial to the plant's growth. This links back to the ways that professional foragers in this study, for example Adam and Thomas, noticed that harvesting nettles and common hogweed in a certain way could benefit their growth. Just like Wall-Kimmerer, I noticed that professional foragers usually combined experiential knowledges with scientific research found in books and online to inform their practice.

Indeed, this practice and articulation of care can be seen as quite different from the way that Natural England, for example, cares for sea kale, as mentioned in the previous section. Natural England, working with conservation knowledge practices, enacts care by protecting the plants from human interaction and potential damage. On the other hand, experienced foragers enact care in a way that does interact, and take, from the plant – but in a way that they see as benefiting its growth, to ensure the population continues and that the plant is available for future harvests. As well as different aims and knowledges, different worldviews are evident here – echoing the land sparing and land sharing debate (Loconto et al. 2020). In this sense, it can be questioned whether; to promote biodiversity, humans should live, dwell, and eat separately from areas marked out for biodiversity conservation (land sparing), or whether humans can share territories with nonhumans in a way that is beneficial for both (land sharing). This is discussed further in section C.2 and Chapter 5.

B.3 Navigating care as a foraging instructor: A teaching site in South Wales

This section shows how a foraging instructor is navigating competing responsibilities towards the wellbeing of humans and the health of the ecosystem. The theme of care is implicit here, which is explored further in the discussion in the next chapter.

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On a warm, balmy day in late summer, I met with Thomas, a foraging and bushcraft instructor, for a walk and talk about foraging. He took me along on his teaching route, pointing out different species and discussing their uses through history.

As we walked, he told me about the different landscapes that we were passing through, starting with woodland, then moving onto salt marsh, before heading down to the beach. He explained that a forager can expect to find different species in each of these ecosystems.

“The nettles are a bit leggy now – so better used as cordage in bushcraft. They’re better to eat in the summer; they are rich in iron, a great emergency food”.

Figure 16: Picking nettles (taken by author)

Thomas showed me how to harvest nettles without getting stung, by pinching the top leaves off with a firm grip (Figure 16). He explained that by taking just the top leaves, the plant would grow back with a double head, meaning more was available for harvesting.

I asked him about foraging conduct as we walked towards the salt marsh.

“It’s a tricky one.” He said, “Now that foraging is becoming more popular there is a risk that certain species just get completely stripped. In an area like this, where there’s a lot of foot fall, if everyone took some, then it just wouldn’t be sustainable. Commercial foraging is a problem, too.”

When we arrived at the salt marsh, he showed me various plants, including burdock, ground ivy and sea beet.

“Sea beet is one of my top ten plants – you can use the leaves like spinach. This is a plant our ancestors would have used as you can dig up the roots for a good carbohydrate source. That isn’t really necessary now…it’s a survival food and we have other ways of getting carbohydrates. If the whole population needed to live off it, it wouldn’t work. It’s such a fragile environment. As for picking leaves, you have to just take a leaf from here and there. Just one from each plant (Figure 17). The key thing is – don’t take more than you need.”

Figure 17: Picking sea beet (taken by author)

Then he added, “with some plants, they are so prolific, perhaps it would be alright. But things like sea beet and burdock, there’s not enough of them for everyone to start harvesting them.”

“I also worry that if global temperatures continue to increase, our ecosystems will change drastically, and plants acclimatised to a northern aspect will decline further.”

As we walked, he told me about the work that he does with his community interest company (CIC), teaching foraging and bushcraft to people experiencing mental health challenges. He explained that getting people outside, to experience the abundance in the natural world, is extremely beneficial for mental health and reconnection to land, history, and place.

“In my view, one of the main causes of mental health struggles is disconnection from nature and total reliance on technology for everything.”

He explained that he taught foraging, primarily, to help people connect with nature. He would usually just teach the obvious plants and their uses in different ecosystems, pointing out the toxic plants and lookalikes to ensure that people were safe when foraging for themselves.

When we arrived at a patch of marsh samphire, a plant I knew and enjoyed eating, I enthusiastically tried picking one, only to uproot it by accident.

“First rule of foraging”, Thomas said, “Bring a knife!”.

B.3.A Teaching vs. personal foraging sites

This was a teaching site of Thomas’s, rather than a place he often comes foraging for personal consumption. Several foraging teachers I talked to said they often do not take students into the areas they forage in for personal use but have specific teaching sites. I remembered that when I had contacted Malcolm, a commercial forager in Stroud, he had joked that I just wanted to know all his spots. Instead, he’d taken me for a dog walk in a place there were very few mushrooms, not revealing the places where he would usually find a flush.

In this way, like many conservationists, there was a protectiveness over certain places and species that professional foragers shared. Despite them wanting to share their passion for foraging, and its benefits on wellbeing, eight of the professional foragers I interviewed said that they were reluctant to share their best spots with anyone else. Embedded in this is a feeling of scarcity and threat to biodiversity – that there is not enough wild food for everyone.

B.3.B Biodiversity, climate change and overharvesting

Thomas acknowledges that he is aware of the different pressures that surround the contested space of foraging, including climate change and biodiversity loss. Access to nature and activities such as foraging are seen as important for tackling disconnection and mental health issues, although there is a recognition that it would be detrimental to the ecosystem if everyone foraged due to depletion caused by human industrial development.

Thomas explained that the desire to forage and the desire for biodiversity are two sides of the same coin - it is impossible to have one without the other. Nevertheless, as we have seen, foraging can impact biodiversity in the same way as biodiversity can impact foraging. If there is a lack of wild food available, people cannot forage, so if people forage too much and deplete the ecosystem, they are causing problems for themselves.

Furthermore, Thomas is concerned about weather changes and how this will impact foraging in the future. The weather has agency over different species and the way they develop and their rates of reproduction each year. Indeed, when I held a walking session with amateur forager William, we found that the absence of rain, affected by global climatic patterns, impacted our foraging experience – as the sea buckthorn berries were not ripe enough to harvest. The dry summer had caused the sea buckthorn to be delayed in its seasonal berry ripening. Key here is the way that people who practise foraging often notice how the weather is impacting different species. Due to this noticing and observing of weather impacts, often foragers have ground for concern about climate change through personal experience of the effects of rising temperatures, or lack of rainfall, for example.

As I walked across the salt marsh with Thomas, I wondered what rising global temperatures and sea levels would have on the plants that grow there. Researchers have predicted that

sea level rises would inevitably change the habitats of plants in salt marshes, and rising temperatures could cause certain species to become extinct (Poppe and Rybczyk 2021).

The salt marsh plants we came across - sea beet, sea purslane, marsh samphire, and wild rocket, among others - seemed to be in good condition. They were growing in small colonies, and there was not much evidence that there was any overharvesting. On the several occasions I've been there, I've never seen anyone else foraging. Thomas said the same - most people walk obliviously past as the plants sway in the breeze. Without a knife, I appeared to be the biggest immediate threat, uprooting a plant by accident!

When I asked an ecologist, Peter, who specialised in marsh samphire, about the threats of overharvesting, he explained that he didn't feel human harvesting was a threat to the population if plants were of the right size and the level of harvesting wasn't too excessive. In some areas of the UK, geese eat marsh samphire and some smaller birds eat the seeds. There is a history of foraging for marsh samphire on the Norfolk beaches where Peter conducts his biology research. Local people have been collecting marsh samphire for generations, and it is generally done sustainably as people know how many to take so that the seed bank can recover – just as birds do. Marsh samphire is an annual plant so it relies on producing and dispersing seeds, and for the correct conditions for growth the following season. Peter agreed with Thomas that it would be detrimental if people relied on marsh samphire at a particular time of year, or if it was foraged commercially, but currently there is no evidence of this.

Similarly, another ecologist, Chris, believed that excessively harvesting salt marsh shrubs, such as sea purslane, would damage their populations. In his view, the potential threat is linked to the amount of harvesting that takes place. This links back to the foragers' code of 'take only what you need'.

B.3.C Codes of conduct

The professional foragers I interviewed, such as Megan and Thomas, taught codes of conduct as part of their foraging walks. Although their codes of conduct varied slightly, professional foragers all had their own ways of judging which plants should and shouldn't be harvested, and how much to take to keep it a sustainable source. The variations in what they

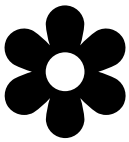
expressed came from their experience of harvesting over time, along with their own research of resources surrounding foraging guidelines.

Yet, there were some key similarities in the codes of conduct I came across in my research encounters. The first one I heard and read about many times, was “take only what you need”, just as Thomas had said. This message is reiterated in online advice about foraging by conservation organisations (NatureScot no date; Woodland Trust no date-b) - to only take what you intend to use for personal consumption. This code seemed to encourage a level of self-awareness and regulation, to try to prevent overharvesting. This would protect the species from damage and would also leave some for other predators. In this way, commercial harvesting was generally not endorsed by professional foragers, as this, in their view, went beyond personal need. A slightly more specific recommendation for how much to take was often mentioned in interviews – such as Megan, who taught people to take one fifth of a given species. From others I heard different amounts, such as a half or one third. This seemed to be a way for professional foragers to give a clear guideline to those they were teaching.

Four of the professional foragers told me they wouldn’t harvest if there was a single plant of a certain species, in the hope that the population would grow and spread from that specimen. Furthermore, it was generally considered unacceptable to harvest an endangered species that was on the Red List, as those species needed to repopulate and recover.

Thomas also gave me the “first rule” of foraging – to always bring a knife. Professional foragers that I walked with often showed me how to harvest certain plants so as not to damage or uproot them. Thomas suggested I use a knife to cut marsh samphire rather than to pull it up or break it off. In a similar way, Jeremy, a professional forager in the Cotswolds, explained that I should just take a leaf from here and there, rather than concentrating on one area, to avoid overharvesting or damaging the plant. Nevertheless, different professional foragers would have different ways of practicing, and some were horrified by the practice of using knives – showing how there are contentions and controversies within the foraging world also. Codes of conduct are discussed more in relation to ideas of good and bad foraging in Chapter 5.

Overall, this section has shown the competing responsibilities that are felt by a foraging instructor. Although Thomas considers foraging important to connect people to nature, especially in the context of the current mental health crisis, he makes sure to teach codes of conduct to mitigate the risks of overharvesting. This was a sentiment I heard from professional foragers and conservationists alike. This section has also shown how a feeling of scarcity is perpetuated by the current contexts of biodiversity loss, climate change, and population size. Some foragers can be protective about what they consider their sites – another form of territorialisation, and exclusion, that might be observed.



C. Autumn

Autumn is the season when plants and fungi bear fruit. Hedgerows are heavy with berries and nuts, and leaves fall from the deciduous trees, providing nutrients for the soil and fungi below (Wilkes 2022) . Many different animals, including humans, stock up for the winter months, some getting ready for hibernation. For foragers, it is the time for jam making, drying and pickling, in order to preserve wild foods, to make use of this short window of abundance before things change yet again.

C.1 Myths and Mycelium: Porcini hunting in Oxfordshire

It's mushroom season and I set out hunting for porcini mushrooms with amateur forager Fred and a small group of friends. This section depicts the uncertainties that can circulate around foraging and conservation conflicts. Nonhumans can be difficult to predict and difficult to know – particularly, mushrooms. I also show how people find evidence, embodied and relational, to support their views - but their claims can often conflict.

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"When you find one, there are many."

Fred kept repeating this mantra to us, over and over again, until it stuck. Indeed, he is right, when you find one mushroom, poking out from underneath a brown leaf, just visible, there are probably others nearby. In fact, you are probably standing on one. "Watch your feet!", he said.

We were in a woodland in Oxfordshire hunting for porcini mushrooms. According to Fred, most Italians hunt for porcini in the autumn in Italy, and many Italians living in the UK try to find them here, too. Generally, they are not as big as in Italy, and they emerge earlier in the season due to lower temperatures.

We had to wake early to find the mushrooms before our competitors did. Muntjacs and pheasants are "bastards", according to Fred[7], eating up the mushrooms before we humans have a chance to get out of bed. He tells us there are also foraging courses run by a local farm shop which brings groups into these woodlands, and if you arrive after one of them you have no chance. If there is one mushroom on its own, it means someone has already been there as mushrooms grow in clusters. If it has been turned over, it was most likely a human trying to identify it.

Fred told me that we were probably not going to find many because we had not chosen the right day. I wondered how this could be – all the conditions seemed right … it was autumn, it had rained the night before, and we had made it into the woodland just after daybreak. But no, we should have chosen a date based on the moon's cycle, according to Fred. We should have chosen a date between the new moon and the full moon, but our moon was already waxing.

Later, I tried to find more information about this online, but to no avail, and it wasn't in any of the mushroom books I read. However, there were many chats online about it, with people

[7] In my journal, I reflected that I felt somewhat challenged by the prospect of taking so many mushrooms that my non-human competitors would go without. The excitement of finding mushrooms in that woodland meant we gathered more than we needed that day. I was left wondering about the other creatures that might have benefited had we not picked them.

referencing their grandfathers, usually from central or southern Europe, who would say the same.

At first, we didn't find any porcini but we did find plenty of red cracking boletes, which come from the same family. Fred told me they were not as tasty but we could still use them in our risotto. I found them quite strange looking – once you touched the spongy yellow underside, they began turning blue. There was part of me that wondered if eating something that was turning blue was a good idea. But I trusted Fred's judgement – he had been mushroom collecting since he was a young lad and he told me that he only picks the five or so species that he knows well, avoiding the others. The red cracking boletes reminded me of tiny little moles poking up through the leaves on the forest floor. They had beautiful colourful stems and furry brown tops.

Soon our baskets were quite full (Figure 18), but we still hadn't found any porcini. I couldn't help feeling a little disappointed.

Figure 18: Finding red cracking boletes with Fred (taken by author)

We kept finding what he called signals - mushrooms that usually grow close to porcini, which would guide us where to look. But still no porcini.

Fred told us that we were best to look underneath oak or chestnut trees, maybe birch, as this is where porcini like to grow best. They also love moss and roots, and are most prolific in damp areas of the woodland.

“I’ll tell you a secret” he said, “just relax and connect with yourself and you will find them.”

Suddenly, I heard a faint shriek of delight from one of our group members. We quickly found our way to where she was crouching next to a holly bush.

“You found porcini”, Fred exclaimed, “Well done!”

They were tiny. “Should we pick them, they are so small!” I asked.

“Yes”, said Fred, “If we don’t, an animal will eat them.”

We speculated that the only reason there were some still there was because they were hidden under a holly bush (Figure 19). Perhaps the muntjacs couldn’t get their noses underneath without being spiked?

Figure 19: Finding porcini under a holly bush (taken by author)

“If we pick them all,” another group member chipped in, “won’t that mean there are no mushrooms next year?”

“Of course not, there will always be mushrooms”, was Fred’s reply. “They are like the fruits on an apple tree, if we twist them off properly, we won’t cause damage to the fungi. We can put them in our baskets and the spores will spread on our walk home.”

The hunt was addictive, but eventually after five hours we began to pick our way back through the woods. On our way, we stumbled across a bramble bush and spontaneously decided to pick some blackberries for dessert. The season was almost over – it had been early due to a heat wave in the summer, but there were still a few juicy ones left. The brambles had been early fruiting this year whereas the mushrooms had been late – where the blackberries thrived in the heat, the mushrooms could not emerge until there was rain.

When we had finished the hunt, we set to work on cleaning the mushrooms. “No water, just a rub”, I was warned. Fred had strict control over the bolete risotto recipe (Figure 20), having learned from his Italian family. He also made a carpaccio with the few porcini that we did manage to find, sliced very finely and drizzled with olive oil, seasoned with a bit of salt and pepper. The flavour of the porcini was incredible, and we all considered that being fried in garlic with the rest of the mushrooms would have been a waste.

Figure 20: Making risotto (taken by author)

After dinner, we settled down next to the fire, feeling satisfied and replete.

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The idea that mushrooms are similar to the fruits of other species, such as apple trees or brambles, is something I heard from many foragers, including Fred. It's a seasonal topic that erupts, like the mushrooms, around this time of year. An online article, *The Foraging Debate Continues*, written by a foraging teacher based in Wales, states:

'When it comes to the science, the reality is that a mushroom is simply a fruit like an apple or blackberry. The British public would laugh at the suggestion that members of the WI picking a basket of hedgerow berries to make jams and jellies to sell for good causes, were in fact threatening the future of our crab apples or brambles – let alone think that because they picked large quantities, this was evidence of 'commercial' harvesting' (Butler 2018, para 6).

In autumn specifically, the science of mycelia and mushrooms becomes a topic of concern. The argument that mushrooms are simply fruiting bodies and harvesting them does not impact reproduction of the mycelium was a line of defence, used by many, in response to growing criticism and concern.

One mycologist I interviewed, Lesley, was adamant that the biology of mushrooms is very different to that of a blackberry or apple, and that picking mushrooms in the UK, a country where there is little habitat left suitable for mushrooms, should not be advised. She said that spore dispersal is inhibited if mushrooms are picked before the end of their sporing period. A report by the United Nation's Food and Agriculture Organisation similarly shows governance level concerns with the disappearance of certain species of macro-fungi due to overharvesting (Boa 2004).

Those involved in the debate around whether the harvesting of mushrooms is the same as harvesting of any other fruit have been exposed to evidence of some sort, to support their opinions, whether it be through the experience of harvesting mushrooms or from scientific papers. Indeed, there is a mycological study stating that there is no danger to the mycelium from picking mushrooms, no matter which technique is used – it's the trampling that damages habitats (Egli et al. 2006). Many I spoke to often referred to this study when talking about mushroom harvesting. Some, like Fred, also acknowledged they needed to use a weaved basket rather than a bag to make sure the spores were spread effectively while

walking through the forest. He was of the opinion that it was beneficial for the mushrooms, as he was taking the spores to places that wouldn't otherwise be reached.

Others disregard the study's conclusion because they feel better evidence suggests that mushroom harvesting is detrimental to rates of mushroom reproduction. Sheldrake argues that making sense of mycelia is not something humans are very good at, and that there are so many mysteries surrounding them (Sheldrake 2020). What goes on under the soil cannot be fully understood. As Pitt argues, knowledge about plants (and, arguably fungi) is always partial, as there are many aspects of their life worlds that we simply cannot access (Pitt 2015,2017).

Derek, the head of conservation strategy for a large forest management organisation, explained to me that they work with a precautionary principle when it comes to restricting the harvesting of mushrooms because the risks are not fully understood. What is clear is that there are multiple understandings of how mycelia work, and multiple misunderstandings.

I felt somewhat conflicted about our gathering of porcini on that October day. I acknowledge that the excitement of finding porcini and the other Boletus species, and their deliciousness, made us quite greedy – we took more than we really needed to make a meal – we had a risotto, a carpaccio and some left over. There were not many in number yet we picked all we could find. Fred had told us that if we hadn't taken them then the muntjacs or pheasants would have done. In my online research I could not find any evidence of those species eating porcini or fungi. Folk knowledge, perhaps? Even if they do, is it the right attitude to be in competition with them? I pondered it for some time.

Then there was the moon comment. Fred was hoping for a wet night followed by a sunny morning, coinciding with the correct phase of the moon cycle, for a good harvest. Again, although I couldn't find any information about this online, it is a knowledge that has been passed on from family - his have been harvesting mushrooms for generations. They will have seen and will have got to know patterns over time. In this sense, scientific evidence is not always the most valued way of knowing when it comes to foraging.

C.1.A Porcini (Boletus edulis)

Figure 21: Porcini (taken by author)

Porcini (Figure 21) are the 'fruit bodies' of mycelial networks that grow underneath the soil (Watling and Hills 2005, p. 38). These fruit bodies are the medium for the mycelia to reproduce, sending spores out to infect host plants and to be carried by the wind to new territories. The very name, fruit bodies, implies they have similar qualities to fruits such as blackberry and apple. However, porcini are the fruits of mycelia, not plants, and they behave in different (mysterious) ways. They produce and disperse spores from the tubes and pores just under their caps[8]. Whether the spore dispersal is effective or not very much depends on the right conditions created through interactions between the host plants, the spores, and other soil organisms (Hall et al. 1998). Other nonhuman beings and forces are involved, for example, the weather, the soil, the trees, and maybe even the moon.

This particular species of the Boletus family is 'among the most widely prized and sought-after wild mushroom in the world' due to its flavour, popularity in certain cultures, and its

[8] Tubes instead of gills for boletes (Dann 2017).

high commercial value (Gelardi 2020, p. 223). There is a long history of its trade and consumption in Europe, especially in Italy (ibid 2020), which means that Italy imports porcini from other European countries to keep up with local demand (Boa 2004). Porcini cannot be cultivated commercially as they are ectomycorrhizal (Perez-Moreno et al. 2020), meaning that they grow in symbiosis with plant roots, usually certain species of tree (Boa 2004). They help the tree to access water and nutrients from further afield, in exchange for essential carbohydrates from the tree roots (ibid 2004). Their habitat is deciduous or coniferous woodlands and they can be found in areas with temperate climates across the world (Dann 2017).

Porcini are elusive, more endangered than crab apples or blackberries, and appealing to many more-than-human predators. They also thrive best in acidic soils (Gelardi 2020) and have relationships with certain other soil organisms (Hall et al. 1998). I was warned by some mushroom foragers that the Cotswolds is not a good region for ectomycorrhizal mushrooms in general (although slightly better for saprotrophic mushrooms, which grow on decaying matter), because most mushrooms prefer rich, acidic soils over the sandy limestone soils of the Cotswolds. Again, this points to the particularities of the porcini life world, which requires quite specific conditions.

The species of trees that are known to dwell and coexist alongside the ectomycorrhizal mycelia that produce porcini are oak, beech (Dann 2017), and chestnut (according to Fred). It isn't clear whether porcini are similar to matsutake mushrooms, which thrive where there is human disturbance (Tsing 2015), but if the trees are removed, ectomycorrhizal do not grow (Boa 2004). The very specific human disturbance of coniferous, broadleaf woodland destruction is not beneficial for porcini. Trees are therefore essential to the reproduction and growth of certain mycelia, just as the presence of the mycelia is fundamental to the health of these trees (ibid 2004).

In the UK, woodland covers just 10% of the country (Tobin 2022) – this small percentage has been attributed to overexploitation and climate change (Burton et al. 2018). Furthermore, only a quarter of this 10% is ancient woodland, much of it being conifer plantations (Tobin 2022), which is not the desired habitat of porcini and many other species of fungus.

Therefore, the excitement around finding porcini in the UK (probably the most favoured mushroom species of all – many foragers squealed excitedly when I said I'd been on a porcini hunt) is partially to do with how rare it is to find a place where they grow. Porcini are unruly and cannot be expected in the same way as a blackberry or an apple. They cannot be cultivated or planted. They may arrive, they may not. The only thing that one can expect from a porcini is a consistent flavour in risotto (if one is lucky enough to find some in the south of the UK).

In this way, this section introduces the unruliness of wild foods as deterritorialising forces and agents, as well as the difficulty in knowing them. They move beyond human-made boundaries and are not predictable ion their patterns. Folk knowledge can conflict with scientific knowledge – do fruiting bodies act the same way as brambles? And if that is the case, does that justify overharvesting? What about the muntjacs and the moon? It would seem, even within the scientific community, there is no full consensus when it comes to the sustainability of harvesting and the biology of mushrooms. This theme of uncertainty and complexity is developed further in Chapter 5.

C.2 Land sparing vs. land sharing: Following fungi in the New Forest

This section shows how different opinions exist around how humans can live well with other species, in particular relation to the New Forest National Park and the debate about harvesting mushrooms there.

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I arrived at the forest car park a little early for my meeting so I stretched my legs. The first thing I saw was a sign saying ‘Look, but please don’t pick’, referring to the fungi in the New Forest (Figure 22). I had heard of this rule from many foragers and conservationists, who all felt a bit differently about it.

Figure 22: Look but please don't pick sign in the New Forest (taken by author)

I saw a group of people forming to my left and asked them if they were on the fungi walk.

“Yes”, said a man with a loud voice, “we are the Hampshire Fungus Recording Group – are you coming with us?”

I wasn’t actually sure. I didn’t think that the group I was planning to join was an official fungus recording group. I looked at their wellies and large camera lenses and felt a little underprepared with my trainers and small digital camera.

“Is Steven here?” I asked.

“Probably not,” the spokesperson said, “he’s probably doing something else.”

I was puzzled as I am sure Steven said Saturday when I had last spoken to him. A minute later he appeared.

It became clear that there were two guided groups going out to the forest - the Hampshire Fungus Recording Group, apparently recording all the different species, some of which they would do DNA tests on, and a fungi identification walk led by Steven. The two guides seemed to know each other, the first showing displeasure that there was a rival walk going on at the same time. I, however, felt relieved to be with people who were as new to foraging as I was, judging by their smart phone cameras and lack of knowledge about scientific names for fungi.

Steven started our session by telling us that we would be in broadleaf, deciduous woodland first, then move into an area dominated by pine and larch trees – two distinct habitats, hence home to slightly different mycota.

We walked down a slope just a few metres from the car park and came to a decaying tree covered in honey fungus. To my surprise, Steven plucked a mushroom from the tree and held it up to show us its features (Figure 23).

Figure 23: Steven showing us honey fungus (taken by author)

“I thought you weren’t allowed to pick mushrooms in the New Forest?” I asked, somewhat confused.

“Ah” he said, “I have a permit. We are allowed to pick some for identification purposes and I think smelling them is important to this.”

He said that if you don’t want to pick a mushroom to identify it you will need a mirror, as you have to look at the underside to know what it is. He produced a mirror on an extendable stick from his bag and showed us how you could use it to look at the underside. Seemingly, he would use this only for the scarcer mushrooms he didn’t want to disturb. He also told us he would leave the fungi growing along the path that others might enjoy looking at.

“Will mushrooms still spore once picked?” I asked, leaving a mushroom I’d been handed by one of our group on a mossy mound nearby.

“Yes, they will,” he smiled. “Just leave them somewhere and they will spore out eventually”. What a relief, I thought, as our group members could keenly pick every mushroom in sight and I was slightly concerned they might pick a rare or highly toxic one.

There were all kinds of beautiful mushrooms (Figure 24). It had rained the night before, so there were many, some particularly slimy due to the wet conditions.

Figure 24: A collage of colourful mushrooms we saw that day (taken by author)

As we entered the pine woods, Steven told us that there used to be many porcini growing in this forest, but that during the past few years he hadn't seen a single one. I asked him why he thought this was.

"I believe it's the restauranteurs who come early in the morning; they strip the place of the tastier ones. The 'look, don't pick' rule is really to deter them because if all the mushrooms are gone we are unable to enjoy looking at and identifying them. In the past I have seen car parks with piles of rejected mushrooms on the ground. Presumably they just pick everything and then discard the inedibles afterwards. I suppose they come when no one will see them and they ignore the restrictions."

On our walk back to the car park, after four hours of fungal fun, Steven told me about a particularly rare mushroom that can be found in the New Forest: the bearded tooth fungus. He explained that this species is on the Red List and is protected under the Wildlife and

Countryside Act 1981. Even for those with a permit, it is illegal to take or damage bearded tooth.

In just four hours we had seen 80 species of fungus. Steven explained that there were around 2,500 different species in the New Forest. I understood why this was such a popular and important spot for fungal identification groups to operate. I felt very happy to have been able to learn about so many types.

C.2.A New Forest ownership, designation and legislation

On inspection of Steven's permit, I saw that he was only allowed to pick 1.5kg per event and hold only ten events per year. I found this interesting and looked online to find out about the land ownership and regulations relevant to the New Forest. Despite it being legal to pick mushrooms for personal consumption, the Forestry Commission, which manages the New Forest on behalf of the Crown, strongly advises against mushroom picking in all areas. If a person wants to pick mushrooms (for identification purposes only), they must apply for a permit.

The public is allowed access to most sites managed by the Forestry Commission, the National Trust, Wildlife Trusts, and local authorities, without it being considered trespass (Wright 2010). However, many of these sites also have a designation such as being a SAC or a SSSI (Wright 2010).

From records online, it is possible to see that the New Forest Association was hopeful that a byelaw could be put in place to ban foraging in the New Forest (Tarnoff 2016). However, this seems to have been unsuccessful, and it is currently not illegal to harvest mushrooms in the New Forest. However, it is illegal to harvest or damage any species protected by the Red List, such as the bearded tooth fungus (IUCN 2022), which has been added to Schedule 8 of the Wildlife and Countryside Act 1981 (UK Wildlife no date). Furthermore, the 1981 Wildlife and Countryside Act makes it illegal to damage any plant listed on a SSSI, as well as any 'operations that may damage' the SSSI itself, including 'removal or damage to any plant, fungus or animal' (Wright 2010, p. 29). SSSIs are usually managed by Natural England and are often public access sites. As can be seen in the image below, the New Forest has various designations, with different protection statuses. There are some SSSIs in this forest, but most of the region is a SAC due to certain habitats, such as beech and oak woodlands (Joint

Nature Conservation Committee no date-b). SACs are not protected by the same byelaws as SSSIs, although land managers do have more power to create new byelaws if they discover human activities are having negative impacts on protected habitats or species (The Conservation of Habitats and Species Regulations 2017-b).

The New Forest is an important site for mushrooms in the UK, and this attracts visitors as well as fungi identification and monitoring groups. I interviewed Owen, who is part of the New Forest staff team, and Derek, who works in the forestry sector managing policy, about harvesting and protecting mushrooms species. They both feel that conserving and showcasing biodiversity is a way to connect people with the natural world. They were uncertain about the impacts of mushroom harvesting on mycelia, which meant that the advice was more on the grounds of aesthetics and monitoring than conservation.

The New Forest Association makes it clear that these guidelines are for the benefit of both the fungi and visitors to the National Park (Tarnoff 2016), and some foragers agreed with this. I was told that there was a stakeholder consultation meeting in 2016 that initiated discussion between mycologists, fungi enthusiasts, foragers, and restauranteurs. Interestingly, many of the mycologists there were reportedly in favour of the creation of a stronger byelaw, whereas the restauranteurs argued that the resources in the forest were important for their businesses and people's connection to wild food.

In other parts of the country, there may be stronger byelaws in public access sites to deem picking fungi illegal. An example of this is Epping Forest. As part of my research, I asked Neil, who works for Epping Forest District Council, about why foraging for fungi is banned there. I was told that the byelaws, which were established in the late 19th century by the City of London Corporation, prevent people taking any resource from the area or damaging any plant or living being. This was most probably developed, he said, to stop people from taking resources such as gravel and large pieces of wood, rather than being anything to do with the conservation status or habitat for certain fungi. Despite this, he finds that the byelaw is now relevant to the conservation of certain fungi, as he feels people are more likely to harvest mushrooms than dig for gravel in these times. Apparently, the byelaw benefits Epping Forest as it has been known for groups to come in and harvest mushrooms on a large scale – and the byelaw means that it is possible to prosecute these harvesters without having to prove they are part of a commercial operation (as would be the case elsewhere). Mycologists

operating in the New Forest would arguably be aware of this historical byelaw and might wish to pass something similar for the New Forest.

C.2.B Bearded tooth fungus (Hericium erinaceus)

The bearded tooth fungus grows and feeds on old deciduous and sclerophyllous trees, usually dead beech (Dann 2017). It relies on certain conditions, such as mild weather and a large amount of dead wood from certain types of trees (oak and beech). It fruits in the UK in the late summer and early autumn (Dann 2017), which produces an interesting looking white shaggy mushroom on the sides of trees.

The bearded tooth fungus is known as a delicacy and for its medicinal purposes, but it is illegal to harvest it in the UK (unless commercially cultivated). Endangered species such as this are entangled in the 'look, don't pick' advice, feeding into the way many certain organisations and individuals view the harvesting of mushrooms. This fungus is said to be endangered due to a decline in its habitat (Kalucka and Olariaga Ibarguren 2019; IUCN 2022). The removal of dead wood from forests by forest managers for firewood can be detrimental to the bearded tooth fungus. However, an IUCN report explains that 'another threat is the heavy harvesting of fruitbodies because of its edibility and for medicinal purposes' (Kalucka and Olariaga Ibarguren 2019, p. 5).

This species has attracted attention from conservation organisations because of its decline in numbers in the UK and elsewhere. Its endangered status encourages people to protect and support its fragile population. Mycologists have witnessed certain fungal populations in decline, which is linked to human behaviours such as the foraging of dead wood and fungi. Lists and resources such as the Red List support and contribute to the conservation culture of protecting endangered species from human activities, meaning the fungus is on Schedule 8 of the Wildlife and Countryside Act 1981, making it illegal to damage or harvest it. Endangered species and ecosystems clearly have an impact on legislation and site designation, and will affect the way the site is managed and the messaging that goes out to visitors.

Furthermore, the designation of the New Forest as a National Park including SAC and SSSIs is based on unique ecological assemblages. In this instance, protected features in the New Forest offer protection and restoration of oak and beech trees, which in turn offer habitats

for species of lichen and invertebrates (Joint Nature Conservation Committee no date-b). The special interest species on this site, and the consequential designation that has been formulated, then, affects the kinds of human activities that can take place on the site, for example fungi identification walks, monitoring, and perhaps for some, foraging. Many stakeholders feel that the New Forest is a unique and special habitat that should be protected from development, agriculture, or damage from human activities.

C.2.C Tourism in the New Forest

Alongside the special protection of certain ecosystems and endangered species in the New Forest is tourism. Owen of the New Forest National Park explained that just as the deer rut brings thousands of tourists to the forest every year, the fungi also have an important function. People come from all over the south of England to take photographs of interesting looking mushrooms. It is important for the managers of the New Forest that visitors are coming and enjoying themselves, spending money in the local area. The value of the forest is not only for its ecosystems but also for connecting humans with wildlife and providing them with a positive outdoor experience. Again, if most of the mushrooms were taken by restauranteurs or hobby foragers, the National Park would no longer be able to provide visitors with this experience.

Underlying this messaging is the idea that for a positive relationship with the natural world, biodiversity must be protected from certain exploitative human activities for the benefit of the general public.

C.2.D Amethyst deceiver (Laccaria amethystina)

The amethyst deceiver mushroom (Figure 25) is perhaps not ‘charismatic’ in the same way as bearded tooth because it is not currently endangered, but it is undeniably an extremely photogenic mushroom. Species such as this, among other things, are what draws tourists into the forest during the mushroom season. Arguably, without fungi species like this, the New Forest would not be as attractive to curious photographers and amateur mycologists, whose interest and enjoyment has impacted the Forestry Commission’s ‘look, don’t pick’ advice.

Figure 25: Amethyst deceiver - picked by one of the other participants (taken by author)

Coincidently, the amethyst deceiver is edible to humans (although apparently eating it can cause long term health problems) (Dann 2017). It thrives best in beech woodlands with rich soil (ibid 2017). The fruiting bodies are a bright purple colour, which makes it eye-catching and interesting. On the fungi walk, one participant picked an amethyst deceiver without asking Steven first, and it attracted a great deal of attention from the group for its vivid colour. Here, aesthetic charisma (Lorimer 2015) plays a part, as colourful fungi attract photographers, mycologists, and tourists into the forest.

C.2.E Subversive strategies

Online articles have argued that restricting foraging in the New Forest is unfairly preventing people from accessing healthy food, and that foraging is a right (Butler 2018). Two of the commercial foragers I spoke to - one professional and one amateur - agreed with this. They argued that human disconnection from nature in recent times is a huge problem that conservation strategies further perpetuate. An example of this mindset can also be seen in Wright's foraging guide; he argues that 'one sin occasionally committed by the conservation-minded is that of 'environmental colonialism' – refusing to buy or gather local wild food

while cheerfully buying the imported article' (Wright 2010, p. 24). Although this is a slightly different argument than the importance of nature connection, it again warns us about what happens if people are distant from their local wild food sources.

A rather critical online article argues that it is perfectly legal to harvest mushrooms in the New Forest, and that it is the foresters who are in the wrong:

> *'The New Forest is often mentioned after the Forestry Commission placed some signs some years ago suggesting mushroom foraging was banned in the park. Visitors are in fact able to forage for personal consumption under the law and it was pointed out that foresters confiscating the public's baskets might constitute theft' (Docio no date, para 24).*

Like this writer, some of those in favour of harvesting in the New Forest feel that to live well with nature means to be roaming the land like a large mammal, browsing the flora. Many foragers referred to hunter-gatherers as a way to explain their practices and ethos. Instead of taking photographs of mushrooms, they would rather use them for their medicinal and edible properties. When talking about the restrictions in the New Forest, they felt that the rule undermined their personal sense of responsibility for looking after the land and their connection to the landscape. Similarly, Morris-Webb's (2021) study showed that personal wellbeing and connection to nature were among the main reasons people forage on the North Wales coast.

Furthermore, some human foragers follow nonhumans, not necessarily the land access laws. Some professional and amateur foragers were quite smug when telling me they had been chased off land by farmers, while others were rather distraught. The pull of wild food clearly drove some of them to places they shouldn't go in legal terms. Some claimed they would never go on private property to forage. However, they often referenced the law as being a grey area, and the rights of the people to forage in common law. Overall, individuals felt differently about abiding by land laws and permissions.

C.2.F Wood blewit (Clitocybe nuda or Lepista nuda)

Edible mushrooms, their flavour, and their distribution, are very much entangled in this disagreement. Wood blewits (Figure 26), I noticed, were fairly plentiful in the New Forest. Wood blewits, common in the south of England, are less precious about their habitats than many other mushroom species, often found in parks, gardens, and compost heaps as well as

woodlands (Dann 2017). They are also not as photogenic as the amethyst deceiver and could be mistaken for wet leaves on the forest floor. These mushrooms are corporeally charismatic (Lorimer 2015) as they are valued for their texture and taste by those that enjoy eating mushrooms, rather than their appearance. Those in favour of foraging in the New Forest would probably rather like to eat them.

Figure 26: Wood blewit in the New Forest (taken by author)

C.2.G Restaurateurs

From Steven, I heard that we didn't see any porcini mushrooms because restaurateurs had probably "stripped" the forest before we arrived. I was told by four different conservationists, managing various public access woodlands, that they had seen piles of discarded mushrooms in their car parks, which was evidence that these commercial operations were in operation. There are also online news articles that have reported illegal commercial fungi pickers stripping the UK forests of fungi (Carrington 2014; Greenfield 2019). The word "stripping" was often used by conservationists and foraging teachers to refer to overharvesting, in reference to any kind of foraging. These commercial activities, rather than small scale foraging, arguably necessitated the 'look, don't pick' advice in the

first place, and this has had a knock-on impact on small-scale hobby foragers. Many of the smaller scale foragers and foraging teachers disapproved of commercial activities and some agreed with the 'look, don't pick' advice on these grounds. Seemingly, the signage did not deter commercial harvesters. Stronger byelaws, like those in Epping Forest, many agreed, would carry more weight.

In summary, this example of the New Forest shows how there can be differing views about how humans should dwell in the landscape. In the discussion, I link this to the land sharing and land sparing debate, which explains how these two differing worldviews on food production and biodiversity can be managed, and how they can conflict. A land sharing perspective argues that humans can live well among other species, promoting biodiversity through wildlife farming (and foraging), whereas a land sparing perspective, echoed in the 'look, don't pick' advice, argues that there should be zones in which humans cannot produce or harvest food - safeguarded for biodiversity to thrive (Loconto et al. 2020). This resonates with the debate around the suitability of foraging in the New Forest, and how humans should act in that territory in relation to fungi. This core difference between different stakeholders is arguably a large factor in the development of tension and conflict surrounding foraging, as well as the threat of illegal commercial harvesting that lingers in the background (as in many of these research encounters). Nonhumans, and charisma, however, cannot be ignored as key agents in this process. In this instance, charismatic mushrooms are key – some photogenic, some just delicious, and others incredibly rare.

D. Winter

Winter is the toughest time of the year in the UK for many species. The combination of short and cold days makes it challenging for many species to gather enough food to survive during these months. Some animals have adapted to hibernate as it takes so much energy to keep warm and it is more energy efficient than to forage when resources are scarce. Many plants

are dormant, waiting for temperatures and sunlight hours to increase before they have the energy to start their growth and reproductive cycle (Wilkes 2023).

In woodlands, the wild garlic bulbs are waiting for the warmth of spring to signal it's time to emerge. On the wild path sides, the wild mint has died back and the wild carrot has dropped its seeds – new plants will grow next year. On the coast, sea kale is dormant, energy stored in its roots under the shingle, and shellfish are resting. They will reproduce again in warmer conditions, meanwhile overwintering birds are harvesting them as a supply of protein over the winter.

For foragers, there are not many wild foods readily available, however some hardened harvesters still go out to find shellfish, seaweed, evergreen plants, and hardy mushroom species. Others live on homemade preserves from fruits, nuts, and leaves throughout the rest of the year to see them through the winter months.

D.1 Hazel dormice, Hedgerows and Human entanglements

This section brings the year to a close, highlighting the feeling of scarcity that extends beyond the winter season – in the context of industrialisation and associated habitat and biodiversity loss that is assembled around foraging as a contested practice. I also draw out some of the synergies that I have seen emerging throughout these research encounters, which is developed in the next chapter.

*

In late autumn 2021, conscious of the winter approaching, I picked a kilogram of berries from a hawthorn tree which I processed into hawthorn ketchup. They were some of the last remaining fruits available in the hedgerows. It took me a few hours, with a couple of friends, to harvest enough for the recipe, then another few hours of sorting the berries, boiling then mashing them, and cooking them with sugar, vinegar, and cayenne pepper. At the end, I had

only two small jars of ketchup. It was certainly a lot of effort for something that was just a small addition to any meal – nothing substantial. I wondered if I should have left the berries for the birds and animals instead, considering that I have access to shops and farmed products. Is preserving berries from a tree a good use of resources that would be wasted anyway…or would it be better for the more-than-human collective if I let them be?

My thoughts echoed some of the concerns implicit in codes of conduct and foraging guidelines that I'd heard about. The Woodland Trust, for example, in its foraging guidelines (Woodland Trust no date-b), states that it is important to leave some wild food behind for other animals when foraging. Wright (2010, p. 24) represents these views by saying 'there is also the plea that we should always leave some wild fruit to feed the birds'.

That same autumn, with this issue in mind, I went for a walk with two staff members from South West Lakes Trust, Jessica and Anna. We stopped to look at a coppice of hazel trees next to the lake on one of their sites. They had erected nesting boxes on the sides of the trees and explained that hazel dormice lived there and fed from the hazel trees (Figure 27). They explained that although they actively encourage foraging on their sites, as a way to entice people out into nature and to promote their activities, they would discourage anyone from harvesting hazelnuts since these are a staple for hazel dormice in the autumn months, helping them to build up fat stores before they go into hibernation through the winter months. It takes more energy than they can consume for hazel dormice to forage over the winter, so they have adapted to hibernate.

Figure 27: Nesting boxes for hazel dormice (taken by author)

These small mammals live in hedgerows and in hazel trees, yet there were no signs on the trees warning people that they should not take hazelnuts. When I asked about this, I was told that it is a difficult situation as signage spoils the natural look of the woodland. Instead, the staff would explain the situation to anyone they saw picking hazelnuts. However, they admitted it was impossible to constantly monitor so some people may get away with picking hazelnuts[9].

I wondered what would happen to the hazel dormice if the majority of hazelnuts were picked one season. I asked this question to Robert, an ecologist working at a university in the south of England. He explained that hazel dormice are very adaptive creatures that can forage many different food sources – nuts, berries, and insects. However, they forage at night and often don't travel very far from their nests, so if they could not eat hazelnuts they would have to travel further afield to find their food stores for the winter. It was his opinion

[9] In my journal, I noted that the activity of building homes for dormice and encouraging people not to harvest hazelnuts was the antithesis of taking every mushroom to prevent other species from eating them (See C.1). Although Jessica and Anna have the power to influence landscapes and encourage certain species to thrive, they are using that power and knowledge in an entirely different way.

that a small harvest of hazelnuts wouldn't have a large impact on the hazel dormice, but if a forager were to 'strip' trees of their nuts, in the absence of other fruits or nuts close by the hazel dormice might suffer. He also worried that hedgerows offer very little much-needed cover and fewer corridors for small mammals than in the past. Furthermore, he feared walkers might trample on them during the six months of hibernation, as they often sleep under fallen leaves just under the surface of the ground. Robert revealed that he is actually a forager as well as an ecologist. He said that he is mindful of hazel dormice when harvesting, and did not feel that his foraging activities - taking just a little from here and there - would impact them.

Hazel dormice are another protected species under the Wildlife and Countryside Act 1981. Their appearance arguably affects humans, moving them to care about their decline and to create homes for them. According to the People's Trust for Endangered Species, hazel dormice numbers have declined by 50% since 2000 and in many parts of the UK they are now extinct, due to changes in climate and habitat decline – notably the loss of old woodlands and hedgerows (People's Trust for Endangered Species No date-a). They move through hedgerows, being their habitat and their main source of connectivity to other feeding sites.

D.1.A Hedgerows and hazel trees

Hedgerows, like hazel dormice, are in decline. A hedgerow is a planted or self-seeded boundary consisting of shrubs and trees, often emerging spontaneously in abandoned corners of fields and along ditches and beside rivers (Mabey 1996). A hedge, arguably, is only a hedge in relation to human land use practices and the materiality of fields and fences. Some are cut regularly and layered, while others are considered 'neglected' (Mabey 1996, p. 93).

Indeed, during another walking interview in autumn 2021, Countryside Skills Educator and forager Fi took me to her usual spot for picking blackberries in a hedgerow, only to find that the hedgerow had been cut by the farmer (Figure 28). Clearly, it had been planted or left by the farmer as a wind break and border to his land. Its purpose was therefore as a boundary, and it was their responsibility to keep it from growing into the road. The fact that this

hedgerow had blackberries on it, which foragers might want to harvest, was not important to the farmer.

Figure 28: Trimmed hedgerow (taken by author)

Like hedgerows, hazel trees and humans have a long history together. There has been evidence to suggest that hazelnuts were a staple for the Celts (Mabey 1996). Furthermore, the first deliberate coppicing was recorded 4,000 years ago and the trees have been bred from their wild varieties for centuries (ibid). The long poles of coppiced hazel have several uses, including fencing, thatches, faggots, and walking sticks. More often than not, hazel trees and hedgerows have been specifically planted by humans for coppicing or eating – and dormice have then adapted to these landscape features. Humans have produced a landscape in which hazel dormice have found their niche.

However, due to changing land use practices and a decline in the number of hedgerows, hazel dormice are threatened (People's Trust for Endangered Species no date-a). Hedgerows suffer from neglect, overpruning, and spraying by farmers and land managers, often to improve their yield or workload (People's Trust for Endangered Species no date-b). This has a knock-on effect on other species, as well as foragers.

D.1.B Scapegoats

Ten foragers (seven professional foragers, two commercial foragers, and one amateur forager) talked about themselves as scapegoats, explaining that the bigger picture was what was really threatening biodiversity, not foraging. They viewed large-scale human impacts including climate change, industrialised farming, agrochemicals, and infrastructural developments as the real problems.

I found that, generally, foragers of all categories and conservationists agreed about the bigger picture. Talking to conservationists and reading through online resources, it seems that many believe that small-scale foraging is not a threat – although commercial scale foraging is. However, more importantly, foraging of any kind is only a threat in the context of wider human impacts on biodiversity. The example of the hazel dormouse shows that farming is often blamed. Again, there seems to be a mutual understanding here between foragers, conservationists and ecologists, rather than a difference. Commercial foraging was generally viewed as a threat, but only in relation to the wider context of habitat destruction and changes in farming as impacts of industrialisation and population size.

A global biodiversity study suggests that although humans have always been responsible for the decline of certain species, the most radical decline has been since the industrial revolution (Hill et al. 2018). In Europe for example, the biggest loss occurred in the early 20th century, whereas in Africa it was during the late 20th century, corresponding with changes in land use linked to the industrial revolution (ibid 2018). Indeed, the Grantham Research Institute at the London School of Economics lists rapid industrialisation, habitat loss and fragmentation, climate change, and other human activities such as overhunting or intense harvesting of resources, as the key factors contributing towards biodiversity loss (LSE 2022). Habitat loss is mainly due to high consumption lifestyles driving an intensification of agriculture and other industrial activities (ibid 2022).

With this in mind, and as we have seen in previous chapters, it makes sense that conservation bodies have marked out territories to exclude human activities that can reduce biodiversity and habitats. Yet, equally, arguments for land sharing techniques (linked to the foraging worldview), such as less intensive agriculture, have their foundations in concerns about intensive farming and industrial projects which deplete wildlife corridors and habitats.

So, the conservation and foraging approaches are striving towards the same goal – a reduction in habitat destruction and biodiversity loss. The conservationists and many of the foragers showed an awareness and knowledge of other species, which means they notice when they are not there and are moved to care.

However, unlike the stakeholders in this research, many people are not aware of their impacts on nonhumans as they wander through the woods. Robert, the ecologist, knows to tread carefully on the woodland floor so as not to step on a sleeping dormouse; Anna and Jessica know not to take too many of the hazelnuts so that there is enough food for them. Yet, there are many people that do not have this level of knowledge about other species (and, therefore, care). Knowing, relating, and caring are interlinked (Pitt 2018). This is a theme discussed in the next chapter.

Furthermore, as previously mentioned, foraging is often seen as a way to promote wellbeing and mental health by foragers and conservationists alike. In section A.3, I presented the competing responsibilities that Shelley, a conservationist, must navigate. Likewise, in section B.3, I drew out the different responsibilities Thomas, the foraging instructor, felt towards people and nonhuman species. Many of their concerns about the future, about the level of harvesting and the responsibilities they had to navigate, were very similar – linking to the overall context of population size, biodiversity and habitat loss, climate change and mental health. They both agreed it was good for people to forage, but that if everyone was to do it, there wouldn't be enough wild foods to go round without causing damage to the ecosystem.

In summary, this section has shown the impacts of foraging situated in the wider context of industrialisation and biodiversity loss. Winter is prevalent here as it is a time of scarcity and thus there is a fear of there not being enough to go round (yet, this is also relevant even in the summer!). There are some clear synergies between conservationists and foragers, even if their approaches, the way they care and what they care about, differs – there is space for mutuality as they strive for biodiversity, and ultimately, living well with other species. I explore some of the synergies in the next chapter, which leads on to suggestions for mutual projects and a shared alterbiopolitical ethos between different kinds of stakeholders.

Before moving on to the discussion chapter, it is necessary to close the annual cycle. Spring will be emerging again soon, with the wild garlic causing a new flurry of excitement. Each season, as I have shown, brings with it new issues when it comes to foraging, based on what is happening with the weather, lifecycles, and the ecosystem. The timing of my research was key to which stories and coordinations emerged and were observed and narrated - if I had carried out this research over a different time period, there would have been different coordinations, conflicts, and synergies. In a way, this shows how fleeting research encounters are, at times, difficult to grasp or to fully analyse or understand. Nevertheless, I've attempted to make some sense of what happened during my fieldwork period through discussing my encounters in the context of key themes in the following chapter, elaborating on those I peppered throughout these narratives.

Chapter 5: Discussion

This chapter develops some of the core themes from more-than-human geographies and posthuman research in the context of foraging as a contested practice in the UK, using examples from my vignettes in the previous chapter. The discussion is guided by my research questions:

1. What kinds of material and relational forces coordinate to make foraging become a contested practice?

2. What are the knowledges, values, and ways of relating that are embedded in foraging as a contested practice?

3. What are the threats and opportunities that foraging offers to land management and conservation projects?

In the context of these questions, I draw on the theoretical framework I presented in Chapter 2 - an assemblage-based approach looking at multispecies coordinations (Gan and Tsing 2018) in section 5.1. I explore how foraging, as a contested practice, provides an interesting insight into the process of territorialisation and deterritorialisation (Deleuze and Guattari 1987; DeLanda 2016).

In 5.2, I then move on to unpack different ways of knowing, relating, and valuing nonhumans evident in this research, drawing on preexisting theories that have been used to analyse how humans relate to nonhumans in different ways. For example, I discuss the concept of nonhuman charisma (Lorimer 2007) in the context of this research, and bring in different knowledges and ways of relating in the exploration of foraging as a contested practice.

I then draw on theoretical concepts such as commodification (Ortiz-Przychodzka et al. 2023), salvage accumulation (Tsing 2015) and care (Law 2008; Pitt 2018; Mol and Hardon 2020), to contextualise the practice of foraging among other literature, pointing to patterns in the way that humans relate to nonhumans. These patterns are important to evaluate, because they enable us to understand why humans relate to nonhumans in certain ways and offer insights which may help with developing new ways of relating. This section highlights some of the threats associated with foraging as a practice, particularly vis-à-vis conservation projects.

This leads on to Section 5.3, which explores the opportunities and synergies that foraging and conservation practices offer, developing Puig de la Bellacasa's (2017) concept of alterbiopolitics. This section of the discussion contributes to the strand of critical posthumanism that examines practices and the opportunities they offer for learning how to live on a damaged planet (Puig de la Bellacasa 2017; Tsing et al. 2017; Krzywoszynska 2019).

In this way, contributing to studies of controversy and contestations, I offer a multispecies assemblage approach which shows the circumstantial and posthuman nature of conflict. I also offer insights into the way knowledges and ways of relating are multiple and complex, which makes distinguishing between different groups of stakeholders very difficult. Therefore, instead of focusing on difference throughout the discussion, my approach looks at the complexity of navigating tensions, values, and knowledges for the individuals involved in this research. I show how there are multiple ways of valuing and knowing that coexist and need to be constantly navigated when regulating and practising an activity such as foraging.

I move the discussion and analysis of contested knowledges on to suggest new ways of relating based on synergies between knowledge practices and ways of relating. This approach to looking at controversies brings in a critical posthuman angle to progress this scholarship. In this way, I utilise and develop the concept of alterbiopolitics, extending it to encompass multiple practices, as a method for creating mutual understandings in contested space and new ways of relating.

5.1 Multispecies territories and the contested practice of foraging

The following two sections address my first research question: *What kinds of material and relational forces coordinate to make foraging become a contested practice?* This part of the discussion looks at what comes together to make foraging contested, as well as developing assemblage approaches to understanding contestations, in particular, Gan and Tsing's (2018) use of the term coordination as a key facet to assemblage and the concepts of territorialisation and deterritorialisation (DeLanda 2016). In these sections I am working with the foundation of assemblage as an ethos (Anderson and McFarlane 2011); I present the insights gained from applying the notion that everything is in constant process and flux, and that material and relational forces are constantly affecting and changing one another, to the

study of contested practices. I link the vignettes in the previous chapter with these key concepts, explaining how taking an assemblage approach is useful for this topic.

5.1.1 Multispecies coordinations

Firstly, throughout the preceding chapter, I have highlighted the kinds of material and relational forces that coordinate[10] to make foraging a contested space. I have told stories about different living beings, bringing in natural history, folk-knowledge, and my own observations, as well as elaborating on what participants said about them. Included in my category of material and relational forces are nonhumans and humans, as well as legislation and the media, which I consider socio-political forces that affect living beings and these encounters.

Overall, this analysis has shown that the forces that make foraging a contested space are human and nonhuman, socio-political and ecological. For instance, in section A.1, it was evident that there were many material and relational forces that came together to make commercial foraging a local issue for people in Cornwall: the chemical compounds of the wild garlic, the human taste for this plant, and the wild food industry, to name some examples (pp. 80-89). The locals in Lostwithiel who came across the man harvesting wild garlic weighed up the situation and decided that it resembled a commercial harvesting operation, based on their preexisting knowledges and opinions, influenced by the law and the media. The coordination, or coming together of these different entities, was just one example of how, in a moment, practices such as foraging can become contentious and cause conflicts. Indeed, this event caused a ripple effect as it was reported by The Guardian and would therefore more widely influence public perceptions of foraging in the UK.

Often, it is multiple assemblages that come together in these moments. By assemblage, I am referring to ecological assemblages, such as the assemblage of chemicals that make wild garlic taste good to some to humans. Another example was evident in Dungeness, as the vegetated shingle and the plants and birds that inhabited the site, assembled to create the conditions for the SSSI (pp. 113-120). I am also referring to socio-political assemblages such as legislation, which come together and are made relevant through monitoring and policing,

[10] I have drawn on Gan and Tsing's (2018) use of the term coordination to mean the coming together of different subjectivities and force-relations to create particular encounters.

as assemblages of human activities and bodies. This is arguably a helpful way to look at contested practices, showing how the process is inherently more-than-human.

The structure around the seasons was intended to bring the climate and lifecycles of different species to the forefront of this analysis. The human desire to forage a certain species, for example, is relevant only during the season that this wild food is available. Certain issues become 'charged' (Stewart 2011, p. 452) at certain times of the year, such as the debate about harvesting mushrooms in the New Forest (pp. 142-154). The struggle between the mushroom harvesters and national park managers in the New Forest only occurs during the time of year when the mycelia are fruiting. And again, the issue of the lapwing eggs on a site in South Wales is only an issue at the time of the year when lapwings are breeding (pp. 90-98). In all of these examples, human rhythms such as daily practices (for example, a conservationist doing a tour of their site), meet seasonal practices of other species, which change their location or their physiology depending on their life and breeding cycles. These seasonal practices are interlinked and often driven by nonhuman forces. This mode of analysis is key to the posthuman approach as it facilitates a certain level of what Murdoch (1997) refers to as symmetry between humans and nonhumans.

It has also become clear how movements and practices cause a ripple effect. The farmer that had cut the hedgerows in Dartmoor where Fi was planning to forage for blackberries (p. 158) was responsible for our change of plan - there were no blackberries. Although we were relying on the rhythms of the bramble plant to follow a semi-predictable pattern, we hadn't considered that the farmer's cutting schedule would interfere with this. The idea of a semi-predictable pattern, often mentioned in the context of assemblage as a concept and rhythm (Kleinherenbrink 2015; Brighenti and Kärrholm 2018), is useful here because while seasonal rhythms are fairly predictable, certain forces, such as the weather, do shift certain timings. When I went to harvest sea buckthorn with amateur forager William, for example, we found the plants were not yet ripe due to a lack of rainfall that summer. Confounding factors, for example the farmer trimming hedgerows (p. 158), a ranger cutting the meadow before my interview with Adam (pp. 120-122) and commercial harvesters driving over lapwings' nests (pp. 89-98) show how other bodies moving and dwelling in the landscape can change things or interfere with the rhythms of others. On several occasions, we had to change our route due to changes in the landscape or changes in which species were available.

In this way, a coordination, in the context of my research, is often the place where multiple forces and agencies come together, in a slightly random way (or semi-predictable way), to produce something new. The way things came together in Lostwithiel (pp. 80-89); the wild garlic, a new walking route, a commercial company, and a media report – is based on both predictable and unpredictable patterns. The walk of the locals in Lostwithiel was so timed, coincidently, that they witnessed the man harvesting wild garlic and reported it to the media. By choosing this way of writing and mode of analysis, I have attempted to show how everything is in the process of becoming, always produced and reproduced by everyday multispecies coordinations.

Furthermore, some of the vignettes I present are less about conflict and more about the everyday practices that show how foraging is managed by professional foragers, such as Adam from Devon (pp. 120-126), and land managers, such as Kenneth at Tower Hamlets Cemetery Park (pp. 108-112). Inspired by the style of Stewart (2007), I see everyday events and feelings as crucial to understanding how life unfolds and practices manifest. These everyday practices provide examples of how foraging can be done with knowledge and skill, or, in some instances, without. It also shows how foraging is regulated and monitored by those managing conservation sites or other territories. Again, there are always nonhuman species involved, such as burdock (p.123-124) and sea kale (p.116-117), whose properties and behaviours move people to harvest or protect them.

Furthermore, in the context of this research, each vignette can be seen as a coordination. I acknowledge that I am part of these multispecies encounters in this research - and that, because of my presence, something new comes into being. The people I spoke to and the information I found online, as well as my own interests and way of listening and hearing, were part of what produced these vignettes and stories, and therefore the analysis. For example, I am explicit in my vignettes about how my data collection and storytelling comes from following trails of information about foraging as a practice, based largely on what I find intriguing. This is a known approach in multispecies ethnography (O'Mahony 2019; Wels 2020), but the process isn't always as explicit. For example, I explain that it was a newspaper article that a colleague has sent me about a dispute between commercial foragers and local people in Cornwall which set me off on a research investigation (p. 80). In this way, I show

how this research is performative (Law 2004), and an output of a coordination in which I play a part.

Therefore, through this study, I have shown how Gan and Tsing's (2018) version of the concept of coordination is a useful analytical tool when looking at how controversies and contestations manifest. I have also shown how the presence of the researcher within these coordinations is fundamental to this, as research is performative and requires an understanding of positionality and co-creation between the researcher and the assemblage of other material and relational forces surrounding the research encounter.

Furthermore, looking at the world through the lens of multispecies coordinations is a perspective that lends itself to examining key theories in assemblage theory, such as territorialisation and deterritorialisation, which I explore in the following section.

5.1.2 Territorialisation and deterritorialisation

'Territorialisation (is)…a parameter measuring the degree to which the components of the assemblage have been subject to a process of homogenisation, and to the extent to which its defining boundaries have been delineated and made impermeable' (DeLanda 2016, p. 3).

In this thesis, I have referred to several different conservation zones - the vegetated shingle of Dungeness (pp. 113- 120) the Natural Trust site in South Wales (pp. 89-98) and the New Forest National Park (pp. 142-154). For example, the unique feature of the chalk cliffs near Dungeness created vegetated shingle, have become the habitat for certain species such as sea kale and migratory seabirds. The sand dunes and grasslands on the National Trust site in Gower are a nesting ground for lapwings. The New Forest provides the right conditions for oak and beech trees, which in turn, provide habitats for the rare and protected Red Listed bearded tooth fungus.

Sites such as the Dungeness SSSI, therefore, can be seen as an assemblage of bodies that has been defined and made into a homogenous zone, based on the way that ecologists and conservationists understand landscapes and ecosystems. The site designation relies on the certain patterns of behaviours and rhythms of nonhumans, such as migratory birds landing on the site seasonally, or certain plants reproducing and growing. According to assemblage

theory, these rhythms - or melodies - of species are fundamental to the formation of territories, and are semi-predictable (Kleinherenbrink 2015; Brighenti and Kärrholm 2018).

In the first instance, vegetated shingle only becomes a habitat because of the parallel species-milieu – the life worlds of certain species that means they choose shingle for their home. These species, then, use their bodies to mark their territories, their homes (a bird makes a nest on the shingle, or a plant puts down its roots). This embodied expression of territory marking can be considered a ritornello. 'Ritornellos are signatures in the world and the expression of such signatures entails the formation of a domain' (Kleinherenbrink 2015, p. 216). Kleinherenbrink (2015) reminds us that the root of the word is the French *terre*, which signifies the physical environment in which a being acts and dwells.

Furthermore, territorialisation is about exclusion - the formation of spatial and non-spatial boundaries (Bear 2013). Certain species use ritornellos to mark out their territories to exclude others, and, in this instance, humans draw boundaries to exclude certain activities. Dungeness is a site that the general public can access, however only certain human activities are allowed and endorsed. Natural England has marked out Dungeness as a specific protected territory, using its own expressive mediums to form boundaries, to make a site, and to categorise it.

Indeed, those working in conservation have learned to attend to these species-milieus, territories and territory markers, and act to insure their protection. For example, they monitor the site, mark its boundaries on maps, and display informative signs. Regulators have endowed Natural England, as a governmental body, with rights and liabilities, such as the ability to enforce a stop notice on any activity it believes is damaging to the site (The Conservation of Habitats and Species Regulations 2017-a). The territory of certain species, then, such as overwintering birds and the great crested newt, becomes a restricted territory for humans through this procedure.

This demonstrates how any human territory, in this instance the designation of a site as a bounded SSSI, is inherently more-than-human, and is produced and reproduced through a variety of nonhuman forces. Indeed, Deleuze and Guattari (1987) argue that subjectivity emerges from the interrelation of expressive qualities that produce a territory. In Dungeness, this particular grouping of milieus, rhythms, and ritornellos - the chalk cliffs, the

shingle, the beings that dwell there - all contribute to the way that humans are allowed to act in this place.

In this way, something fairly static is created through the site designation, which both encompasses and relies on these rhythms – making a certain order from chaos. It's the task of the conservationist to ensure the ecosystem is somewhat stable and maintained, so that the territory makes sense as a boundaried entity, and so that the symbiosis between the different species in the area remains in a particular balance and harmony. Natural England has a responsibility to maintain this territory and the rhythmical assemblage of nonhumans that dwell there.

Conservationist organisations, for example Natural England (p.117), and individuals such as Shelley in Cornwall (pp. 98-108), are obliged to keep records and ensure patterns of behaviour of certain protected species and ecosystems remain in a certain rhythm. This is to ensure that damage to these ecosystems is mitigated. If they suspect an activity is harming the ecosystem, they would be required to provide evidence and have the power to take legal action. The law, which stipulates that it is illegal to damage any protected habitat or species, provides them with integrity and power in this legal action.

Since ecosystems and habitats change throughout the year, conservationists are required to understand what protects them as the season changes and progresses. As Ingold (2005) notes in his essay on the 'politics of dwelling', humans and nonhumans both inhabit a world that undergoes 'continual formation' (Ingold 2005, p. 505). Places are fluid, constantly changing, and see the movement of nonhuman and human bodies over time. Conservationists such as Shelley and mycologists such as Steven (pp. 142-154) know what to look for at different times of the year, and their duties and activities change accordingly.

Yet, Ingold (2005) notes, humans strive to protect themselves from outside forces, and the unknown, and therefore establish boundaries and territories to reduce the feeling of threat and create fixed places – some marked out for humans and others reserved for "nature". There is also certain competition for resources that results from dwelling in a landscape – in which building, making, eating, and moving are all a part. Conservation organisations strive to protect nonhumans by creating certain boundaries around nature reserves, just as other humans build fences around their gardens to protect their private property.

In this research, it has become clear that foraging practices can be seen as a threat to conservation territories. Returning to the example of Dungeness (pp. 113-120), Natural England has marked out the territory based on ecological and institutional/socio-political assemblages, and works within the byelaws of the SSSI designation to restrict certain human behaviours. It clearly sees the activities of Forager Ltd. as a threat to the site because sea kale could be overharvested and the vegetated shingle damaged.

Similarly, private property, as a process of territorialisation which has emerged from the historical assemblages in the UK, is also key in the way foraging becomes contested. For example, in Lostwithiel (pp. 80-89) the land where the suspected commercial harvesters are foraging for wild garlic is known to be private property. Therefore, unless the harvesters have landowner permission to be there, they are trespassing, as well as committing an illegal offence by foraging for commercial purposes. I heard stories from several foragers about times in which they had been chased off private property or even told to stop harvesting berries on the perimeter of someone's private land.

In some of my research encounters, it was possible to see where the power resides, in terms of territory, and how this impacts how humans can dwell and move through landscapes. For example, although within the neoliberal economy companies have relative freedom in how they operate, commercial foraging, unless conducted with a licence and landowner permission, is illegal. Furthermore, Natural England has the right to take individuals and not just companies to court if they are thought to be damaging any interesting features of the SSSI (p. 117-118). There are certain codes of behaviour, then, which are supported by a legislative framework, impacting the way humans can inhabit and move through sites such as Dungeness. This is arguably different on unprotected or designated conservation territories, although in general the power resides with the landowner rather than with the general public in terms of access and behaviour (Lee and Garikipati 2011).

Yet, there are also other forces that have power over landscapes. Researchers show that 'the progressive enclosure of common lands was part of a political decision to promote industrialised agriculture' (Lee and Garikipati 2011, p. 422), showing one of the consequences of industrialisation and the emergence of neoliberalism for land access and human nonhuman interactions. Increasingly in the UK, land access is generally restricted to those that own it, unless there are public rights of way, but even then there are certain acts

such as the Countryside and Rights of Way Act (2000) which restricts practices such as foraging by the general public (Lee and Garikipati 2011). This shows the general trend of neoliberal politics, which prioritises private ownership, entrepreneurialism, and economic growth and reduces the liberties and access of the general public to resources. It also means that there are fewer areas to forage, which can cause increased, and potentially unsustainable, activity in a smaller area (Lee and Garikipati 2011; Lee 2012). Territorialisation, as much as it is linked to nonhumans' dwelling, feeding and marking, is also linked to socio-political assemblages in the human world.

In this way, foragers of different kinds, whether amateur, professional, or commercial, sometimes choose to subvert access laws or the Theft Act, to assert their commoners' rights and autonomy. As we saw in the example of the New Forest, many people argued that they should have access to harvest mushrooms there for personal use (pp. 142-154). Similarly, many professional foragers assumed their right to harvest in conservation zones for personal use, in a careful way. Foraging practices can indeed threaten the territorialisation that has been established through private property and conservation law.

Indeed, Gan and Tsing (2018) explain that humans inevitably disrupt the coordinations and, arguably, territories, which can be both destructive and productive. Foragers, in general, ultimately change the landscape in some way as they harvest species, which may pose as a threat to conservationists who are trying to maintain a certain ecosystem balance or population of a certain species, or landowners wishing to keep their property private. The chef who was accused of taking all the wild garlic seeds around Bodmin (p. 87), for example, impacted that ecosystem and the symbiosis between different species to such an extent that the colony became extinct. The example of the lapwings in South Wales (p. 90-98) also shows how rhythms collided and disruption and damage occurred, which threatened the territory of the SAC. The seasonal breeding cycle of the lapwings met with the activities of the illegal cockle harvesters who used the track, without permission, to access the beach. The wheels of their heavy vehicles smashed some of the eggs of the ground nesting birds that are part of the seasonal territorial assemblage of the conservation zone. Inevitably, this changes the ecosystem balance and is a form of disruption and deterritorialization – deterritorialization being the process through which territories break and crumble (DeLanda

2016). The territories of the lapwings, as a part of the human conservation zone, is disrupted by the vehicles, and may change as a result.

However, humans are not the only deterritorialising force. In section C.1, for example, Fred woke early in the hope of reaching mushrooms before other harvesters, including the nonhuman harvesters (p. 134). According to Fred, pheasants and muntjacs are disrupting the process of the mycelium fruiting and sporing by gobbling up the mushrooms[11]. He believes that they forage in the early hours and therefore he adjusts his schedule accordingly. A land manager may be able to try to prevent humans harvesting on their site, but wild animals, insects, and birds have the right to roam. Then there's the mycelium, sending up fruiting bodies inside and outside of human-made boundaries. Wild food and wild animals move between territories, influencing the movement of human foragers – enticing them into certain spaces through their very presence.

Indeed, throughout this thesis, I have created an atmosphere of competition, between different stakeholders and between different species. There is a feeling of scarcity of wild foods, considering the context of the biodiversity crisis, fears around climate change, and access to wild places. Professional foragers showed protectiveness towards their spots (pp. 129-130) in a similar way to how conservationists tried to prevent too many people harvesting on their sites – whether through talking to them as did Shelley (p. 98-108), putting up signs to prevent the harvesting of mushrooms in the New Forest (p. 143), or leveraging legal power as in the case of Natural England (p.117). In this way, territorialisation, aside from being unique ecosystem features protected by conservation zones, is relevant to the way foraging and conservation are practiced. Certain areas are marked out, used and protected by particular individuals (whether foragers or conservationists), and the arrival of unwanted species or changes to the ecosystem are monitored and kept at bay.

Thus territorialisation and deterritorialisation, used in assemblage as a concept (Deleuze and Guattari 1987; Anderson and McFarlane 2011; DeLanda 2016), are useful in understanding

[11]Even though I couldn't find any evidence that muntjacs and pheasants eat mushrooms (linking to the section on uncertainties), they represent wild animals and insects that forage for wild foods in this context.

the processes in which foraging becomes a contested practice. As I have explained, territories are constantly changing. Therefore, those trying to maintain an equilibrium (in this case, conservationists) may experience conflict or competition with human and nonhuman agents who threaten that ecosystem balance. Territory, then, is inherently contentious, as different agents compete in the way they define and dwell within territorial boundaries, some disrupting the territories of others. This thesis, therefore, presents this concept as central to the study of contested practices, especially in relation to land use and management, demonstrating how it can be used in analysis.

The next section begins to explore the knowledges and ways of relating and caring that were evident during my research encounters that underlie the way different humans engage with territories and nonhumans.

5.2 Contested knowledges, ways of relating, and caring

This section presents the research findings that answer the second research question: *What are the knowledges, values, and ways of relating that are embedded in foraging as a contested practice?* I explore the kinds of knowledges that underlie the way humans relate to the nonhuman world in my research encounters, as a foundation for exploring alternative ways of relating and synergies between conservation and foraging in section 5.3. As part of this section, I focus on discussing several theoretical concepts used in more-than-human geographies – nonhuman charisma (Lorimer 2007), commodification (Ortiz-Przychodzka et al. 2023), taste (Hennion 2016), and care (Law 2008; Mol and Hardon 2020) – to show the different way humans relate to the nonhuman world. I draw on several different concepts which I find helpful as a basis for understanding nuanced ways of relating and contextualising them within the field of more-than-human geographies and posthumanism. These concepts provide a backdrop to understanding the complexity and multiplicity in terms of how humans relate to nonhumans within the context of foraging as a contested practice.

In this section, I also build up a picture of the kinds of threats that foraging poses for conservation and land management projects, which links to themes of territory, knowledge practices, and values. This is driven by my third research question: *What are the threats and*

opportunities that foraging offers to land management and conservation projects? This question is further explored in the following section, which focuses on the opportunities foraging presents for land management policy and practice.

5.2.1 Nonhuman charisma and taste

When it comes to conservation knowledges, the field is nuanced and complex (Whatmore and Thorne 1998; Lorimer 2015; O'Mahony 2020). Arguably, what conservationists have learned to attend to is based on their educational background, situated within socio-political assemblages around territorialisation, land use, and species and habitat protection. There are strands of conservation that focus on rewilding (Lorimer et al. 2015; O'Mahony 2020; Wynne-Jones et al. 2020), and other projects that focus on maintaining certain landscape aesthetics and habitats that resulted from agriculture (Lorimer 2008). In this study, I have witnessed various paradigms for conservation that make their way into my research encounters – from knowledge about mycology, to botany, and also knowledge of the law around the protection of certain species, and consequently, the way certain species are treated. In this section, I discuss Lorimer's concept of nonhuman charisma and its applications for understanding foraging as a contested practice.

As Lorimer (2015) explains, nonhuman charisma is, indeed, contentious – humans consider different species charismatic in different ways, depending on their relationship, proximity, lifestyle, and knowledge practices. From my research encounters, narrated in my vignettes, it was evident that different individuals related to nonhuman beings in ways which reflected how they perceived their charisma or value.

Charisma is arguably linked and enmeshed in international politics surrounding the conservation of species and landscapes. Lorimer (2015) suggests that the way that funds are raised in support of flagship charismatic species is fundamentally neoliberal. The Red List, for example, is based on which species are endangered but, arguably, the ones that receive most attention and care are those which are charismatic, in various ways: aesthetically, corporeally, and ecologically.

For example, the way the National Trust's ranger Mike responded to the situation in South Wales would have been affected by the international governance associated with protected species (pp. 90-98). Lapwings are known to be in decline in the UK and have recently been

added to the Red List, as well as being protected under the Wildlife and Countryside Act 1981. There is a certain feeling of nostalgia linked to species such as lapwings which used to be a lot more common in the UK. Mike was feeling unhappy and protective when he saw commercial cockle harvesters driving near lapwing nests. The situation with the lapwings, then, affects how Mike views foraging as an activity. He was quite clear during the interview that people picking blackberries or other prolific species, without damaging any habitats, was perfectly fine. It was damage to the ecosystem and the lapwing population (also beachcomber beetle populations) that concerned him. Arguably, he may not have worried so much about the illegal entry of vehicles to the site had they not been damaging the nesting site of a protected species. His view of foraging has thus been shaped by these circumstances and certain charismatic species, protected by the law and influenced by international policy. In this instance, lapwings could be considered an aesthetically charismatic species, in a similar way to hazel dormice (p. 155-161). Aesthetic charisma - valuing the species for its appearance - Lorimer (2015) asserts, is fundamental to conservation practices and policy. This way of valuing a nonhuman is based on emotion, nostalgia, and affect. Arguably, they are also charismatic for the way in which they can be categorised and understood ecologically, bringing in the category of ecological charisma.

However, in my research encounters, it seemed those working on conservation projects were concerned both about endangered, aesthetically pleasing species and about the ecosystem more generally. This supports Lorimer's (2015) view that conservation knowledges and priorities are shifting to a more ecologically focused approach. For example, Natural England found the "pioneer" species of sea kale (p. 116-117) to be worthy of the effort involved in the legal case. Although, in these cases, ecological niche could be considered as form of ecological charisma, this category does not fully encompass this. Beyond the materiality of a species and the way it can be categorised, sea kale is providing an ecosystem service by being first to repopulating a barren landscape, increasing biodiversity and creating habitats.

Furthermore, there was a quality, noticed by many different stakeholders, which I feel deserves particular attention – the endangered status of a species. Many different stakeholders, whether they practised conservation or foraging, or both, would not harvest an endangered species even if it was considered delicious (such as the bearded tooth

fungus) (p.149-150). Rather than valuing these species for their appearance (aesthetic charisma), or materiality and the way they are recognisable and identifiable (ecological charisma), they were valued for their rarity and their vulnerability. Consequently, food sources of vulnerable species, such as hazelnuts (pp. 155-161), were sometimes considered unsuitable for harvesting. This supports the work of Hodgetts (2017), who suggests that conservationists are increasingly focusing on the protection of habitats and food sources as fundamental to biodiversity.

Moreover, the category of charisma, although used in Lorimer's work as a way to describe how conservationists value different species, can be applied more broadly and to other stakeholders. For example, the way that the commercial forager Justin values and knows sea kale is seemingly corporeal – as he values it for its flavour and texture (pp. 118-120). Corporeal charisma refers to the desired material affect on humans, which includes edibility and usability (Lorimer 2015). Justin's way of relating to plants was also embodied – understanding how to harvest and to make the plant both delicious to humans and marketable. Sea kale, in this instance, was his target. He was moved by its taste and texture as that is how he had learned to relate to this plant – in a completely different way to how Natural England staff had learned to relate.

Notably, the value humans give to nonhumans is central to the way they perceive their charisma. As Ortiz-Przychodzka et al. (2023, p. 4) explain, 'values…are ways in which people assign importance to human and nonhuman entities and their relations'. These values are very much entangled in more-than-human assemblages (Ortiz-Przychodzka et al. 2023), situated in the context of socio-political as well as ecological forces. They shape what people perceive as morally important when relating to other species (ibid 2023). Again, in the context of the Dungeness case (pp. 113-120), what Justin values sea kale for – its taste, texture, and flavour, and the marketable potential of these qualities – is inherently different to the value that Natural England gives to the plant as a pioneer species. The way he knows this plant seemingly affects these values, and his values also affect the way he comes to know the plant.

The charisma of the sea kale, or the wild garlic, then, can be contextualised alongside the knowledges and culinary histories that make them into desirable foods. Indeed, sociologists (Bourdieu 2010; Hennion 2016) and more-than-human geographers (Roe 2006-a;

Colebrooke and Miele 2017; Sexton 2018) remind us that human taste is both social and natural, concepts that cannot be so easily separated in contexts such as eating (Swyngedouw 1999; Castree and MacMillan 2002). Certain ways of eating, flavours, and recipes become embedded in social fabrics and become part of identity. This is supported when reflecting on the way that Fred cooked the risotto using his family recipe (p. 137) or the way that wild garlic caused such a buzz in Stroud and pesto appeared everywhere that spring (p. 80). Then there's the Cornish tradition which brings families out to harvest cockles, whether they personally like the flavour or not (pp. 98-108).

Taste, Hennion (2016) explains, is all about attachments – attachments to certain ways of being, certain social dynamics, and certain flavours. This may be to do with social class and what ideas resonate with certain people (Bourdieu 2010; Hayes-Conroy and Martin 2010), but it is always circumstantial (Hennion 2016) and very much affected by the context in which it is presented. Arguably, commercial foraging exists because there is a taste for certain wild foods, and certain socio-natural conditions make it popular and financially profitable to harvest. For example, the taste and tradition of shellfish, assembled alongside the neoliberal economy, can create industries like the one in South Wales (pp. 97-98), which exports cockles and mussels globally. Equally, people's enthusiasm for, and knowledge of, wild garlic (p.84-87) means that it is viable for a commercial operation to harvest it.

Wild food products and offerings in restaurants are gaining popularity, becoming fashionable (de Jong and Varley 2018). In this way, neoliberal economic assemblages meet the social and sensory resonances of certain humans. Again, affect is at play. Certain kinds of foods appeal to certain kinds of people (Hayes-Conroy and Hayes-Conroy 2010; Hayes-Conroy and Hayes-Conroy 2013), and there are some humans that enjoy both the idea and flavour of particular wild foods. What is considered edible and desirable is embedded in socio-political assemblages (Roe 2006-a; Sexton 2018). This is linked to the process of commodification, which is the focus of the following section.

Overall, I find Lorimer's concept of nonhuman charisma to be helpful in understanding how different stakeholders relate to and value nonhumans, and why tensions can exist. The category of corporeal charisma can be applied to the way foragers value nonhuman species, for texture, taste, and usability. As I have shown, this links to notions of edibility and taste which are embedded in socio-political assemblages. This can cause tensions between

foragers and conservationists, the latter being more likely to value nonhumans for their aesthetic or ecological charisma, or their endangered status. Overharvesting seems to be a threat when the corporeal charisma is valued over the other qualities. So, in answer to my third research question, when a nonhuman is valued for their corporeal charisma, in neglect of the other forms of charisma, foraging can be a threat to conservation and biodiversity projects.

This isn't to say, however, that those who forage do not also value nonhumans for their material properties, endangered status and for their aesthetics. In fact, it seemed that professional foragers valued nonhumans as wild foods (corporeal charisma), while also valuing them for their place in the ecosystem. It seems pertinent and important that foragers sometimes value nonhumans in multiple ways, rather than just corporeally. I have noticed that in this research it is not always clear cut which form of charisma and other values take priority in a situation, which shows how conservation knowledges are complex and nuanced, and involves a navigation of international governance and ecological knowledges. Arguably, the way an individual values a nonhuman other is not only based on their responsibility or job title, such as conservationist, but also on their personal experiences, background, and the situation. For example, although some conservationists said they chose not to forage for wild foods because they felt ecosystems were depleted, others would forage alongside their conservation work, showing that they value different species in different ways.

Lastly, I have argued that, in the context of this research, a species endangered status and ecological role was of high importance when it came to whether a species was harvested or not. This seemed to be important to foragers and conservationists alike. This quality sits outside of the categories of charisma that Lorimer (2007, 2015) presents, being neither strictly aesthetic, ecological or corporeal. This, perhaps, mirrors a paradigmatic shift away from a taxonomic towards a holistic ecosystem-based approach to conservation, which has been noticed by Lorimer (2015) among others (Hodgetts 2017).

5.2.2 Commodification and economic value

The way that non-humans become wild foods is based on their corporeal charisma - their qualities - be it taste, texture or nutritional content, assembled alongside specific tastes that

resonate among certain communities. In turn, this makes certain nonhuman species valuable to the economic market. Since some commercial foragers do not harvest for personal consumption, but harvest for their livelihoods, this can be seen as a way of relating to the nonhuman world which is entangled in socio-political and economic forces.

As Eric, who had previously been employed by a foraging company, explained, the pressure of being paid per kilo rather than per hour meant that commercial foragers often overharvested certain spots (pp. 87-89). What is morally important to them is, arguably, less about the ecosystem and more about the income they need. Indeed, 'values' produce and reproduce 'diverse economies', in which humans practise and negotiate their livelihoods, which are inherently interrelated with the life worlds of other species (Ortiz-Przychodzka et al. 2023, p. 4). These diverse economies, in turn, affect people's experience of place and the assemblages in which they are entangled, transforming them and shaping them (ibid 2023). Commercial foragers, as a result, may experience place differently to others, and their activities will change and transform landscapes, setting new trajectories, knowledges and relationships into motion. Beaches become sites of livelihood and commercial activity rather than sites of leisure, such as in South Wales (pp. 90-98). Places may be known for their ecosystems, in specific relation to their harvesting potential, rather than for conservation or biodiversity.

This process, through which a nonhuman species becomes economically valuable, can be linked to the concept of commodification used by Ortiz-Przychodzka et al. (2023). Commodification is arguably a relational process which has been taking place over many years. It is also ever changing, as it responds to tastes and fashions. As relational materialist theory encourages, neoliberalism, the market, and consequently the economic value that humans give to different entities, is not something metaphysical but material and relational (Mol 2008; Colebrooke and Miele 2017). For example, the commodification of wild garlic results from the coordination of the chemical compounds of the wild garlic, the interaction of the chemical compounds in the bodies of humans and their reactions and consequent desire for this flavour, with the neoliberal market forces that enable companies to set up commercial foraging operations (pp. 80-89). As demonstrated, assemblage theory encourages researchers to look at the agencies and forces which shape practices and situations. In this case, this research has shown how different forces participate in

commodification of a nonhuman, from the material qualities they possess and the economic value attributed to them.

Following feminist theory (Haraway 1988), commodification, or the economic value attributed to certain materials and processes, is ever adjusting in line with the context and situation. One species might be prolific one year and not the next year. Recipes and menus have to shift as a result, and new tastes and ways of knowing through eating and purchasing wild foods become established. In this way, nonhumans are agents in the market. Staff at Forager Ltd. would have had to adjust their activities, having been banned from harvesting at Dungeness (pp. 113-120), and what they could supply the market with would have changed as a result. If populations are depleted, such companies would have to find wild foods elsewhere. Therefore, commercial foragers, in the same way as professional and individual foragers, have to adjust their practices according to the weather, the specific patterns of growth, the population dynamics, and their access to territories.

In a similar way to the matsutake harvesters described by Tsing (2015), the commercial foraging industry apparent in my research is somewhat outside of the law, but is supported by neoliberal market forces, which means that raw materials have a certain commodity value. There would be no commercial foraging industry if these plants could not attract a good price or be transformed into a delicious dish which would keep restaurant-goers coming back for more. Indeed, it seems to be the commercial foraging industry that is at the heart of foraging and conservation conflicts and controversies.

Furthermore, for this industry to succeed, humans must take risks and work in precarious situations. Only those with certain relational and material conditions will arguably take this chance. Forager Ltd.'s Justin, for example, is fuelled by his ideology of how humans should dwell with the more-than-human world – as hunter-gatherers (p.118-120). Some shellfish harvesters, on the other hand, are driven by their economic situations (pp. 97-98). It also requires a species knowledge, which may or may not have been there prior to taking the work, and a willingness to brave weather conditions. I was told by several commercial (or former commercial) foragers that the freedom of the lifestyle was a big incentive – they would much rather work out in the elements than be in a factory or an office somewhere. Again, these stories resonate with the findings of Tsing (2015), who realises that although matsutake harvesting is precarious, it is often taken up by ethnic minorities and immigrants

who are marginalised in the USA because it is a choice outside of a bureaucratic system. She explores how being on the outside of the law and within the capitalist economy can coexist. 'Salvage capitalism' (Tsing 2015) and resulting commodification, it seems, are phenomena which occur regardless of legal regulations, creating economies and industries which emerge and affect humans and nonhumans, under the bureaucratic radar. They are driven by market forces and the commodity value of certain nonhuman species, rather than the legal system.

As Eric suggested, there are also those commercial foragers who have a limited species knowledge and who are taught to identify a certain species, then harvest as much as they can of it (pp. 87-89). Eric decided to leave the industry because of this lack of concern for the ecosystem that he saw in the particular context in which he worked. It is clear that there are different ways to go about commercial foraging, but without landowner permission or monitoring, the human desire for income can result in unsustainable practices and overharvesting. This, I would contend, is driven by valuing the nonhuman purely for its economic value – of course, underlying this is corporeal charisma that makes it edible and appealing to humans – but its attributed economic potential is the most prevalent knowledge practice and value here. The knowledge of the market and the industry, in this way, is central.

Of course, those acting in a way that is based purely on the economic value of a nonhuman being are going to meet conflict with those that value it for its other attributes, such as its aesthetic, ecological charisma or its ecosystem function. Here, the value system and knowledge system that some commercial foragers are working with is at odds with those of some working in the field of conservation, and others who forage professionally and teach codes of conduct, or guidelines for the practice.

Nevertheless, economic and neoliberal values work their way into many of the other ways of relating to wild foods, too (Adams et al. 2014; Lorimer 2015; Ortiz-Przychodzka et al. 2023). The livelihoods of professional foragers who teach foraging and write books, and conservationists who manage and monitor ecosystems and landscapes, are also reliant on certain nonhuman species. The salary of the foraging teacher requires there to be wild foods to identify, just as conservationists require certain landscape features and species that are protected. In this way, it is not possible to simplify the argument by saying that commercial foragers are driven by capitalist and economic values where professional foragers and

conservationists are not. However, commodification of wild foods, and commercial foraging, can be considered threats to conservation and biodiversity projects. Nevertheless, monitoring and regulation, and knowing what is beneficial and what is damaging, can be complex and difficult. I explore this in the following section.

5.2.3 Uncertainty, suspicion, and complexity

In my research encounters, it seemed that uncertainties were also present and caused contention around foraging as a practice. For instance, the use of the "precautionary principle" in the regulation of mushroom harvesting in UK forests (p. 139) demonstrates that land management decisions take place amid scientific uncertainties. Callon et al. (2011) argue that the precautionary principle is a way for organisations or institutions to take responsibility when there is a lack of certainty about whether an activity is damaging. In the case a large forest management organisation, working with this principle, arguably, is a form of taking care of the ecosystem when faced with a lack of scientific evidence (p. 139).

On the other hand, Justin from Forager Ltd. argued that scientific uncertainty meant there was no evidence that the activities of the company were damaging to sea kale or the vegetated shingle habitat (pp. 118-120). As he explained, Natural England was most likely working with the precautionary principle as it also did not have scientific evidence that the activity of Forager Ltd. was damaging. Natural England, however, felt a sense of responsibility for preventing any possible damage to the protected site.

Furthermore, uncertainties about the impacts of harvesting mushrooms, and whether they are similar to fruits such as blackberries and apples (p.133-142), seemed to be a point of contention between mycologists and mushroom foragers. As I showed in section C.2, there are peer-reviewed articles that suggest harvesting mushrooms is not damaging to mycelia and the population of the species, but other mycologists and scientists still disagree. Again, this shows that there is conflict among stakeholder groups, such as between foragers, and in this case, between different academics. The world of fungi is complex and mysterious (Sheldrake 2020) and leaves space for other ways of relating, such as seeing the impact of moon cycles on mushroom fruiting (according to Fred, the Italian forager (pp. 133-142)).

Yet, 'lack of certainty doesn't mean complete absence of knowledge' (Callon et al. 2011, p. 214), and there are indeed some mycologists who argue that large-scale harvesting of

mushrooms is damaging to their populations. However, according to many of the conservationists and mycologists I interviewed, there is a lack of funding for this kind of research and therefore their opinions are unsupported by peer-reviewed academic research.

Furthermore, conservation conflicts between commercial foragers and conservationists, such as the situation in South Wales in which the lapwings' nests were being driven over (pp. 90-98), is arguably a result of a lack of knowledge rather than conflicting knowledges. The commercial cockle harvesters did not intentionally drive over and damage the lapwings' nests but were ignorant of their existence. From first-hand experience, I have also realised that my own ignorance, rather than knowledge, caused me to make mistakes while foraging, such as eating a polluted cockle (p. 103) and overharvesting wild garlic (p. 81). Indeed, Shelley from Cornwall explained that she felt the traditional trigging of shellfish was less risky to health than tourists harvesting on their holidays because the latter often did not know the locality or purging techniques well enough (p. 104).

Furthermore, Sarah at the Devon and Severn Inshore Fisheries and Conservation Authority, felt that public disquiet around foraging for shellfish was often based on emotional grounds rather than being based on fact. She explained that locals believed there to be "gangs" foraging shellfish. This language was even used in a local newspaper (Reporter 2020). Sarah explained that there was no evidence of gangs or overharvesting and that people's reactions and the contention was based on suspicion and prejudice, as there were groups of individuals from ethnic minorities harvesting shellfish. She said that although her organisation did want to create byelaws and weight limits to manage the risk of overharvesting, there were much higher risk activities than individuals gathering shellfish, such as scallop dredging – a current priority.

Scholars of STS have long argued that scientific uncertainties are fundamental in the formation of disquiet and public contention (Callon et al. 2011). So, this finding is nothing new. Foraging, as a practice, is often contested because there is a lack of scientific evidence or conflicting evidence, underpinned by different knowledge practices and ways of knowing. Yet, ignorance is also a factor here. Without knowledge and experience, it is indeed possible to forage in a way that is damaging to ecosystems or harmful to humans – and not just to the species in question.

Furthermore, it is very difficult to monitor foraging as the legislation around it is quite a grey area (Lee 2012), and it can be difficult to know who is within their right to forage, and who is acting illegally. For example, the four different groups of human harvesters mentioned in the Cornish beach example – the woman in protective clothing, the trigging visitors, the tourists, and the bait collectors – highlights the complexity in managing foraging (pp. 98-107). Humans have different motivations for gathering, and some tread the fine line between commercial gathering and gathering for personal consumption. Any attempts by Shelley, the conservation group coordinator there, to manage foraging on the site begins with an enquiry about people's motivations and activities. Her personal approach, starting with a conversation, shows the difficulty in creating blanket rules that may not be known or visible to the general public.

Therefore, a lack of knowledge can be seen as a relational force which coordinates and makes foraging a contested practice. Indeed, from my research encounters, it seemed that an in-depth experiential and botanical knowledge was considered crucial for professional foragers, to ensure a careful harvest. This is the focus of the next section.

5.2.4 Experiential knowledge and dwelling in the landscape

As explored in Chapter 2, it is important to account for different ways of knowing in the formation of land management projects (Ingold and Kurttila 2000). This can help different stakeholders understand each other's worlds and to form synergies, as opposed to conflict (Burgess et al. 2000). Therefore, although foraging can be considered a contested practice, I have explored the knowledge practices and values of different kinds of foragers to try to understand if and how they could be integrated into land management policy.

As was explored in section B.2, experiential knowledge was considered important in developing a sustainable and careful foraging practice. Many professional foragers felt they were able to discern what was appropriate in a given circumstance, which involved a level of experience and skill. Thomas considered his expertise as coming from a process of "trial and error" over time (p.124). Indeed, there was a shared sense among professional foragers that foraging, as a practice, was a skill, and required in-depth knowledge of the local landscape. Many argued that this is why foraging can be threatening to ecosystems, as it can be done without skill or care for the local environment.

Arguably, this discernment and skill requires an attentiveness that has been mentioned in posthuman studies, as a way of relating to the more-than-human world (Krzywoszynska 2019; Just 2022). Indeed, this mode of attentiveness requires a response to the affective agency of the nonhumans involved. For example, Thomas and Adam both mentioned how harvesting certain species (in a specific way), such as nettle and common hogweed, could encourage their growth (pp. 120-126). Similarly, Fred demonstrated how mushroom harvesters often respond to their perceived needs of the mushrooms to spread their spores by carrying them in an open weave basket (p. 137).

However, this way of relating to the environment wasn't always compatible with legal restrictions such as uprooting a plant (pp.120-126), access laws (pp. 151-152) or conservation agendas (in the case of the Dungeness SSSI (p.113-120) and the South Wales beach (pp.90-98)). This knowledge system, arguably, is part of what makes foraging contentious, as it can be at odds with the law or certain conservation knowledges. Foragers, at times, felt that their experience in the landscape, and with harvesting, meant that they "knew better". In a similar way, as mentioned in the literature review, Burgess et al. (2000) found that this distrust of scientific conservation knowledge, related to international governance, was prevalent among English farmers in the 1990s. She explained that they felt that their years of experience participating and working in the landscape gave them an expertise that the government did not necessarily understand.

Furthermore, Luczaj et al. (2021), in their study of foraging in the UK, argued that modern day foraging involves a mixture of TEK and contemporary practices. TEK, in the context of their study, was conceptualised as an in-depth knowledge of plants and their uses as medicines and foods, shaped by historical knowledge, which is a common concept used in ethnobotany (Drew 2005; Turreira Garcia et al. 2015). Yet, as well as being a locally specific set of species knowledge and their uses to humans, social scientists have suggested that TEK is a competency to adapt to environmental changes and circumstances (Tristan et al. 2015). I would concur that foragers' experiential knowledges and skills often meant their knowledge practice was more a set of codes and tools to apply to different landscapes and circumstances, as well as varying levels of encyclopaedic botanical and species knowledges.

Furthermore, as mentioned in section B.2, professional foragers indeed often explained that their knowledge practices were related to a sense of "tradition" that wasn't directly linked to

their own family or ancestors. Thomas (pp. 126-132), for example, mentioned that "connection to nature" and ethnobotanical knowledge had diminished in the UK, and that foraging, as a practice, enabled people to redevelop this knowledge system and way of relating. This was evident in interview and in books such as Ffyona Campbell's (2012) *The Hunter-Gatherer Way,* which referred to experiential foraging as a practice of hunting and gathering in a way that our ancestors would have done.

As Blaser (2013) and Ingold (2000) have shown, certain communities have distinct ontologies in the way that they see the world. Petitpas and Bonacic (2019), for instance, argue that local people in Northern Chile do not have the same nature-culture dualism that conservationists working in their region have as part of their ontology. In this study, some foragers strive to see themselves as part of nature and feel that foraging as a practice contributes to this. Although, as I will argue in section 5.3, foraging can contribute to an ethos of seeing the human as part of a more-than-human interdependent network in this way, I find that it is not appropriate to consider foraging as a distinctly different ontology to conservation science. Foraging books share similarities with botanical identification guides[12], and some professional foragers studied ecology at degree level and take an interest in conservation science. Furthermore, as I explored in Chapter 2, there are certain pitfalls with the term 'traditional', so I prefer to categorise foraging knowledges as 'experiential' or 'local', rather than TEK.

Moreover, professional foragers often advocated for knowing which species were rare and endangered, that is, those not to harvest (pp. 132). This requires a certain attention to be paid to conservation status, often available on conservation organisations websites or lists from international governmental organisations such as the International Union for Conservation of Nature and Natural Resources (IUCN no date). Botanical knowledge was also seen as necessary to harvesting sustainably. Indeed, foraging teachers such as Jeremy (p. 132) and Jacky explained that their interest in ecology was a prerequisite to their interest in foraging. Similarly, park manager Kenneth explained that his passion for plants was behind his interest in both foraging and conservation (pp. 108-112). There were evident overlaps in knowledge practices between conservationists and foragers, some of which fitted into both

[12] Foraging knowledges and botanical knowledges, despite being seen as different in Nyman's (2019) study, inherently inform one another and are entangled.

categories through having a general passion for ecology, botany and knowing the uses of different plants and fungi.

Moreover, instead of finding a difference on an ontological level between different groups of stakeholders, from examining my research encounters it is evident that there were differences in the way people felt about dwelling in the landscape. I use the term dwelling because this relates to moving, acting, living, and eating, according to Ingold (2005). Arguably, it is not just a viewpoint about the way to manage land but the way humans act within territories and amongst other species. There were examples online and in-person where foragers of varying backgrounds believed that conservation zones separated humans from nature – for example, two commercial foragers, Justin (pp. 118-120) and Malcolm (p. 125), had said that they felt conservation zones were like "museums", perpetuating the separation. This viewpoint was echoed online in a blog about harvesting in the New Forest (p. 151). Fi, Thomas and Megan, all professional foragers, spoke of rewilding the landscape to make sure there was more wild food available to harvest, as well as areas for biodiversity. They actively spread seeds of wild foods, and Fi mentioned planting wild foods in her garden. This viewpoint echoed the notion that foraging in the landscape is an ideal method of food procurement which also promotes biodiversity and connection to nature. As mentioned in section D, often intensive farming and large-scale development projects are blamed for biodiversity loss, rather than actions like foraging (pp .155-161).

As argued in the literature review, although the land sparing vs. land sharing controversy is related to agriculture (Loconto et al. 2020), it is applicable and relevant to this research as it involves conflicting views on how humans should dwell in the landscape, and is linked to themes of territorialisation, biodiversity management, and food procurement. Land sparing generally refers to the viewpoint that humans cannot be trusted to cohabit with other species, and therefore there should be areas distinctly marked for human food growing separate from areas in which nature can be protected. Conversely, the land sharing paradigm refers to the view that it is possible to live well among other species if we farm less intensively and prioritise wildlife within farming (Loconto et al. 2020).

An example of where the land sparing vs. land sharing debate was particularly prevalent in this research was the situation in the New Forest (pp. 142-154). The mycologists and forest managers advised people to 'look, don't pick' the fungi in the forest, while some (not all)

foragers felt that this was unjustified. Many felt that with more areas available for foraging, people could learn to harvest sustainably through experience, and there would be less risk of overharvesting due to the larger availability of wild foods.

Yet, as we saw, the decline in population of species such as the bearded tooth fungus (pp. 149-150) and its attribution to the decline in oak and beech forests, dead wood on the forest floor, and human harvesting for foods and medicines, might support and strengthen the land sparing view for many people. Surely, they argue, these fungi will survive only if they are protected from human foraging or the destruction of broadleaf, deciduous forests for human infrastructure development? Indeed, the protection of the oak and beech trees in the New Forest SAC would help to ensure there is a habitat for species such as the bearded tooth fungus (Joint Nature Conservation Committee no date-b). Living well with other species, according to the 'look, don't pick' rule, is providing safe habitats for them to thrive.

Although it would be simple here to say that foragers, in this way, were aligned with the land sharing paradigm, and conservationists, the land sparing – this was not the case. Many conservationists I interviewed, such as Shelley (pp. 98-108) and Kenneth (pp. 108-112), did encourage foraging as long as they were able to monitor it. Foraging blogs can be seen by conservation organisations, encouraging people to go outside and "connect with nature" (The Wildlife Trusts no date-c; Woodland Trust no date-a). Arguably, the land sparing viewpoint echoes the 'Protection of Threatened Nature' perspective, which is one of the many approaches to conservation highlighted by Dempsey (2021, p. 1). In contrast, 'Innovation in Nature' (ibid 2021, p. 1), modelled by land managers in this study such as by Kenneth in Tower Hamlets Cemetery Park, could be considered more aligned with a land sharing perspective.

However, some of the conservationists, such as Marcus (p. 107), feel that foraging is not justified in the current context of biodiversity loss and fragile ecosystems. He felt that foraging should not be permitted, especially in fisheries. In this way, ideas of how to live well and to cohabit the planet with other species can be controversial and divisive. Differing opinions about this underlies many of the debates and conflicts around foraging that emerged through this research – through the legal case in Dungeness (pp. 113-120), the advice in the New Forest (pp. 142-154), and also in more subtle ways behind the opinions and words of both foragers and conservationists. This, of course, is species and context

specific, and links to the agendas of certain conservation projects, and species charisma. In section 5.3, I explore how a dwelling perspective based broadly on the land sharing paradigm could be integrated into conservation projects. Before that, in the next section, I address how foraging can also be considered contentious among foragers.

5.2.5 Foraging as a contested practice among foragers

Thinking back to the literature presented in Chapter 2, it was evident that conservation, as a broad field, is nuanced and contested. There are multiple ways to practise conservation based on different agendas and landscape aesthetics (Lorimer 2015; Dempsey 2021). In a similar way, there are multiple ways to practice foraging. From the research vignettes in Chapter 4, it is clear that foraging is both considered "good" and beneficial for the ecosystem in some contexts, but also "bad" and damaging in others. Barry, the coastal foraging teacher, for instance, suggested licensing as a way of monitoring shellfish harvesting more consistently in Wales, despite his passion and love of coastal foraging, as he wanted to see ecosystems protected from human behaviours.

According to many of the professional foragers I interviewed as well as online blogs, best practice foraging entailed sticking to certain principles or codes of conduct (pp. 131-132). These varied from individual to individual, depending on their practical experience, sources of information, and opinion about the impacts of harvesting. There were some key similarities among the foragers, such as leaving a certain amount of a species when harvesting for the benefit of its population, as well as other foragers (nonhuman included) and refraining from harvesting if the population size was too small, and using a knife rather than pulling plants up by their roots.

These codes were generally similar to the recommendations given by conservation organisations and land managers about foraging. As I have explained, Kenneth, the manager of Tower Hamlets Cemetery Park, would ask foragers to apply for a permit then he would send them guidelines on how many kilograms of a certain species they were allowed to take for the harvest to be sustainable (pp. 108-112). He could keep track of how much was being harvested and who was harvesting it, which was a key part of his strategy to manage the site. Other organisations involved in land management and conservation also have 'responsible foraging guidelines' on their websites, such as the Woodland Trust, which

includes the advice to ‘leave plenty behind’ and ‘do not collect rare species’ (Woodland Trust no date-b, para. 14; para. 17). Furthermore, the Woodland Trust (no date) urges people to leave some for birds, which was a common code that I heard from foragers (although some felt that there would naturally be some that were out of reach of humans for the birds).

Indeed, rather than laws, codes of conduct ‘have long played a central role in governing outdoor access. They are devices of self-governance designed and employed to influence conduct at a distance, especially where mobile or diffuse practices are involved’ (Brown and Dilley 2012). There are many examples of codes of conduct for foragers and bait collectors available online and in books (Wright 2009,2010; Luczaj et al. 2021; Exe Estuary Management Partnership no date; The Association of Foragers no date; UK Marine Special Areas of Conservation no date; Woodland Trust no date-b). This also supports the findings of Luczaj et al. (2021) who noted that codes of conduct and ethics, as well as a large species knowledge, were key principles that resonated among certain groups of professional foragers, such as the AoF (Luczaj et al. 2021).

Nevertheless, although these sorts of guides were intended to help amateur foragers new to the practice to harvest more carefully, discernment on a more intuitive level about when to harvest and when to not harvest took many years to develop and required intimacy with certain landscapes, localities, and species, as explored in the previous section. There was also some disagreement among foragers about these codes. These disagreements usually occurred when statements were made such as “always bring a knife”, which were overly general rather than specific to species or contexts.

Professional foragers often felt that inexperienced foragers, or commercial operations at scale, could damage the landscape. In many cases, I heard stories from professional foragers about witnessing someone “stripping” a certain wild food (p.153). Megan, the foraging teacher, saw someone take every flower off a bush of elderflowers. The foraging teachers I interviewed explained that without in-depth local knowledge and a care for the local landscape, foraging, even for personal use, could be damaging to ecosystems. Again, Megan explained that she taught people to forage so that they would go back to their homes and forage in their local landscapes. She taught them foraging as a mentality and a set of tools rather than encouraging or teaching them to harvest in a certain spot. Many also communicated that foraging is a way to immerse yourself in the landscape and relate to the

more-than-human world, rather than a practice of purely taking. I heard that it is best practice never to expect to come home with a harvest, but to only bring wild food home when it felt right and when there was plenty.

Furthermore, on online foraging forums, I saw people shame others for pulling up a root or harvesting a rare plant (p. 114). Indeed, there is a level of judgement that circulates among foragers. One participant decided to withdraw from this study on the basis that the examples I provided in my vignettes were not aligned with her foraging principles.

As Poe et al. (2014) discover, there is a great deal of variability and heterogeneity among different foragers. They argue that foraging practices are entangled in identities and cultural backgrounds, as well as learned ways of relating to nonhumans. My results would support this, showing that although there are resonant codes of conduct, promoted by organisations such as the AoF and conservation organisations, to try to form some sort of ethical homogeneity what people care about is inevitably nuanced and tied up in their unique history. Yet, to care is also a nuanced and contentious act. This is explored in the following section.

5.2.6 Ambivalence and care

It is arguably interesting and important to consider which conditions and knowledge practices encourage humans to care, or not care, about nonhuman others. Many researchers in the fields of more-than-human geographies, STS, and extinction studies, argue that this is a crucial academic enquiry in the context of the Anthropocene and large-scale environmental damage (Puig de la Bellacasa 2012; Braidotti 2013; Probyn 2014; Tsing et al. 2017; Beacham 2018). Arguably, examining controversies that are related to resource and land use, eating, and relating to nonhumans in embodied and direct ways, like the ones explored in this thesis, demonstrate the kinds of conditions that create intimacy, responsibility, and care. It also helps to produce an understanding of the kinds of conditions and material and relational forces that feed into unsustainable practices, such as overharvesting and environmental damage.

As Latour (2005, p. 115) asserts, researchers must learn to ‘feed off’ controversies. They present insightful situations from which to explore different ‘worlds’ and encourage an openness to new possibilities (Callon et al. 2011, p. 28). In this case, exploring the ordinary

affects and assemblages within controversies and conflicts around foraging provides insights into the different ways people relate to and know other species, and how this, in turn, shapes their practices and what they care about.

From my research encounters, it was clear that caring was inherent to both foraging and conservation practices. Yet, enacting care is complex and 'full of tensions' (Mol and Hardon 2020, p. 199) – and it was possible to see various competing agendas that make foraging a contested practice. As explained in the literature review, caring, as an ongoing activity, is a navigation of competing priorities (Law 2008; Evans and Miele 2012; Mol and Hardon 2020). For example, conservationists often explained that while they felt that foraging was a beneficial practice in general, when deciding how to manage foraging on their sites they had to consider a multitude of other factors, including ecosystem health, the law, and their organisational responsibilities. Steven the mycologist, for example, said that while he felt harvesting and eating mushrooms brought great joy and health to people, in the case of the New Forest the biodiversity was more important (pp. 142-154). Similarly, Shelley, the conservationist on the Cornish beach, felt that her duty as manager of the protected site was to try to maintain a balance in which people were able to enjoy harvesting shellfish while still allowing the habitat and ecosystem to thrive (pp. 90-98).

Conversely, for the commercial forager Eric, although he could see the negative impact he was having on certain sites, in the moment, his responsibility towards his employers as well as his needs to make a living were clearly prioritised over the ecosystem (p. 87). In this case, despite his awareness of the damage he could cause, his economic situation took precedence over his concern for ecosystem health. As Meah (2017) shows, acts of care such as feeding a family often involve prioritising certain aspects such as convenience or financial security over nutrition or the environment (Meah and Jackson 2017).

As mentioned in Chapter 2, there is a certain 'ambivalence' when it comes to relating to nonhumans as foods (Miele et al. 2005, p. 169). While foragers show a certain level of concern for the wellbeing of nonhumans, their concern is also based on self-interest, thinking about future harvests (even though there may well be a genuine passion for ecology and biodiversity). Arguably, there is also a certain level of disconnection (Miele et al. 2005) required between the forager and their harvest, especially when it comes to

uprooting plants or eating shellfish, which allows them to kill (or reduce/damage) another species for their own sustenance and enjoyment.

In this way, there is an inherent sense of care for the self and the human community in foraging practices. Indeed, there is a sense among some of the professional foragers that foraged foods are more nutritious than domesticated varieties, which motivates them. I also admit that when I eat something I have foraged rather than bought in a shop, I get a sense that it is good for my body. This is arguably what researchers have called resonance (Hayes-Conroy and Martin 2010) with certain AFNs, linking back to the concept of taste (Hennion 2016). In a similar way to how people resonate with the Slow Food movement because it is seen as beneficial to the planet and healthier for the body (Hayes-Conroy and Martin 2010), foragers often see foraging as beneficial to their own physical health, and they often feel good eating wild foods.

Nevertheless, the benefits of foraging were considered more than nutritional by many. Indeed, section B.3 was included specifically to explore the competing concerns around foraging, linked more broadly with wider problems including climate change and mental health (pp. 126-132). There are also a number of online articles exploring the connection between foraging and wellbeing, suggesting that foraging is a beneficial activity which helps people step outside and build a deeper relationship with the nonhuman world (Maxey 2018; Manning 2022). This was reiterated by many conservationists that I interviewed, including Shelley (pp. 98-107), and Jessica and Anna of South West Lakes Trust (pp. 155-157). Likewise, professional forager Thomas started a CIC with the aim of helping people improve their lives through access to nature and introducing them to activities such as foraging and bushcraft (pp. 126-132).

When it comes to commercial foraging, there are also competing agendas and interests involved alongside a simple need for financial survival. From my research encounters it seemed that being outdoors, in the elements, was often viewed as preferable to being in an office or having predefined working hours (pp. 97-98). This finding is supported by other works, for example, in Tsing's (2015) study on matsutake harvesting in Oregon woodlands, she finds that there is a sense of freedom from the formal economy, a connection to nature, and nostalgia that draw people to the industry. Often, immigrants would engage in harvesting activities because it would remind them of their lifestyles and livelihoods in their

country of origin (ibid). Morris-Webb (2021) also finds that shellfish harvesters in North Wales associate shellfish harvesting with improved wellbeing. Caring for personal wellbeing and the self in these contexts, factors into the decision to forage as a lifestyle choice and also to commercially forage as a livelihood.

As professional forager Thomas explained, although foraging is beneficial to people's mental health, on a commercial scale it can be detrimental to the ecosystem. "If everyone took some then it just wouldn't be sustainable", he said. There seems to be a rising desire to forage and to consume wild food in the UK (de Jong and Varley 2018). Many of the foragers I interviewed believe this is because people want to feel connected to nature and foraging is a pathway to this. However, there was a shared view among participants that if too many in the UK chose to forage, resources would quickly be depleted and ecosystems damaged. In this way, caring for other humans becomes contentious with caring for the ecosystem.

Yet, professional foragers such as Thomas felt that they were able to act with care towards wild foods and the ecosystem (pp. 127-133). Again, he would be careful to harvest in a way which was not damaging to the plant, such as using a knife, and taking a little from here and there. As explained in section 5.2.4, many foragers also mentioned encouraging a species to thrive by spreading the seeds or spores in different areas as they walked. I saw Malcolm (p. 125), a commercial forager, picking and throwing a mushroom to assist in its spore dispersal. Although this might seem damaging rather than helpful in the same way as uprooting a plant might be, an experienced forager or a conservationist might take action to do what they think is beneficial for the spread of a species. The affective agency of the wild food is evident here, as the way that the plant tastes might encourage a forager to help its spread as a species.

On the other hand, the remit of the conservationist is to protect ecosystems and species, and they also pay attention to what the more-than-human world might need, in a different way. Arguably, their practice of care for other species is less clearly linked to their own personal benefit, such as their wellbeing or nutritional needs. The way that a conservationist cares for nonhumans, as this thesis shows, is to try to protect them from harm – for example, Mike trying to protect the lapwing eggs from being broken (pp. 90-98) or Natural England preventing the potential damage of sea kale on a SSSI (pp. 113-120). Conservationist Marcus (p. 107) demonstrated caring about the ecosystem more than his

own enjoyment and nutritional health. He explained that although he learned to forage as a child, he would no longer forage any shellfish or coastal plants because he has seen the negative effects of human harvesting and the depletion of ecosystems.

However, it would be wrong to generalise about foragers or conservationists where care for nonhumans is concerned. Arguably, what foragers and conservationists care about is based on their specific responsibilities, their experience, and the species that they have direct relationships with. Although conservationists work to promote the growth and preservation of some species, in doing so they often destroy the lives of other species. I was told by Rachel, a contracted site manager for many sites of conservation and heritage in the UK, that often edible shrubs such as hawthorn and bramble are poisoned to stunt their growth on SSSIs. Many wild food species are considered weeds, defined by an 'undesirable presence in human activities (social definition) and its capacity to propagate (ecological definition)' (Argüelles and March 2022). As Argüelles and March (2022) argue, the way humans respond to weeds says a great deal about human-plant relationships. Weeds, and the human aversion to them, have created land use practices which often involve spraying agrochemicals on to plants to reduce their growth. Linking back to the work by Adams et al. (2014), conservation practices can also be driven by the neoliberal model, applied to nonhumans, of ecosystem services as part of an economically driven system.

These findings are supportive of the argument of Pitt (2018), which she formulates from her research in community gardens. She explains that having a relationship or connection with a nonhuman being isn't a prerequisite for acting with care. Instead, she explains, gardeners negotiate whether to tend to or kill certain species based on their situated knowledge practices, as well as their own needs and desires. She explains that some nonhumans known intimately by gardeners, such as those considered pests or weeds, are irradicated while those that are considered in place and beneficial for human consumption are cared for. While with conservation practices the main premise might be to protect certain nonhuman species, this is very specific and is not consistent across the treatment of all other species. Similarly, professional foragers are interested in the long-term sustainability of certain wild foods and therefore harvest with care – while arguably, at times, those interested more in short-term financial gain or who visit a place without the intention to return, may care less about the longevity of that particular population.

Through the practice of multispecies autoethnography, I have also shown how ambivalence manifests in practice, from my personal perspective. Through footnotes that I recorded in my autoethnographic journal, I reflect on the power dynamics between myself and non-humans. For example, I noticed how I felt entitled while picking wild garlic (p. 81), reflecting on my own power as a consumer and harvester. Yet, I also noticed the power that the plant had over me in some way, as I was drawn towards it in the spring. Sometimes I felt discomfort when harvesting, such as harvesting the mushrooms in Oxfordshire (p. 134), and at other times I didn't (when perhaps I should have), for example, when I was harvesting cockles in Cornwall (p. 102). These footnotes are provocative rather than conclusive, highlighting the dilemmas that foraging can bring up in relation to eating and caring.

Overall, this study contributes to research on the complexity of caring, particularly in relation to nonhumans. In the examples above, caring for the self is inevitably tied up in caring for, or about, the other. Human values and knowledges, entangled in socio-political assemblages, work their way into the way humans relate and care for the nonhuman world. Ultimately, most ways of relating and caring mentioned in this thesis put human interests at the centre. In section 5.3, I discuss how care for the self is not necessarily an inhibitor to caring for the other, especially in the context of alterbiopolitics and the concept of a more-than-human collective. Firstly, I conclude this section and comment on what it tells us about how foraging can be a threat to foraging and biodiversity projects.

5.2.7 Foraging as a threat to conservation and biodiversity projects

This section (5.2) has shown that there are conflicting ways of knowing and relating that underlie contested practices. In this instance, foraging becomes contentious because there are multiple ways of knowing, relating, caring, and valuing nonhumans, that can collide in practice and within territories. Scientific uncertainties, rather than knowledges, are also part of this process in which foraging becomes contentious. Therein lies the question of how one knows what is damaging and what is beneficial when it comes to harvesting. Can people be trusted without the support of scientific evidence? Is a lack of scientific evidence justification for commercial harvesting, as Justin (pp. 118-120) asserts?

For professional foragers, an in-depth experiential knowledge and long-term experience of harvesting and noticing is considered essential for harvesting sustainably. Yet, among

foragers, there is a sense that if not done correctly (best practice foraging being equally contentious), foraging can be a threat to ecosystems and populations of nonhuman species.

Nonhuman charisma, I have argued, is central to the way humans relate to nonhumans, particularly in the context of practices such as foraging and conservation. In the context of foraging, corporeal charisma is particularly useful concept, encompassing the way foragers, commercial and professional, value nonhumans. Categories of aesthetic and ecological charisma also provide a background to why certain species have historically been the focal point of conservation efforts.

Nevertheless, I have also shown how nonhuman charisma is multiple and complex, and that individuals navigate different forms of charisma in daily activities. I have highlighted the importance of the ecological niche and endangered status of a nonhuman in the way people practice and regulate foraging – qualities which cannot be neatly translated into the three categories of charisma. Indeed, there are many competing agendas involved when it comes to land management and resource use, and my research vignettes present how individuals in this study are navigating those competing agendas and ways of knowing, which can, at times, involve inner tensions within a person's life. There are many perceived benefits to foraging as a practice, such as "connecting to nature" and wellbeing, that are considered among the risks of overharvesting and ecosystem depletion. Indeed, it is often when economic value or the corporeal charisma is prioritised over the health of the ecosystem that foraging becomes a threat. Commodification (Ortiz-Przychodzka et al. 2023) as a process embedded in socio-political assemblages, and the taste (Hennion 2016) for wild food, creates the opportunity for unsustainable harvesting practices as foragers are paid per kilo to harvest them.

Furthermore, I have argued that there are differences in the way stakeholders believe humans should cohabit with other species and dwell in the landscape – and how to manage biodiversity. A mixture of land sparing and land sharing approaches could be seen among the stakeholders, although it seems that the land sparing paradigm is still dominant when it comes to policy and legislation over certain protected territories (as could be seen in the Dungeness case pp. 112-119). Foraging as a practice, on the other hand, was more aligned with a land sharing approach.

However, as I have shown, there are many consistencies in the ways of knowing, relating, and caring between (professional) foragers and conservationists, blurring the boundaries between the two groups. Going forward, I argue that, despite the apparent contentions that can exist in this field, there are many similarities, and opportunities for mutual projects. In the following section, I explore the development of an alterbiopolitical ethos, inspired by the term used by Puig de la Bellacasa (2017), which can be found in some of the foraging practices and ways of relating seen in this research. I show that foraging, as a practice, provides opportunities for encouraging ways of relating that are not utilitarian/human-centred, and that can incorporate humans and nonhumans as part of a collective in a caring way. In turn, I discuss how this ethos may be useful for the formation of a new approach to conservation and land management.

5.3 Foraging and conservation: opportunities for mutual projects

As mentioned in Chapter 2, many previous studies have highlighted that it is essential to account for different worldviews and ways of knowing in the formation of land policy and management plans (Burgess et al. 2000; Ingold and Kurttila 2000; Taylor and de Loë 2012; Blaser 2013). For this reason, while it is important to recognise that foraging as a practice can pose threats to conservation projects and biodiversity initiatives, it also necessary to explore the opportunities it presents.

In this study, I have been working with the principle that knowledge is situated and circumstantial (Haraway 1988), and that ways of relating are also contingent. As Ingold (2005) reminds us, it is important to take responsibility for the ways we treat and relate to the nonhuman world. Viewing knowledges as situated, incomplete, and ever-changing (Haraway 1988) leaves room for unpacking how new knowledges can be formed and what contexts might support this. Seeing knowledges and practices as situated also means they are contingent and malleable, based on new knowledges and circumstances. As has been asserted;

'Personal lives are affected by what a society values and considers relevant and they are transformable through collective action.'(Puig de la Bellacasa 2010, p. 164)

Although I have demonstrated how human-centred values, such as economic value or individual health, underlie many of the practices involved in foraging, there are arguably many aspects of this practice that could be beneficial for developing a more-than-human ethic of care. This section of this discussion, therefore, builds on Puig de la Bellacasa's work on alterbiopolitics (Puig de la Bellacasa 2010; Puig de la Bellacasa 2017) in an attempt to draw out what foraging might offer in the way of an alternative way of relating to the more-than-human world.

Arguably, practices that foreground human economic needs, without consideration or care for the wider webs of life and ecosystems, can be associated with this dominant form of biopolitics that Puig de la Bellacasa (2017) describes. As explored in Chapter 2, an alterbiopolitical ethos, on the other hand, views humans as part of a multispecies 'collective' rather than as a dominant species, seeing humans as entangled in mutually dependant webs of life (Puig de la Bellacasa 2010, p. 160). She explains that this ethos develops 'an alternative path in the politics of living with care in more-than-human worlds' (Puig de la Bellacasa 2017, p. 130). In this section, I also draw on the work other scholars such Tsing (2010, 2012) and Lorimer (2015) to highlight potentially beneficial ways of relating that are evident in foraging practices. Therefore, this section contributes to the field of critical posthumanism and discusses the second part of my third research question:

> *3. What are the threats and opportunities that foraging offers to land management and conservation projects?*

5.3.1 Foraging as an alterbiopolitical ethos

5.3.1a Caring: from the personal to the collective

As Puig de la Bellacasa (2010, 2017) argues, an ethos is only alterbiopolitical if it moves care from the realm of the personal to the collective. For instance, in the case of permaculture, Puig de la Bellacasa (2010, p. 160) explains how people who have trained begin to see themselves 'as embedded in a web of complex relationships in which our personal actions have consequences for more than just our kin'. In relation to caring, this involves acting on this awareness of the collective and thinking about the consequences of actions on the nonhumans with whom we share territories and resources. This ethos could be seen in certain codes of conduct for foraging, communicated by online foraging blogs, professional

foragers and conservation organisations. For example, the professional foragers' advice to leave some wild food for other species (pp. 131-132) can be considered a mindset which encourages harvesters to think beyond the relationship between themselves and the wild food, to the wider ecosystem and to others who share and rely on the same food sources.

There were clear overlaps between foraging and conservation practices in this way. For example, the staff at the South West Lakes Trust tried to safeguard the hazelnut supply for the hazel dormice, monitoring the trees, and encouraging any foragers they spotted not to harvest (pp. 156-158).

Indeed, Puig de la Bellacasa (2010) argues that caring for the self is part of caring for the collective, and vice versa. She argues that permaculture is not altruistic but encourages practitioners to see themselves as interdependent with other species who are not necessarily seen as kin. During my research, I saw an awareness of this interdependence through the words and actions of many foragers. It is arguably impossible to escape the fact that nonhumans are a utility for humans when it comes to foraging, however the acknowledgement of interdependence I saw often engendered a level of respect and care for the ecosystem.

In this way, perhaps foraging offers an opportunity for conservation projects. Indeed, many conservationists already promote foraging as a way to encourage people to spend time outdoors and to enjoy their sites. Yet, going further than this, foraging as a practice could provide a way to teach people about what it means to live in a multispecies collective and for humans to be interdependent. Of course, it is important to acknowledge the power imbalance, and that humans are the primary producers of landscapes in the context of the Anthropocene (Ingold 2005), and that foraging can be damaging if done in the wrong way. Yet, it also is a practice which arguably reminds humans that they are part of the ecosystem rather than separate.

Although in some instances, conservation organisations may specifically ban the harvesting of a certain species if there is evidence that this is damaging to the ecosystem, foraging could be taught on privately owned land and in conservation areas, as in Tower Hamlets Cemetery Park (pp. 108-112), to encourage the awareness that humans are part of the

ecosystem. Puig de la Bellacasa (2010) sees this awareness as a foundation for caring for the more-than-human world, in a way that cares for humans alongside other species.

Going further, eating wild foods can be seen as part of the process of caring for the self (as mentioned in section 5.2.5). Foragers often spoke about the nutritional content of wild foods as opposed to domesticated varieties, valuing the healthiness of wild foods. William (p. 130), the amateur forager with whom I picked sea buckthorn, explained how the fact that the sea buckthorn was not sprayed was important to his trust and feeling of safety when eating the plant. He also knew that the berries were good for his vitamin C levels so stored some in the freezer to keep him healthy over the winter months.

As was evident in section B.3, health doesn't simply refer to the physical body but also the mind (p. 129; p. 194). According to many of the foragers I spoke to, both physical and mental health can be enhanced by foraging as wild foods are considered more nutritious than domestically produced foods and foraging itself is beneficial to mental wellbeing.

Care for the self, in this context, extends to care for the other. Eating is an inherently intimate act (Mol 2021), which connects different subjectivities. Humans become merged with the species that they are eating (ibid 2010). This ethos cultivates an awareness that personal health is inherently more-than-human and affected by the other. Professional foragers often felt that the health of the ecosystem, in turn, determined the nutritional value. If health, in this way, could be seen as collective – a healthy ecosystem is a healthy body – it arguably helps dissolve some of the historical separation between humans and the ecosystem in which they are entangled.

From my autoethnographic experiences, I realised that when harvesting food I would be thinking about the health of the species I was eating. If a plant looked unhealthy, weak, or diseased, I would not harvest it. Similarly, if I suspected that a hedgerow had been sprayed with agrochemicals to control weeds, I would avoid harvesting fruit from it. Since eating is an intimate way of interacting with the landscape, it brings a heightened awareness of how the landscape is managed. A healthy ecosystem is necessary for personal health and wellbeing. This is part of the alterbiopolitical ethos that practices such as foraging can support, which encourages humans to see their body within an ecosystem of interconnected elements and health as something which is inherently more-than-human. In this way, foraging for personal

use offers an opportunity for a posthuman way of thinking about health, a way that again sees humans as part of a multispecies collective, and health as shared.

This also involves the acknowledgement that 'humans are not the only ones caring for the earth and its beings – we are *in* relations of mutual care' alongside other species (Puig de la Bellacasa 2010, p.164). Through practising foraging, perhaps humans may begin to understand the ways in which nonhumans are agencies that contribute to fulfilling human needs. Where conservation can be considered one-directional – in which humans are taking care of the needs of nonhumans – foraging offers an opportunity for the development of the conception of care as multi-directional, as humans and nonhumans are giving and receiving. Granted, foraging can be a practice of taking rather than receiving, and that is where conservation practices would need to be included in land management, to help establish a deeper, more informed awareness of the needs of other species. The practice of attentiveness, as a form of experiential knowledge of the professional forager, could be employed and encouraged to try to sustain this balance of giving and receiving.

5.3.1b Attentiveness and noticing with naturecultural awareness

Many researchers have focused on 'attentiveness' – 'tuning into nonhuman worlds' (Just 2022, p. 1212) as a way of caring for other species (Krzywoszynska 2019; Just 2022). In this research, I view the experiential knowledge of the professional foragers as developed through practices of attentiveness.

The 'art of attentiveness', as explored by van Dooren et al. (2016, p. 17), is also a method of research which intends to enliven nonhuman worlds. It involves a deep exploration and curiosity about nonhuman worlds that involves different types of knowledge and ways of knowing. Indeed, some of the professional foragers would use experiential noticing and observing alongside knowledge of ecology and botany that could be gained from books or courses in a similar way. The key motivation was their passion for wild foods and for knowing and learning about nonhumans and how they could be harvested, used, and helped to thrive.

Attentiveness could be seen in foraging *and* conservation practices in this research. Conservationists, as part of their practice, are interested and passionate about nonhuman others – they learn about their worlds. Although, as I have argued elsewhere, this

attentiveness does not extend to all species, or necessarily the same species as foragers, the practice itself is very similar.

Furthermore, the way professional foragers monitored populations of certain species was comparable to the practices involved in conservation. Observing and recording population patterns and noticing if something is “out of place” was mentioned by professional foragers as well as conservationists. For example, foraging teachers Megan (p. 131-132) and Barry (p. 105) acted in a similar way to Shelley, the conservationist on the beach in Cornwall (pp. 98-108), monitoring their foraging sites for shellfish population changes. Megan and Barry had noticed a decrease in the size and numbers of razor clams and cockles over the years and were concerned about this. Both said that they had witnessed large groups of people spraying salt on to the beaches to harvest razor clams and had started seeing a decline in populations.

As Despret (2004) argues, a practice of knowing can become a practice of caring – however, I see these as multi-directional practices. Both conservationists and some of the foragers began with an interest in another species, for their different reasons, and then educated themselves about them. This learning can constitute caring, but caring can also, arguably, produce learning, or knowing. In this way, becoming interested in foraging could be seen as an opportunity for developing a deeper curiosity about nonhuman worlds, which could be a prerequisite for attentiveness and also for care.

As Desai and Smith (2018) show in their study about more-than-human caring, there is a difference between learning about and learning from. They argue that learning from the other isn’t about ‘passively acquiring information about others’, as learning about can be, but is instead an ‘activity’ which involves ‘observation within a context of life experience’ (Desai and Smith 2018, p. 45). This type of learning, in their view, can provide the context from which care is developed. This was evident in the way that professional foragers gathered experiential knowledge, learning from nonhuman species through experience and adapting their practice accordingly. This can be considered a form of local knowledge which is specific to the individual and their location.

As I have shown in the literature review, contentions often occur because local people feel misunderstood, or that their knowledges are ignored, by scientific communities and

governmental organisations (Whatmore 2009). In the context of land management and policy, it has been advised that it is important to consider different ways of knowing and to include local knowledges (Ingold and Kurttila 2000; Taylor and de Loë 2012). Considering this, foraging could offer another opportunity – as a way to include local and experiential knowledge of species into conservation and land management projects.

For example, citizen science schemes could be developed so that local people are able to report impacts they see from foraging, or how climate changes or land management practices are impacting the populations of species. Respecting and encouraging people to share their local knowledge and experiences of foraging, as a more intentional and collective form of attentiveness, could be a way to form more mutual projects and trust between local people and land managers.

Relevant here is Tsing's concept of 'noticing' (Tsing 2010, p. 192). By noticing, she is referring to the process of paying attention to where and why certain fungi might thrive, as a way of learning about ecosystem balance (and disbalance). She explains that looking at the natural historical context and the relationships between humans and nonhumans over time can teach us about the ecosystem or relationships between things. This, in turn, she argues, can inform a sense of how to build better ways of relating. Similarly, in *Unruly Edges*, she discusses the ways in which humans and mushrooms are entangled through history, and what attending to mushrooms might show us about the state of the world (Tsing 2012).

In this research, conservationists often demonstrated an understanding of how human and nonhuman histories are entangled, and how biodiversity monitoring helps us to understand the scale of impact of industrialisation and commercial activity. The staff at the South West Lakes Trust (pp. 155-161), for example, have taken note of the way that humans and hazel dormice have become historically and territorially entangled, and work with this knowledge to produce homes for the dormice. Ecologists monitor their populations and try to understand their feeding patterns and routes through hedgerows. Their work, which supports the populations of hazel dormice, would not be possible without an understanding of how they live, where they thrive, what they eat, and how they move through the landscape. Furthermore, the monitoring of overwintering birds on the Gower Peninsula (p.95) demonstrates this form of 'noticing' (Tsing 2010, p. 192) by the government, as it is acknowledging human nonhuman entanglement and realising its responsibility to take note

and learn from the patterns of behaviour in other species. Arguably, this form of noticing requires an understanding that humans are part of interdependent webs of life – that they are part of nature, which I have described elsewhere as a 'naturecultural' awareness (Puig de la Bellacasa, 2017, p.161). Wildlife, in this context, is not 'out there' but everywhere, and humans are part of it (Lorimer 2015, p. 161).

It was clear from my research encounters that foragers often developed this sense of awareness also. Many foragers mentioned the importance of hedgerows and wildlife corridors and felt that spraying agrochemicals for weed control was damaging to the ecosystem more generally. They noticed when an invasive species was dominating, such as himalayan balsam. Over their years of foraging, they had noticed declines and booms in certain populations and could speculate as to why this might be, considering the human impacts. Many argued that certain forms of agriculture or land use meant that foraging was more difficult and some species were less prolific.

Furthermore, many foragers in this study explained that they had developed an awareness of human impacts on the climate through direct experience. For example, Thomas explained that there were some species that seemed to be thriving with climate warming while others could struggle (p.127-133). William (p. 130), while harvesting sea buckthorn, was also concerned about the impacts of climate change on the seasonality and normal cycle of the plant. In this way, the practice of foraging could provide an opportunity for people to become more aware of the human impacts on the ecosystem and biosphere.

Overall, it seems that both conservation and foraging practices can be ways of learning from nonhumans, which can foster a deeper sense of care and a naturecultural awareness[13]. Fostering this sense of curiosity about nonhumans and treating them as teachers is part of the alterbiopolitical ethos in which humans view themselves as part of a multispecies collective.

Moreover, like permaculture, the attentiveness that can be involved in foraging practices is situated, and always changing and adapting to circumstances. This could be seen when foragers had to adapt their plans due to unforeseen changes in the landscape or make use of a species which was thriving at a particular time, including what would be considered by

[13] As well as being practices that may stem from a sense of care for the ecosystem or other species.

conservationists as “invasive species”. As Lorimer (2015) argues, at times conservation practices try to maintain a particular order rather than adapting to changes. The findings of my research generally support this, as there was a general mistrust of invasive species by conservationists I interviewed, and concern about populations of different species changing due to climatic conditions. In this way, I wonder, could foraging – as an alterbiopolitical ethos, informed by some conservation practices of attentiveness, monitoring, and caring – actually be a more adaptive strategy for dealing with the changes we may face? This offers food for thought, which is developed in the next section.

5.3.1c Diversity and complexity – beyond protected species and territories

Arguably, rather than being a problem or contention, the differences between ways of relating, knowing, and valuing among foragers and conservationists could be combined to form a new approach to conservation, similar to the one that Lorimer (2015) advocates. His suggested ontology of conservation is based on the resilience of ecosystems, which are heterogenous and generative, rather than static or based on a few keystone species. Lorimer (2015) argues that the risk of orthodox conservation is that it can create ideas of landscapes which are static or based on certain aesthetics, rather than what is beneficial for wildlife (Lorimer 2015). He suggests that conservation, indeed, must move beyond territorialisation, as creating conservation zones separate from human life is not beneficial for biodiversity and acts against the natural patterns and movements of species across borders.

Similarly, Ingold (2005) argues that, fundamentally, this process of boundary making and place making can be damaging to both human and nonhuman worlds, as it conflicts with the inherently fluid and malleable definition of place from a posthuman perspective. Territories are constantly in motion, and changing (Bear 2013). As explained in previous sections of this discussion, nonhuman beings are not restricted by these same access laws as humans. Attending to the life worlds of nonhuman others clearly demonstrates this – seeing certain species either side of the fence.

As mentioned in Chapter 2, Toncheva and Fletcher (2022) argue that humans and nonhumans do learn to coexist in shared territories, and that conservation projects need to find ways of allowing for this cohabitation rather than creating separation. The way that conservationists create policy and land management plans on behalf of other species is

considered anthropocentric by more-than-human geographers (Toncheva and Fletcher 2022).

As I have argued, where conservation science is historically more aligned with the 'land sparing' paradigm, setting aside territories for wildlife, and supporting more intensive agriculture in the human dominated territories, foraging engenders a 'land sharing' ethos (Jiren et al. 2018, Loconto et al. 2020). Land sharing involves low intensity food growing or harvesting activities to support biodiversity and wildlife. Ingold (2005) and Lorimer (2015) agree that separating humans from the notion of wildlife perpetuates the problems we need to address to be able to adapt to climate changes and create resilient and diverse ecosystems, and would advocate a land sharing approach. Integrating foraging into land management projects could indeed be a way to showcase a land sharing model, highlighting how wildlife and humans can coexist.

Furthermore, as I have shown, foraging can be a deterritorialising force which is threatening to some conservation projects that are working with a model of stability and trying to maintain a particular ecosystem. Foragers follow wild foods across boundaries and may alter the ecosystem in some way. Understandably, this is where tensions arise. However, if conservation practices move in the direction Lorimer (2015) is suggesting, which is about adaptation, change, and resilience of ecosystems rather than static ecosystems, perhaps there is an opportunity for foraging practices to be part of conservation projects. Indeed, foraging could support two out of three conservation models suggested by Dempsey (2021, p. 1) – 'Adaption to Changing Nature' and 'Innovation in Nature' (moving away from the 'Protection of Threatened Nature' model).

The practice of foraging, arguably, can bring attention to species that might usually be overlooked, neglected, or even killed. What are often considered weeds or species with less value are noticed, harvested, and researched by some foragers. Plants such as hawthorn, which was poisoned by one conservationist to restore species balance on a particular territory (p. 196), could be a food source for a forager. In this way, foragers may notice species that are outside of the socio-political conservation assemblage and apply the practice of attentiveness. Adam, for example, noticed the hogweed that was regrowing in the meadow that had been cut before we arrived (pp. 120-126) and Fi noticed that the blackberry fruit had been cut off by a farmer when trimming his hedgerow (pp. 158-159).

These species are not pioneer or keystone species, but, through foraging they are noticed and made to matter.

As Lorimer (2015) argues, for conservation projects to become adaptive to the climate changes and environmental degradation that are a result of human activities, it is necessary to move away from valuing certain charismatic species, which can be seen as political, to valuing diversity and complexity in ecosystems. Arguably, encouraging wild foods in conservation territories and other areas of privately owned land could be a way to encourage more diversity in the landscape. Equally, foraging could be a way to manage species which are invasive, through harvesting and using them, giving them a value within the ecosystem, while still drawing on conservation practices as a way of monitoring and understanding what a healthy population of a species could look like.

Thinking back to the theme of charisma, it seems that valuing a nonhuman for its place in the wider ecosystem and web of life, rather than its aesthetic appearance, taxonomy, or corporeal use for humans – is consistent with this ethos. Valuing a nonhuman for its economic potential, as a form of commodification (which can be a result of prioritising corporeal charisma), on the other hand, is inevitably a way to alienate it from the landscape and ecosystem. Similarly, aesthetic charisma could prevent conservation projects from looking at the holistic picture by focusing too much on certain species that receive attention or funding from governance and appeal to human emotion. In general, this research supports the view that conservation approaches are moving in this direction, as many conservationist (and foragers) strategies were based on an ecosystem approach.

5.3.2 Foraging and land management

Despite my advocation of foraging as a practice beneficial to conservation projects, I must also acknowledge the risks of this. Without significant education, monitoring, and regulation, foraging, if practised on a large scale or by many companies, could threaten diversity and resilience in the landscape instead of benefiting it. When economic value comes into the picture, foraging can very easily become an unsustainable or exploitative practice. Equally, if there were many people practising foraging without the necessary skill and knowledge to do it well, it could cause significant problems.

Therefore, I would argue that the alterbiopolitical ethos which could be developed at the intersection of foraging and conservation, should be an approach to land management rather than suggesting that there should be more foraging practiced in the current context of limited land access. Land management strategies, in this way, could be developed to value diversity and complexity in the ecosystem, as well as access, finding ways to include humans in the multispecies collectives and commons. For this to work, more areas would need to be open to the public for foraging, and monitoring systems would need to be put in place.

In this research, there have been examples of how permitting foraging, with restrictions, can be a way to encourage the ethos of shared territory, while making sure harvesting is sustainable. For instance, in section A.4, Kenneth, the manager of Tower Hamlets Cemetery Park, advises foragers who wish to forage on the site how much of each species to harvest to keep it sustainable, and how to do it with care for the ecosystem (pp. 108-112). His system of requiring them to apply for a permit to forage on the site allows him to keep a record of how many people are harvesting, and he is able to base his weight limits and guidance on his knowledge of ecology and personal experience of best practice foraging. Unlike the cases of Dungeness (pp. 113-120) and the South Wales beach (pp. 90-98), Kenneth is finding ways for foraging and conservation to coexist, making it less of a contested practice and more a carefully managed and monitored one. Overall, the intersection of conservation and foraging practices, as demonstrated by Kenneth in London, perhaps offers an opportunity for humans to dwell in the landscape in a conscious way and to be aware of ecosystem balance and the needs of other species.

As suggested by Tengö et al. (2021), citizen science projects can be used as a way to include and value local knowledges. In this context of foraging, a project involving local communities in monitoring and data collection could also be used to educate the public about what it means to harvest responsibly, rather than the view simply to take. Conservation projects could engage the public with the question about the impacts of moving through the landscape and harvesting wild foods.

In this way, the practice of foraging would need to be carefully managed, and education projects would have to be put in place – guided by a collaboration of conservationists and professional foragers. Kenneth of Tower Hamlets Cemetery Park, for instance, offers a model for this which could be developed for other sites.

Furthermore, land managers such as Kenneth would monitor their site and decide on a limit for harvesting of different species, then educate people about what was appropriate there, considering ecosystem health. Currently, this approach is seen more widely in the marine environment – with NRW monitoring shellfish harvesting and working with land managers, for example (pp. 94-98) - byelaws in marine areas and 'no take zones' (for example, in Arran, Scotland (Community of Arran Seabed Trust no date)) , which limit harvesting of certain species and in certain areas. This form of management, which requires monitoring and research as well as communication to the general public, could be extended beyond marine areas to other areas. This, in turn, would educate people about foraging as a way of knowing the landscape but would also encourage an awareness and skill set of how much to take.

Moreover, if land managers were also more vigilant and regularly monitoring populations and foraging activities, commercial operations may be less commonplace. Of course, to make this educational and affordable, where possible, it would be wise to include local communities in these monitoring efforts, which could encourage access to land, access to wild foods, and education about different species. An example of this can be seen in the Isle of Arran, where community members, scientists, and landowners were all involved in deciding who should have access to their local marine resources. They decided a "no take zone" should be established to allow the marine ecosystem to recover (Ogunyiola et al. 2022). This method arguably avoids the potential of conservation zones conflicting with local communities' interests, as they feel included in the research and have a stake in decisions about their local resources.

Arguably, in this way, if more land managers and owners would allow the public to access their sites for foraging, including citizen science for monitoring and advice on what and how much to take, this could, in turn, promote the benefits of biodiversity and reduce the high concentration of foragers on protected sites and conservation zones, as well as engaging people in thinking about biodiversity and their impacts on other species. This may offer an opportunity for those wishing to forage commercially to demonstrate best practice and to work with landowners to ensure sustainability, rather than operating illegally and potentially overharvesting. During interviews, conservationists operating in the South West frequently mentioned the example of The Cornish Seaweed Company, considered a good example of best practice commercial foraging. On its website, online visitors are informed that the first

step to working sustainably is to have a licence – which they received from Cornwall Council and the Crown Estate (The Cornish Seaweed Company no date). There is also a code of conduct for seaweed harvesting to teach others about sustainable harvesting, which includes the advice to only harvest seaweed by hand, to collect it only during the active growth season to ensure quick recovery, to avoid disturbing other wildlife, and to rotate harvesting so as not to overharvest a certain area (The Cornish Seaweed Company no date). Foraging permits for companies, if monetised, could provide an income for landowners, which they could subsequently invest in establishing more habitats for wild foods and other species.

Indeed, a key shared project between conservationists and foragers was the establishment of habitats, rather than large scale industrial developments, as shown in the winter section (pp. 154-162). Jacky, a professional forager and conservationist, explained to me that personally, preservation of habitat is always more important to her than harvesting. Since there is no wild food without habitats, and since habitats are crucial to conservation efforts and the necessary increase in biodiversity in the UK, habitat protection and development is a key concern – a possible project for foragers and conservationists to work together on.

Overall, this section has brought conservation and foraging practices together, finding the synergies and opportunities for collaboration that could inform land management practices and the formation of new conservation ontologies. I have argued that foraging engenders an alterbiopolitical ethos, in a similar way to permaculture, which could enhance conservation projects. It could be leveraged to support an understanding of health and wellbeing on a collective, more-than-human level. An ethos of foraging may help to extend care to involve care for the other, as part of care for the self. It could also encourage an attentiveness to be paid to nonhuman subjectivities, including those often neglected by orthodox forms of conservation and respect for local knowledges, while also educating the public about the violent histories in which humans have depleted ecosystems, encouraging a self-awareness around this. Diversity, complexity, and resilience could be foregrounded as the main indicators of a healthy ecosystem, rather than stasis. Conservation projects, influenced by this ethos, might prioritise movement and expansion of nonhuman populations, following their natural patterns and rhythms rather than territorialisation and separation of conservation zones from other types of land management. They could include forms of

monitoring and regulation to ensure that humans are aware of the potential damage they can cause the ecosystem through foraging, while encouraging humans to see themselves as part of the multispecies collective in a way that foraging invites. This ethos could be used as a starting point and developed by land managers and conservationists to encourage new ways of relating to the more-than-human world within their projects.

In contribution to critical posthuman studies, this section of the thesis has developed Puig de la Bellacasa's (2010, 2017) concept of alterbiopolitical ethos to bring out the positive aspects of foraging. In this section, I have used the concept to help bring together foraging and conservation practices to offer a naturecultural approach for conservation or land management, in a similar way to Lorimer (2015), who critically analyses conservation practices to find what he considers a more progressive ontology of conservation for dealing with the challenges of these times, and for challenging and subverting the separation of nature and society. In turn, this ethos could inform the development of new models of land management, encouraging the best practices from synergies between foraging and conservation practices which would promote access, diversity, collective ecosystem health, and community/citizen monitoring projects. Indeed, it seems important that land managers of all kinds attend to ecosystem health and community access for the benefit of future generations.

Chapter 6: Conclusion

This section provides an overview of the findings that have emerged from this study of the contested practice of foraging. As well as contributing to more-than-human geographies of foraging, this thesis has developed key concepts under the broad umbrella of assemblage theory, especially in relation to the study of controversies and contestations. It has engaged with critical posthumanism, moving beyond descriptive analysis to think about how new ways of relating could be encouraged to resolve disputes around land management and biodiversity in the south of the UK.

Firstly, this chapter addresses how my approach, developing assemblage as an ethos, has centralised the concepts of multispecies coordination and territorialisation in the study of contested practices. Particularly about land use and human-nonhuman relating, I argue that these concepts help to invite a symmetry (Murdoch 1997) between human and nonhuman subjectivities in the process in which a practice becomes contested. Secondly, I explain how this study develops the idea that nonhuman charisma (Lorimer 2015) and the practice of caring are inherently contentious, complex, and embedded in socio-political assemblages. Going further, it points out how people navigate different, and often competing, values as they go about practices such as foraging or conservation. Lastly, I demonstrate how this study contributes to the field of critical posthumanism by analysing the threats associated with certain ways of relating and practising foraging, while also building on the concept of alterbiopolitics (Puig de la Bellacasa 2017) to bring out the opportunities it presents as a practice and an ethos, in the context of land management and conservation strategies.

6.1 Assemblage as an ethos

As described in Chapter 2, based on the philosophical works of Deleuze and Guattari (1987), using assemblage as an 'ethos' for analysis requires attention to be paid to how assemblages form and crumble in a constant process of flux (Anderson and McFarlane 2011, p. 125). In this study, I have experimented with what assemblage as an ethos can highlight about contested practices such as foraging. My autoethnographic vignettes highlight fleeting moments of encounter and shows how nothing is stable, certain, or fully knowable. In my

discussion, I employ two concepts associated with assemblage theory, that of coordination and territorialisation.

For coordination, I have drawn on and developed Gan and Tsing's (2018) use of the concept to describe the way different forces meet and create an event or assemblage. In ANT, this concept is often used to show the actions that emerge from an interconnection in a network. In contrast, Gan and Tsing (2018) advocate for the term to be used to apply to processes that are constantly in motion. In this way, I have used it to analyse my research encounters and events in which foraging becomes contested – looking at nonhuman agencies and socio-political assemblages that meet in these moments to create something new. Through doing so, it was evident that there were both human and nonhuman agencies that came together to make foraging a contested practice. I have highlighted how nonhumans have an affective agency that moves foragers and conservationists in different ways.

Thus, I have foregrounded the seasons as the structure of Chapter 4, to make known the affective agency of nonhuman forces. Writing seasonally rather than thematically is a creative and experimental approach to posthuman research. Complementing assemblage as an ethos, the empirical sections are therefore based around lifecycles and movements of different nonhuman agencies, showing how different contestations arise at different times in the seasonal cycle. I have also shown how climate change is considered a threat to foraging practices and conservation projects. Changes in weather impact nonhuman cycles and, therefore, human activities. I draw on the term rhythm (Brighenti and Kärrholm 2018) to describe semi-predictable patterns (Kleinherenbrink 2015, p. 212) of different agencies that coordinate together. The seasons, while having a semi-predictable rhythm, change year to year, causing disruptions in the coordinations that are required for a foraging harvest. In this way, it is clear that foraging practices, and therefore conflicts that the practice can cause, change as the weather changes.

Furthermore, the concept of coordination, applied to the study of foraging, provides an example of how contested practices are only contested in the context of certain spatial-temporal relationships. This specificity is necessary, and offers a response to Kinkaid's (2019, p. 558) question; 'if anything can seemingly be described as an assemblage, what clarity does the vocabulary offer for understanding patterns, relationalities, and transformations in

socio-spatial orders?'. Arguably, through using the concept of coordinations, clarity can be found by referring to particular places, people, and nonhuman subjectivities, how they move and dwell in the landscapes, and what socio-political forces affect their movements. This includes describing particular conservation sites as bounded territories, and relating them to legislation, such as in the Dungeness SSSI and the New Forest National Park. It also includes more everyday examples of how people practise and regulate foraging, navigating their own complex web of responsibilities and parameters. This thesis, therefore, joins other studies that use assemblage approaches to analyse specific land and resource management contexts (Bear 2013; Gan and Tsing 2018; Kinkaid 2019), describing particular events and analysing the ways in which assemblages hold together.

Territorialisation, as I have argued, is a key process of multiple coordinates that makes foraging a contested practice. While territorialisation is often used to describe struggles in land rights and politics (Rasmussen and Lund 2018; Melo Zurita and Munro 2019; Niendorf 2021), I have applied a more ecological use of the term, strongly associated with Deleuze and Guattari's (1987) work to describe multispecies boundary making processes, which informs politics and land access. Following Kleinherenbrink (2015, p. 216), who argues that the Deleuzian concept of 'ritornello' as a boundary making behaviour is fundamental to the process of territorialisation, I show how nonhumans make territories from certain areas, which is affected by, and affects, the demarcation of conservation territories. In this way, conservation projects often try to prevent disruption to the territory to maintain an equilibrium in the ecosystem and habitat.

However, as DeLanda (2016) shows, deterritorialisation is inevitable as, in a world of constant change, territorial boundaries are disrupted and subverted. Foragers often follow wild foods through the landscape – nonhuman and human affect one another and follow one another across boundaries. Foragers spread seeds and dig up roots as nonhuman wild foods lure them into new places. As practitioners, they are sometimes seen as threatening the ecosystem balance that conservation projects strive to maintain, by overharvesting, trampling, or changing the ecosystem in some way. In posthuman studies, especially those looking at conflicts around land use, it is important to consider that nothing is stable, and that attempts to try to create homogeneity and equilibrium will come up against deterritorialising forces, like the ones foragers and wild food represent.

This thesis, therefore, supports scholars who criticise orthodox conservation projects in their inability to adapt to changes, as well as their separation of humans from nature (Ingold 2005; Lorimer 2015). With the view that change and disruption are inevitable, it seems that resistance to adaptation to new circumstances will inevitably lead to difficulty and conflict.

In section 5.3, I suggest how foraging might be (and sometimes has been) integrated into conservation projects to promote an understanding of humans as part of a multispecies collective, focused on shared territories. Having pointed out differences in the way individual stakeholders feel about living well and dwelling with other species, which I have linked to the paradigms of land sharing and land sparing (Loconto et al. 2020).

While the land sharing paradigm is more commonly seen among foragers, I have shown that there are many nuances and differences between conservation approaches. Indeed, there were some examples in this research of conservationists and land managers already working with this principle of shared territories. In this way, this research contributes to a body of literature which looks at the nuanced ways that conservation can be practiced, and how different approaches are adapting to climate changes and biodiversity loss (Escobar 1998; Lorimer 2015; Lorimer et al. 2015; Dempsey 2021).

Overall, this study has developed the use of assemblage as an ethos in the study of contested practices. I present coordination, territorialisation and deterritorialisation as inseparable forces, as integral concepts to the study of contested land use practices. Of course, they are entangled in socio-political assemblages, as well as the knowledge practices of different stakeholders. Therefore, in order to examine the nuances and complexity surrounding foraging as a contested space, I have combined the study of coordinations and territorialisation with an in-depth analysis of knowledge practices, values, and networks of care. I have looked closely at what motivations and ways of relating different foragers, conservationists, and land managers presented during my research encounters.

Moreover, studying contested practices and the assumptions and values of different stakeholders begs the question as to what assumptions and values the researcher has. Through writing autoethnographic vignettes as my way of presenting this research, I have attempted to show how, as a researcher, I am inherently part of the coordination that produces this research output, alongside seasonal forces such as the weather and the

lifecycles of plants and animals. Although I have not made my own biases explicit through the narrative, I have presented myself as another participant in this research, implicitly showing that I have my own reactions, emotions, and tendencies when it comes to foraging. I am transparent about my past mistakes and my process of learning and change throughout this research. Following Gillespie (2021), I have reflected on the power dynamics that I observe when practising foraging.

In keeping with assemblage as an ethos, I show how nothing is fixed, but fluid. Following Law (2004), this approach, therefore, presents the researcher as part of the encounter and the performative production of knowledge. Furthermore, considering that my own foraging practices were changing as I learned and as I delved deeper into this topic, this method helped demonstrate the processes through which experiential knowledge is acquired by foragers over time.

This research, then, explores how multispecies autoethnography (Gillespie 2021), can be employed to explore contested practices, such as foraging, in a reflective and insightful way. Additionally, this offers new perspective to contribute to the small body of more-than-human geographies of foraging. Although I use autoethnography alongside other, more well-recognised research methods such as interviewing and case studies, this can be considered progress for a relatively new and peripheral approach to research. Arguably, including autoethnographic elements in research, particularly participatory research involving relationships with nonhumans, allows for a deeper investigation into ways of knowing and relating, and the way in which knowledges are situated and circumstantial (Haraway 1988).

6.2 The contentious nature of relating to nonhumans

Further contributing to the study of contestations and controversies, I have drawn on several theoretical concepts and fields of literature to explore the tensions that surround foraging as a practice.

Firstly, I found that the concept of nonhuman charisma, which is developed in Lorimer's (2007, 2015) assemblage-based studies of conservation, was somewhat useful for understanding how different stakeholders value nonhumans differently. As Lorimer (2015)

asserts, nonhuman charisma is fraught with complexity and is inherently contentious, as different people find different qualities and species to be charismatic. This thesis has shown examples of how, when conservationists value the aesthetic and/or the ecological charisma of a species, this can be at odds with those, such as foragers, who value a species for its corporeal charisma – its uses to, and material affects on, humans. I have linked corporeal charisma to certain ideas of taste and edibility, drawing on an expansive and nuanced body of literature which explores how raw materials become desirable commodities (Roe 2006-a, b; Bourdieu 2010; Tsing 2015; Hennion 2016; Colebrooke and Miele 2017; Sexton 2018; Ortiz-Przychodzka et al. 2023).

Nevertheless, I have argued that many of the professional foragers interviewed in this research have found ways to attend to nonhumans in a way which values them for both their ecological niche and edibility. They often teach codes of conduct (which vary slightly according to their own experience), with an attempt to educate those interested in foraging to harvest sustainably and carefully. These codes of conduct were peppered through my seasonal chapters, then broadly brought together in Chapter 5, showing general perceptions of "good" and "bad" foraging rather than a homogenous set of principles.

Furthermore, I have specifically mentioned a quality of a nonhuman that was highlighted by foragers and conservationists in this study – their endangered status. Where ecological charisma refers to the material properties of an organism, and how a human can categorise it as part of an ecosystem, endangered status seemed to have a larger impact on whether or not an edible species would be considered food. One of the codes of conduct that was mentioned in the majority of interviews with foragers was that they would not harvest an edible species if it was on the Red List.

Of course, conservation paradigms and knowledge of ecology, legal restrictions, foraging codes of conduct, culinary, experiential and local knowledges, all came together to influence how each stakeholder related to foraging. Certain types of knowledge, such as botanical and legal knowledge, would impact how and whether an edible species would be harvested or not. This is arguably nuanced, complex, and individual.

In section 5.2, I have shown how different kinds of knowledge practices can cause tensions. I described how the experiential knowledge of foragers was sometimes at odds with legal

restrictions or scientific knowledges. Equally, uncertainties surrounding the impacts of foraging on different species caused disquiet among the foraging and conservation communities. Lack of evidence, in some cases, justified harvesting while at other times meant restrictions would be put in place, based on the "precautionary principle". These findings were consistent with Callon et al.'s (2011) well-known study on controversies which shows how institutions work with precaution in the context of scientific uncertainties.

In section 5.2.6, I have linked the knowledge practices and ways of relating in this study to the practice of caring. I have explored how stakeholders navigate multiple, and sometimes competing, responsibilities such as human wellbeing and nutrition, ecosystem health, and financial responsibilities. Moreover, I have demonstrated that relating and caring about and for nonhumans involves 'ambivalence' (Miele et al. 2005, p. 169) and is never innocent (Puig de la Bellacasa 2012), which contributes to a large body of research examining more-than-human caring. Following Mol (2020) and Law (2008), I have argued that killing or eating another species always involves a complex navigation of different agendas. What is right or wrong in this situation is difficult to know, especially in the midst of uncertainties about how nonhumans think and feel (Pitt 2017).

Building on the key concepts of nonhuman charisma and care, and exploring contention around knowledges, has allowed me to examine the complexity surrounding foraging as a contested practice and to dig deeper into what is behind the different viewpoints. This was necessary and insightful, laying a foundation for being able to comment critically on the threats and opportunities associated with foraging as a practice. In general, I found that although most foragers were guided by codes and do consider their impacts on ecosystems, the biggest threat was when economic motivations and corporeal charisma outweighed other types of value. This, along with inexperience and scale were considered threats that conservationists and professional foragers generally agreed on. In section D, I also showed how foragers sometimes consider themselves scapegoats for wider problems such as biodiversity loss from industrialisation and monocultures. This, I found, was a shared opinion of foragers and conservationists, agreeing that foraging as a threat is a symptom, and not a cause, of widespread biodiversity loss.

6.3 Critical posthumanism: incorporating an alterbiopolitical ethos into land management strategies

As has been argued by many scholars looking at conservation conflicts, it is important to understand local knowledges and ways of relating, and to integrate them into projects and policy (Drew 2005; Posey and Balick 2006; Yadav et al. 2012; Blaser 2014; Toncheva and Fletcher 2022). Therefore, although this study has presented several threats associated with foraging as a practice (commercial foraging in particular), it is fruitful to recognise that there are also beneficial aspects of the practice for conservation projects, and knowledges that can be integrated into policy or land management practices. This is an attempt to create mutual understanding between stakeholders, and to offer practical solutions, in the context of foraging as a contested practice. As I have explained elsewhere, critical posthumanism is interested in promoting and exploring new ways of relating that are beneficial to the more-than-human world. This section of the thesis contributes to this field and develops the use of certain concepts to analyse current practices for their potential benefits.

Therefore, I have drawn on Puig de la Bellacasa's concept of alterbiopolitics (Puig de la Bellacasa 2010; Puig de la Bellacasa 2017) to show what foraging might offer in the way of an alternative way of relating to the more-than-human world. As Puig de la Bellacasa shows (2010, p. 160), an alterbiopolitical ethos situates humans as part of a multispecies 'collective', rather than as a dominant species. Not only does this sit well alongside posthuman scholarship, but it helps to develop 'an alternative path in the politics of living with care in more-than-human worlds' (Puig de la Bellacasa 2017, p. 130). I argue that in a similar way to permaculture, foraging can promote a 'naturecultural' (ibid, p. 140) awareness, showcasing how human and nonhuman lives are interdependent.

I have suggested that a land management ethos could be developed at the intersection of foraging and conservation practices, which would move care from the personal into the collective, seeing human health as inextricably linked to ecosystem health. This is due to the way that many foragers have realised, through their practices, that without a healthy ecosystem and biodiversity, they cannot eat in the healthy way they would like to. In contrast to orthodox conservation paradigms, that favours a land sparing approach, viewing

food production as separate from nature. Foraging, on the other hand, can promote a way that humans and healthy food production can coexist.

Furthermore, to build this argument, I bring in ways of relating that have been suggested by critical posthuman researchers (Tsing 2010,2012; Lorimer 2015). Through observing the knowledge practices of professional foragers, for example, I find that foraging can encourage a passion about and attentiveness towards nonhumans, in a similar way that Tsing (2010, 2012) describes when talking about fungi enthusiasts. Professional foragers, I have shown, monitor populations and ecosystems in a similar way to conservationists, and manage their harvesting accordingly. Furthermore, I find that foraging could help embrace change and flux in conservation projects, prioritising diversity and complexity in ecosystems. Seeing plants as foods rather than weeds allows attention to be paid to otherwise neglected species and perhaps invites an adaptation to climate changes in a way orthodox conservation projects might not. In this way, by applying alterbiopolitics beyond the practice of permaculture, and integrating ideas from other critical posthuman scholars, I have demonstrated how beneficial ways of relating can be found in contested practices such as foraging, and mutual understanding encouraged.

However, to avoid the threats associated with overharvesting, I have argued that integrating the ethos of foraging into conservation projects would require a focus on monitoring and attentiveness, more than the practice of harvesting itself. There were some examples, such as at Tower Hamlets Cemetery Park, where this has already been trialled and showcased. The manager of the park monitored foraging carefully to ensure that plants would not be damaged or overharvested. Following Tengö et al. (2021), I have suggested that citizen science monitoring projects could be a way to value local knowledges, such as the knowledges of foragers, but as part of a conservation effort. I have also suggested that encouraging wider access to land for activites such as foraging could reduce the threats of overharvesting, since it would be less concentrated in certain areas.

6.4 Recommendations for future research, and policy implications

Like most research projects, there are many questions that arise from this research which could be developed into future projects. For example, having highlighted the potential

threats of commercial foraging, it would be interesting to explore this in greater depth. A research project examining the values and motivations of a larger group of commercial harvesters could inform policy and regulation of the industry. Likewise, I have shown that there are restaurants and food industries that procure wild foods via commercial operations, often illegally, and it would be pertinent to understand this supply chain and how policy might manage this.

Furthermore, research about the impacts of commercial harvesting on ecosystems from a natural science perspective would be useful, to provide some of the missing evidence which is central to the controversy around foraging as a damaging activity. As I mentioned in section 5.2.4, there are many unknowns surrounding foraging and its sustainability, including how certain nonhumans, such as fungi, react to being harvested. It would be useful and interesting to try to understand this, to be able to inform policy and projects that include teaching foraging as part of a land management strategy.

Moreover, having highlighted potential synergies between foraging and conservation projects, and the benefits of foraging as an ethos for conservation and land management strategies, it would be pertinent to evaluate particular examples of this in practice. Beyond the example of Tower Hamlets Cemetery Park, it would be interesting to analyse projects in which foraging, particularly commercial foraging, is permitted and monitored, and how this works in practice. This may help with the development of a road map for land managers to confidently integrate foraging and conservation into their strategies.

Going back to the theoretical framework of this thesis, I have shown how assemblage as an ethos can encourage a holistic approach to looking at controversies, bring in nonhuman agencies as well as socio-political forces. As Kleinherenbrink (2015, p. 224) argues, it is important to 'base ethical and political decisions on the best information we have concerning the real, material circumstances of living beings'. By looking at multispecies coordinations, territorialisation and deterritorialisation, I have based this analysis on the material and relational circumstances of humans and nonhumans, to provide insight into how controversies are made through assemblages. This approach could be developed further, in the study of contested practices, showing how contestations are constantly being made, remade and dissipated, in accordance with lifecycles. The use of the seasons as a way of structuring analysis is particularly insightful for more-than-human studies that wish to

foreground species which appear and disappear throughout the year, and how they affect humans. It would, therefore, be interesting to look at other controversies around land use in this way, to show how issues come and go throughout the seasons.

Moreover, I have shown how alterbiopolitics is a concept that can be applied beyond the study of permaculture (Puig de la Bellacasa 2010, 2017) and collective agriculture (Still 2021), to foraging. Future research agendas could develop this further by looking closely at how practices, such as foraging, can encourage the movement of care from the individual to the collective. This is arguably very important when thinking about creating new policy and projects, in the context of biodiversity loss and climate change exacerbated by human behaviours, while also remembering that there is ambivalence and complexity involved in any act of care, especially when it comes to eating and more-than-human relating.

Going further, I have demonstrated how alterbiopolitics can be applied to find the benefits in practices that are controversial, and less aligned with dominant biopolitical projects. In this study, it was a useful tool and framework to be able to articulate the ways in which foraging could be beneficial and how it could be integrated into the very practice it threatens. This could be further explored as a method for finding mutual understanding and integrating different kinds of knowledges in the context of controversies and contested practices. Controversies, as Callon et al. (2011, p. 28) assert, are 'powerful apparatuses for exploring and learning about possible worlds'. They offer an opportunity to explore knowledge practices and values, with the aim of finding not only where the tensions lie but the potential synergies and opportunities for better worlds.

Overall, this research has shown that, in the study of controversies, rather than condemning practices it is important to examine their threats and opportunities, and to find what they might tell us about ways of relating to the more-than-human world. Implementing foraging into land management, guided by policy which focuses on monitoring and attentiveness, for example, could be one way to encourage ways of relating that focus on the interdependence and shared vulnerabilities of humans as part of a multispecies collective.

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Appendix A

Version 1.4: 02/09/2021

PARTICIPANT INFORMATION SHEET

Foraging practices, regulation, and sustainability in the UK: A more-than-human ethnographic study (working title)

You are being invited to take part in a research project. Before you decide whether or not to take part, it is important for you to understand why the research is being undertaken and what it will involve. Please take time to read the following information carefully and discuss it with others, if you wish.

Thank you for reading this.

1. What is the purpose of this research project?

I am a Postgraduate Researcher at Cardiff University and I am investigating how people practise and regulate foraging. I am interested in the debates and opinions about the sustainability of foraging. I am also keen to pay close attention to the part nonhumans (plants, fungi, shellfish etc.) play in foraging practices and regulations.

I am keen to hear the opinions, and observe the practices of foragers, conservationists and large-scale landowners (organisations such as the Woodland Trust and the National Trust), to really understand the way different people think about and enact their values about sustainability and conduct on the land.

My intended research outputs are a written thesis, a short film and a condensed and accessible action plan for sustainable foraging. I hope to promote mutual understanding between these stakeholders with my research outputs.

2. Why have I been invited to take part?

You have been invited because you have been identified as a stakeholder who participates in the practice of and/or regulation of foraging.

3. Do I have to take part?

No, your participation in this research project is entirely voluntary and it is up to you to decide whether or not to take part. If you decide to take part, I will discuss the research project with you and ask you to sign a consent form. If you decide not to take part, you do not have to explain your reasons and it will not affect your legal rights.

You are free to withdraw your consent to participate in the research project at any time, without giving a reason, even after signing the consent form.

4. What will taking part involve?

- Together, we will find a date, time and place to meet for a walk in a place relevant to the practice/regulation of foraging. We will work out a route and work out how long the walk will take, based on your availability and the route. I would suggest that the walk takes a minimum of 1 hour and a maximum of 3. The route would ideally be a place you know well and practice foraging/conservation/work.
- When we meet, I will ask you to sign the consent form that I have sent you with this Participant Information Sheet.
- During the walk, I will ask you questions about what you do, and about your opinions of foraging. I will also ask you to show me plants/fungi/shellfish etc. that you interact with in your practice and will ask you about them. If you are a forager, and there are plants available to harvest, you are welcome to show me this too. I will therefore me observing and interviewing you informally during this time, learning from both your knowing, and doing.
- I will be bringing a video camera with me. On the consent form, you will be asked how you feel about being filmed – for both the purpose of analysis and wider dissemination. If you agree to being filmed, I will capture some parts of our walk using this technology.
- I will also ask you for your consent for being audio-recorded using a Dictaphone. If you agree to this, I will have a Dictaphone on to record our conversation throughout the interview.

If we are unable to arrange a time and date to meet in person (for example, if it's out of season or distances are too far), I may invite you for a phone or Zoom interview. I will ask for your consent for this also and get you to sign a consent form digitally prior to the interview. I will ask you at the beginning of the Zoom interview if you are happy to be recorded. This will not be included in the short film or any research outputs and will remain for the sole purpose of analysis.

5. Will I be paid for taking part?

No.

6. What are the possible benefits of taking part?

There will be no direct advantages or benefits to you from taking part in this study, but your contribution will help to identify and describe the practices and regulation of foraging in the UK. I intend to use the research outputs to promote mutual understanding between different stakeholders, making sure a diversity of voices are heard.

7. What are the possible risks of taking part?

If you agree to being identifiable in this research (you will be able to choose to remain anonymous if you wish) then there is a slight risk of criticism from others who have strong opinions about the regulation of foraging.

8. Will my taking part in this research project be kept confidential?

For this project, you will be able to choose whether you want to remain identifiable or anonymous in the research outputs. Since I intend to create a short film to disseminate the findings of this research, those participants that chose to appear in the film will remain

identifiable. I intend to publish the film on YouTube or Vimeo, which can be accessed by the general public. On the consent form, you will have the opportunity to indicate whether or not you would like to be included in the short film. If you chose to remain identifiable in the film, the only information that will be shared about you will be your name, organisation and the location of our walk. I would never share your personal contact details with another person.

All participants will remain anonymous and de-identified in written outputs, regardless of their decision about the film.

Any personal information you provide will be managed in accordance with data protection legislation. Please see 'What will happen to my Personal Data?' (below) for further information.

9. What will happen to my Personal Data?

Personal data, according to the General Data Protection Regulation (GDPR) means any information relating to an identifiable living person who can be directly or indirectly identified in particular by reference to an identifier. This may include information such as your name, work organisation and email address. I will keep any personal data about you in a secure, encrypted file on my personal laptop. Unless you have specifically consented to appearing in the film, I will de-identify this stored personal data so it cannot be linked to any research data about you (transcripts/video-clips etc.). Regardless of whether you will be in the film or not, I will store your personal data in a secure, encrypted file.

Cardiff University is the Data Controller and is committed to respecting and protecting your personal data in accordance with your expectations and Data Protection legislation. Further information about Data Protection, including:

- your rights
- the legal basis under which Cardiff University processes your personal data for research
- Cardiff University's Data Protection Policy
- how to contact the Cardiff University Data Protection Officer
- how to contact the Information Commissioner's Office

may be found at https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection. If you would like a paper copy, please for one.

10. What happens to the data at the end of the research project?

After the submission of this thesis and the end of the appeals process all your personal data will be deleted and will not be used for any further research or contact.

11. What will happen to the results of the research project?

The results of this research will be published in a PhD thesis. I may also use the research data to publish articles in academic journals and in presentations at conferences. I may choose to quote you in verbatim but will change any names/places within these quotes to preserve anonymity if you decide to remain anonymous.

It is my intention to make a short film about the practices and regulation of foraging, and the opinions of different stakeholders, in order to disseminate the research findings to wider audiences. As previously stated, you will have the choice about whether you would like to

appear in this film, or not, and your decision will not change how the data from our walking interview will be used in the thesis. This film will just be used to communicate the findings but is not an integral part of the thesis.

12. What if there is a problem?

If you wish to complain, or have grounds for concerns about any aspect of the manner in which you have been approached or treated during the course of this research, please contact me first, Lauren King, and I will try to resolve the issue: [redacted]

13. Who is organising and funding this research project?

The research is organised by Lauren King of Cardiff University. The research is currently funded by the Economic and Social Research Council.

14. Who has reviewed this research project?

This research project has been reviewed and given a favourable opinion by the Cardiff University Geography and Planning Research Ethics Committee.

15. Further information and contact details

Should you have any questions relating to this research project, you may contact me during normal working hours:

Lauren King
Contact details:
[redacted]

Thank you for considering taking part in this research project. If you decide to participate, you will be given a copy of the Participant Information Sheet and a signed consent form to keep for your records.

Appendix B

Version 1.4: 02/12/2021

CONSENT FORM

Title of research project: **Foraging practices, regulation and sustainability in the UK: A more-than-human ethnographic study**

SREC reference and committee: **Cardiff University Geography and Planning Ethics Committee**

Name of Chief/Principal Investigator: **Lauren King.** Please read all the following statements, then initial **those that apply**:

I consent to being captured on film and audio-recorded for the sole purpose of analysis, but I would like to remain anonymous in all research outputs.	
I do not consent to being filmed but I do consent to being audio-recorded for the sole purpose of analysis.	
I am happy to remain identifiable in the short film which will be produced as a way of disseminating the research findings to wider audiences. I am also happy for audio-visual data to be used for the purpose of analysis. I acknowledge that any personal criticism that arises from being identifiable is my own responsibility, and I will only share with the researcher what I am happy to be publicly available. I am aware that I will not be identifiable in the written thesis.	
I do not consent to being filmed or audio-recorded for analysis or for the dissemination of research findings.	
For Zoom interviews only:	
I consent to being audio-visually recorded for the sole purpose of analysis.	

	Please initial box
I confirm that I have read the information sheet dated 2/09/2021 version 1.4 for the above research project.	
I confirm that I have understood the information sheet dated 2/09/2021 version 1.4 for the above research project and that I have had the opportunity to ask questions and that these have been answered satisfactorily.	
I understand that my participation is voluntary and I am free to withdraw at any time without giving a reason and without any adverse consequences (e.g. to medical care or legal rights, if relevant).	
I consent to the processing of my personal information [Name, email address, phone number and organisation (where relevant)] for the purposes explained to me. I understand that such information will be held in accordance with all applicable data protection legislation and in strict confidence, unless disclosure is required by law or professional obligation.	
I understand who will have access to personal information provided, how the data will be stored and what will happen to the data at the end of the research project. I understand how the research data will be used; in a thesis, in academic articles and conference proceedings and in a short film. I have indicated whether or not I would like to be involved in the film or not.	
I understand that excerpts and/or verbatim quotes from my interview may be used as part of the research publication and have indicated whether this should be anonymised or not.	
I understand how the findings and results of the research project will be written up and published.	
I agree to take part in this research project.	

Name of participant (print)	Date	Signature
Name of person taking consent (print	Date	Signature

Role of person taking consent

(print)

THANK YOU FOR PARTICIPATING IN OUR RESEARCHYOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP