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The Ethical Implications of Wild Animal Suffering for Conservation and Wildlife Management



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The ethical implications of wild animal suffering for conservation and wildlife management

THESIS

Presented to the Faculty of Science and Medicine of the University of Fribourg
(Switzerland), in consideration of the award of the academic grade of *Doctor of
Philosophy in Environmental Humanities*

by

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To Mitzi, my temperamental childhood cat,
For teaching me the value of a life so different from my own.

Summary

According to good estimates, most sentient beings living in the world today are wild animals, and most of them will die before reaching adulthood, having spent their short lives struggling to survive. According to a number of ethicists, the suffering of wild animals creates an ethical obligation to intervene in natural ecosystems, at least in theory. For most people, this implies a duty to encourage or conduct research so that we may better know how to mitigate suffering in nature in the future. But what about those, such as wildlife managers, who can make decisions that shape the lives of wild animals today?

Wildlife managers may be uncertain for three reasons: first, whether we have a duty to mitigate wild animal suffering, even in theory, is debated on ethical grounds; second, whether any interventions are worth pursuing now or in the near future is as of yet unclear, given the great uncertainties; and third, no account has been given of how a concern for the suffering of wild animals can be balanced against conservation values. This thesis investigates how wildlife managers should respond to the suffering of wild animals by addressing these three research-gaps.

The thesis follows a pragmatist methodology, in which different ethical frameworks and concepts are employed due to their strengths in highlighting different moral features and answering different questions. In the first part, I use the framework of Principlism to argue that the principles of *beneficence*, *non-maleficence*, *autonomy*, and *justice* capture the values of scholars with different theoretical dispositions. This allows me to argue that the most plausible specification and weighting of those principles supports a duty to mitigate wild animal suffering.

In part two I specify what precaution might entail in this context, and adopt a welfare-consequentialist lens to hone in on the risks of intervention. I argue that the severity of suffering in nature creates a situation of urgency, causing common defences of precaution to fall flat. However, intervention in nature risks causing irreversible changes, thereby closing off future ways to improve wild animal welfare. This leads me to reaffirm the need for precaution, and I end by suggesting types of intervention that promise a particularly low risk/benefit ratio.

In part three I turn to Compassionate Conservation, a framework that combines virtue theory with practical principles to encourage greater and compassion for animals in conservation practice. By pointing out internal inconsistencies in the framework, I show that if compassionate conservationists are to be truly compassionate, they will also need to look for ways to mitigate wild animal suffering. Using the findings from parts one and two, I argue that management strategies are possible that seek to mitigate natural suffering while also pursuing conservation objectives.

The pragmatist approach is employed by refining the frameworks in each part to fit the problem dealt with, and by then relating the findings to one another. Ultimately, the thesis shows that addressing wild animal suffering in conservation and wildlife management is both possible and morally desirable.

Zusammenfassung

Schätzungen zufolge sind die meisten empfindungsfähigen Lebewesen, die heute auf der Welt leben, Wildtiere, und die meisten von ihnen sterben, bevor sie das Erwachsenenalter erreichen, nachdem sie ihr kurzes Leben mit dem Kampf ums Überleben verbracht haben. Einige Ethiker sehen darin eine ethische Verpflichtung, zumindest theoretisch, in natürliche Ökosysteme einzugreifen. Für die meisten Menschen ist dies eine Verpflichtung, Forschung zu fördern oder durchzuführen, damit wir in Zukunft besser wissen, wie wir das Leid in der Natur lindern können. Aber was ist mit denjenigen, die heute Entscheidungen treffen, die das Leben von Wildtieren beeinflussen, wie z. B. Wildtiermanager?

Wildtiermanager sind aus drei Gründen verunsichert: Erstens ist es umstritten, ob wir ethisch verpflichtet sind, Wildtierleiden zu lindern; zweitens ist angesichts großer Ungewissheit nicht klar, ob sich jetzt oder in naher Zukunft ein Eingriff lohnt; und drittens wurde bisher nicht geklärt, wie sich die Sorge um Wildtierleiden mit den Werten des Naturschutzes vereinbaren lässt. In dieser Dissertation wird untersucht, wie Wildtiermanager auf das Leiden von Wildtieren reagieren sollten, indem diese drei Forschungslücken angegangen werden.

Die Dissertation folgt einer pragmatistischen Methodik, bei der verschiedene ethische Rahmen und Konzepte aufgrund ihrer Stärken bei der Hervorhebung moralischer Merkmale und der Beantwortung unterschiedlicher Fragen herangezogen werden. Im ersten Teil verwende ich den Prinzipialismus, um zu argumentieren, dass die Prinzipien Wohltätigkeit, Nicht-Schädigung, Autonomie und Gerechtigkeit Wissenschaftler*innen mit unterschiedlichen theoretischen Dispositionen verbinden. Dadurch lässt sich zeigen, dass eine plausible Spezifizierung und Gewichtung dieser Prinzipien eine Pflicht zur Minderung des Leidens von Wildtieren unterstützt.

Im zweiten Teil präzisiere ich, was Vorsorge in diesem Zusammenhang bedeuten könnte, und verwende eine wohlfahrtskonsequentialistische Sichtweise, um die Risiken von Eingriffen herauszuarbeiten. Ich argumentiere, dass die Schwere des Leidens in der Natur eine Situation der Dringlichkeit schafft, die dazu führt, dass die üblichen Einreden der Vorsorge nicht greifen. Bei Eingriffen in die Natur besteht jedoch die Gefahr, dass sie irreversible Veränderungen bewirken und damit künftige Möglichkeiten zur Verbesserung des Wohlergehens wild lebender Tiere ausschließen. Dies veranlasst mich, die Notwendigkeit der Vorsorge zu bekräftigen, und ich schließe mit Vorschlägen für Interventionsarten, die ein besonders niedriges Risiko-Nutzen-Verhältnis versprechen.

Im dritten Teil wird der Ansatz der "Compassionate Conservation" erörtert, ein Rahmenwerk, das die Theorie der Tugenden mit praktischen Grundsätzen verbindet, um in der Naturschutzpraxis das Mitgefühl für Tiere zu fördern. Indem interne Widersprüche in diesem Rahmen aufgezeigt werden, wird deutlich, dass mitfühlende Naturschützer, um tatsächlich mitfühlend zu sein, auch nach Wegen suchen müssen, um das Leiden von Wildtieren zu lindern. Es wird argumentiert, dass Managementstrategien möglich sind, die versuchen, natürliches Leiden zu lindern und gleichzeitig Naturschutzziele zu verfolgen.

Der pragmatische Ansatz wird in jedem Teil angewandt, indem die Rahmenkonzepte je nach Fragestellung verfeinert und die Ergebnisse in Beziehung zueinander gesetzt werden. Letztlich zeigt die Dissertation, dass es sowohl möglich als auch moralisch wünschenswert ist, dem Leid wilder Tiere im Rahmen des Naturschutzes und Wildtiermanagements entgegenzuwirken.

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Table of papers

	Title	Type	Authorship	Status
1	Challenging Our Thinking About Wild Animals with Commonsense Ethical Principles	Peer-reviewed conference proceedings	Katz for writing the manuscript. Katz & Wallimann-Helmer equally for revising and dev. of argument.	Published 2022 in <i>Transforming food systems: ethics, innovation and responsibility</i> pp. 126-131. Wageningen Academic Publishers
2	Widely Agreeable Moral Principles Support Efforts to Reduce Wild Animal Suffering	Peer-reviewed journal article	Katz	Published 2023 in the <i>Journal of Applied Animal Ethics Research</i> , 5(2), 221-246. https://doi.org/10.1163/25889567-bja10038
3	Gaining Traction on Wild Animal Suffering: Compassionate Interventions in Nature Despite Uncertainty	Journal article	Katz	Final draft not yet submitted for publication
4	Taking Natural Harms Seriously in Compassionate Conservation	Peer-reviewed journal article	Katz	Published 2024 in <i>Biological Conservation</i> 299 https://doi.org/10.1016/j.biocon.2024.110791

5	Catia Faria: Animal Ethics in the Wild	Peer-reviewed book review	Katz	Published 2023 in <i>Ethical Theory and Moral Practice</i> 26 pp. 833-835 https://doi.org/10.1007/s10677-023-10406-z
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“I say this all full of admiration for the jungle. It is not that I hate it, I love it...
but I love it against my better judgement”

- Werner Herzog, in the documentary ‘Burden of Dreams’

Introduction

1. Setting the scene

Wild animals in environmental management

The first time I was seriously confronted with questions about the ethics of wildlife management, I was maybe 12 years old, walking with my family near a place called Castle Hill, in the middle of the South Island in Aotearoa/New Zealand. This is beautiful, remote country in the Southern Alps, with patches of native forest nestled between grasslands and rugged mountains, through which we walked. It was a bit of a shock, then, to suddenly stumble upon a large pit in the middle of that valley, with dead bodies piled in it, their skin stripped from their flesh. At that age, having just been shown holocaust footage in history class, I couldn't help comparing the two - the only obvious difference, as far as my child's eye could tell, was the species. In this case the species was the brushtail possum (*Trichosurus vulpecula*), a marsupial introduced from Australia for the purpose of creating a fur trade, but which has since become invasive in New Zealand, enjoying a mild climate and an absence of predators, munching its way through native forests, and eating the eggs of native birds. Despite intensive population control efforts, such as what I witnessed that day, possums are now widespread in New Zealand, existing almost everywhere except for alpine areas (Hutchings 2008).

In New Zealand the challenges of environmental management are particularly acute, as the native animals evolved in the complete absence of mammalian predators, and consequently have a poor ability to protect themselves from them. But similar challenges can be observed anywhere: we live in the midst of a global biodiversity crisis, and many wild¹ animal populations are in steep decline. Large efforts are being made to protect those threatened species, and yet such efforts often show little regard for the wellbeing of individual animals. In the name of conservation, wild animals are killed *en masse* through hunting, trapping, and poisoning, among other measures. Even individuals from endangered species are frequently harmed: they can be captured, bred in captivity, and later released with low chances of survival in what is now an alien environment to them; or they may be killed as trophies to help conservation organizations raise money. All of these practices are justified for the good of the *species* or *ecosystem*, and although animal welfare² is increasingly acknowledged as something to be considered alongside biodiversity, ecosystem integrity and ecosystem services, it continues to be sidelined.

¹ I use the term 'wild' to mean living outside of human control. This can include animals living in agricultural or urban areas, as well as those that were previously domesticated. But throughout most of the thesis, my focus is on animals living completely independently from humans.

² The terms 'welfare' and 'wellbeing' are used interchangeably in this thesis, unless otherwise specified. What is meant by these concepts will be elaborated in section 2.

Nonspeciesism and natural harms

The meagre regard for animal welfare in wildlife management can be considered an instance of speciesism. Speciesism, first coined by Richard Ryder in 1970, is defined as the “unjustified consideration or treatment of those who are not classified as belonging to a certain species” (Horta and Albersmeier 2020). There are, of course, some justifications that can be made for treating different species differently, for example due to them having differing capacities for different experiences or a different welfare range (Fischer 2024), or different kinds of interests. Nonetheless, there is a lot in common between species, and since nonhuman animals often appear to have a comparable ability to suffer to humans (Browning 2023), we have good reason to give that suffering a similar moral weight in our ethical thinking. But the norm in most societies is to greatly discount the moral weight of nonhuman animals, such that they are used and killed for comparatively minor human interests. According to Peter Singer (2017), distinguishing based on group-membership in this way makes speciesism unjustified in exactly the same way as racism and sexism. Although critics such as Shelly Kagan (2015) point out that we also differ from other animals in terms of our ability to make plans for the future, to reflect, to act autonomously and so on, none of these features clearly distinguishes all humans from all nonhuman animals – or, more importantly, can be said to ultimately ground moral patienthood. As Jeremy Bentham (1996, 283) argued, “The question is not, can they reason? nor, can they talk? but, can they suffer?”

This idea is well acknowledged by animal advocates, who have criticized the violence often inflicted on individual animals in conservation. One does not need to be a scientist to see that wild animals also face hardship in the absence of human impacts. And yet, animal advocates have typically stopped short of objecting to the suffering of wild animals when it occurs due to non-anthropogenic factors— what we can call ‘natural’ harms. For example, wild animals can be harmed by rivals within their clan; or from predators; they may become sick and die, slowly and quietly; or in times of harsh weather, they might simply die of hunger, cold or exhaustion. But with certain species, such as horses, attitudes differ: many think that standing back in light of severe natural suffering constitutes “inhumane management” (Jacewicz Forthcoming 2025, 52). But the starkest contrast is with ourselves: we clearly think that natural harms are worth avoiding or mitigating when humans are affected, so why shouldn’t we be concerned with these types of harms for all sentient beings? Of course, if environmental managers are to take such ethical questions seriously, their work could become all the more challenging still.

Aim & research questions

This thesis aims to answer one overarching question, broken down into three more specific questions, which are dealt with through the three main parts. The primary aim is to investigate how wildlife managers should respond to the prevalence of suffering in nature

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now and in the near future. Fortunately, this question is not entirely new: there exists now a substantial philosophical literature exploring how we should morally respond to the suffering of wild animals. However, a number of different positions about our moral duties towards wild animals have been presented in the literature, and it is not clear how an environmental manager should understand and reconcile these diverging views. This establishes the first specific question that I will answer in part one of this thesis: does the natural suffering of wild animals imply a *pro tanto* duty to intervene compassionately to reduce that suffering? This question concerns the moral grounds of our duty to assist wild animals.

But even if one accepts that we have a *pro tanto* duty to reduce wild animal suffering,³ a second point of disagreement is whether doing so can be justified in practice, given the great uncertainties involved. Two concerns stand out: effective interventions will need to change the natural environment systemically; and secondly, most interventions will involve new technologies, or at least new applications of those technologies. These raise significant risks. The question addressed in the second part, then, is whether compassionate intervention⁴ can be justified despite these epistemic challenges.

But of course, most environmental managers are also conservationists, and assume the goal of preserving biodiversity and ecosystem integrity. It is worth considering, then, how such an environmental manager who assumes a conservation ethic should understand and react to the suffering of wild animals. For this purpose, in the third part of the thesis I question how the suffering of wild animals should be understood within the conservation ethic known as *Compassionate Conservation*.

Significance

This establishes the three research gaps that this thesis attempts to fill. But showing that research-gaps exist is not sufficient to justify a research project. According to Kitchener (2001), the aim of scientific enquiry is to uncover *significant* truths, which depends in part on them reflecting moral and social values. And although the moral significance of natural suffering in wild animals is one object of investigation in this thesis, the prior claims of certain ethicists give us good reason to anticipate its moral significance. And if it is morally significant, that significance may be very great indeed, due to the incredible numbers of animals in the wild. Although only few attempts have been made to estimate the number of wild animals, wild mammals are thought to outnumber humans by at least one order of magnitude, and together with birds and teleost fishes (for which there is strong evidence of sentience; Lambert et al. 2022) by about three orders of magnitude – in other words,

³ I use the terms ‘wild animal suffering’, ‘suffering in nature’, and ‘natural suffering’ synonymously to refer to the suffering experienced by wild animals and which is primarily (although not necessarily only) caused by natural factors.

⁴ By ‘compassionate intervention’ I mean any intervention to reduce the suffering of wild animals.

outnumbering all humans by over 1000 to 1 (Tomasik 2009). There is a very great potential significance, then, to the questions investigated here.

Outline

In this introduction I provide the theoretical background to the three parts of the thesis. The introduction consists of eight sections, and this is section one. In section two, I provide a scientific and ethical background to the thesis as a whole, covering animal sentience and the reasons for thinking that wild animals tend to have poor wellbeing as a result of natural causes. I show that there remains ambiguity about the ethical relevance of wild animal suffering and its implications for wildlife management. In section three I detail my methodology and assumptions, both at a general level and for each major part of the thesis. In sections four to seven I then provide the background to each part, demonstrating the literature gaps that justify my sub-questions. In section four I summarize the philosophical debate about the kinds of *pro tanto*⁵ duties we have toward wild animals, showing that there is a need to reconcile or mediate the different views. Assuming that some *pro tanto* duty to mitigate natural causes of suffering can be justified, section five provides a taxonomy of interventions. In section six I describe the concerns about the uncertainties and practicability of intervention, showing that there is a need to consider these challenges in greater depth. In section seven I summarize the values that currently inform animal welfare in wildlife management and science. I argue that the framework of compassionate conservation is well placed to bring greater concern for wild animal welfare into wildlife management, but that it is unclear how a compassionate conservationist should respond to the natural suffering of wild animals. Finally, in section eight I sketch the argument I will make over the following three parts.

2. General background: Animal sentience & the importance of wild animal welfare

In this section I provide an overview of the current scientific evidence for animal sentience and welfare. Despite a dearth of research on wild animal welfare, I outline reasons for believing that wild animals generally suffer very poor welfare. This leads me to my research question: how should wildlife managers respond to the prevalence of suffering in nature?

Animal welfare science

Although it passed much of the world by, an important scientific breakthrough was made in 2012 for nonhuman animals. In Cambridge, many of the leading cognitive neuroscientists, neuropharmacologists, neurophysiologists, neuro-anatomists and

⁵ A *pro tanto* duty is one that applies “to some extent”. In this context, that means these duties are claimed to be real, and to apply, but in certain contexts may be overridden by other considerations.

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computational neuroscientists gathered to declare that “nonhuman animals, including all mammals and birds, and many other creatures, including octopuses” possess the neurological structures necessary for consciousness” (Low et al. 2012). This was followed in 2024 by the New York declaration on animal consciousness, signed by a wider and far more numerous group of experts in animal science, social science and the humanities, claiming “a realistic possibility of conscious experience in all vertebrates (including reptiles, amphibians, and fishes) and many invertebrates (including, at minimum, cephalopod mollusks, decapod crustaceans, and insects)” (Andrews et al. 2024).

Consciousness entails an awareness of both internal experiences (thoughts, feelings) and the perception of the external world. Sentience is defined more narrowly than consciousness, as the perception of states that are experienced as being good or bad. Sentience is of particular interest within ethics, because only by having good or bad experiences can we clearly say that a condition is good or bad for that being.⁶ However, since it is not known if there is any organism which is conscious but not sentient, consciousness is often talked about (as in the references above) as a sufficient condition for an animal to be a welfare-subject (a being with a particular level of welfare). Of course, one reason why the acknowledgement of nonhuman consciousness and sentience in western science was of so little public interest may be because, for many who had spent time and gotten to know animals well, this seemed rather obvious. Peoples such as the Buddhists and Jains had recognized animal sentience since millennia, along with many naturalists up to the 19th century, including Charles Darwin in his 1872 work *The Expression of the Emotions in Man and Animals* (Broom 2011). But the views of seventeenth-century mechanists such as René Descartes (1637), which resurfaced in the form of behaviorism in the 20th century (e.g. Watson 1913; Skinner 1953), effectively bracketed questions of consciousness or feeling in animals from scientific discourse. This only changed in 1976 with Donald Griffin’s *The Question of Animal Awareness*, which argued for an evolutionary continuity of mental experience. This view was then cemented by Jaak Panksepp, who demonstrated the neurological basis for emotions in other animals in his 1998 book *Affective Neuroscience: The Foundations of Human and Animal Emotions*.

Since then, animal welfare science has become a respectable field of scientific research, driven by pioneers such as Donald Broom (1991), John Webster (2008), David Fraser (2008), and Marian Stamp Dawkins (2012). These scholars established welfare as a measurable state – not one that can be measured directly, but which can be measured via indicators, such as the ‘five freedoms’ (Fraser 2008). However, the wide adoption of such indicators within animal welfare science masks the disagreement that remains as to how welfare should be defined, both for humans and nonhuman animals.

⁶ While some argue that things can go well or badly for nonsentient organisms, these claims tend to be based on how we use language, rather than on for why a particular condition matters for that organism. The sentientist assumption in this thesis is briefly explained in section 3. For a discussion on views of wellbeing, see Crisp 2021.

At its root, welfare is a measure of how well someone is doing. Among the main theories of wellbeing there are (Crisp 2021):

- Hedonism, which claims that wellbeing is simply the presence of positive subjective feelings and the absence of negative subjective feelings.
- Desire theories, which claim that wellbeing can be measured by the satisfaction of one's desires (whether or not they lead to positive mental states).
- Objective list theories, which claim that wellbeing also consists of objective goods that matter beyond their contribution to one's happiness or their satisfaction of one's desires, such as having health, knowledge or friendship.

I follow Kagan (2009) in assuming a pluralist approach that combines hedonism and objective goods. As Kagan argues, feeling good is the essence of wellbeing – but it must be connected to reality, i.e. to objective goods, which may be intrinsically or instrumentally valuable. Kagan is more skeptical that desires are a core component of wellbeing, since desires can be foolish – but nonetheless acknowledges that desire-satisfaction will often contribute to positive welfare or objective goods. In this way, a practical measurement of welfare can include all three aspects.

But within animal welfare science, different understandings of animal wellbeing have been developed. They are:

- 'Feelings-based' or subjective-experience accounts, which reflect a hedonistic account by assuming that an animal's welfare is determined by how it feels.
- Natural-living accounts, which assume that animal welfare is high if an animal can express its characteristic, natural behaviors. This account is at least close to desire theories, insofar as animals desire to express their natural behaviors.
- Biological functioning accounts, which are concerned with an animal's health and physical functioning. Such accounts can be understood as a narrow version of an objective list theory.

That different understandings of welfare are applied to humans and nonhuman animals is problematic. Firstly, natural-living accounts reflect an appeal to nature: the assumption that what is natural tends to be good. But, as will be elaborated in the next subsection, even where animals are able to live natural lives and express natural behavior, they may suffer greatly. Clearly, some natural behaviors cause intense pain, such as acts of aggression or forced copulation, and the fact that we would not include such behaviors as components of human welfare reveal the speciesism inherent in much of animal welfare science. We do not assume that human behaviors that are natural are inherently good, so we should not do so for other animals either.

Secondly, the emphasis on health and biological functioning reflects the origins of animal welfare science as a practice to assess the wellbeing of farmed animals. Clearly, health and biological functioning are of much greater value to farmers than the animal's subjective

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feelings. Objective-list theories of human welfare do often include health as one component of welfare, but it is not the only component, let alone the main one: we do not wish to be healthy yet unhappy, and moreover, we normally consider a good life to amount to much more than good health. There is no reason not to extend this understanding to nonhuman animals as well.

For these reasons, I take an understanding of animal welfare that combines subjective feelings, objective goods such as health, and desires (instrumentally) to be appropriate. That said, in many cases biological functioning and the expression of natural behavior are *instrumental* to the promotion of positive welfare, and in practice tend to be easier to measure (Fraser et al. 1997). A focus on natural behavior and biological functioning can therefore be justified in practice, even if they do not measure animal welfare directly – and I take the methods used by animal welfare science to date to have tracked animal welfare well.

However, animal welfare science has focused primarily on the welfare of *domestic animals* (i.e. captive wild animals, pets, and farmed animals; Soryl et al. 2021). As a result, the knowledge created from this animal welfare science does not translate well to animals living in the wild (hereafter: wild animals), since they must be assessed remotely; will have different needs to their captive counterparts; consist of a broader taxonomic range; and their sheer number means that welfare analyses must be carried out at the population level (Hecht 2021; Kirkwood, Sainsbury, and Bennett 1994). A similar discipline of ‘conservation welfare’ seeks to extend animal welfare science “to consider the effects of conservation activities on free-living wild animals” (Beausoleil 2020). However, because wild animal welfare is also determined by numerous other factors, conservation welfare does not measure wild animal welfare as a whole. Consequently, there remains a pressing need for research specifically focused on the welfare of wild animals, and the methods to promote it (whether the latter is a desirable goal will be discussed in section 3).

Wild animal suffering

Despite the dearth of observational data on wild animal welfare, it is possible to make some assumptions about the welfare of wild animals by reasoning from basic principles in ecology and evolutionary biology. To begin with, we know that, when conditions are optimal, reproductive rates lead to exponential population growth – but we also know that such conditions are rare, and most species typically produce far more offspring than will survive. Fred Hapgood (1979, 34) illustrates this as follows:

All species reproduce in excess, way past the carrying capacity of their niche. In her lifetime a lioness might have 20 cubs; a pigeon, 150 chicks; a mouse, 1000 kits; a trout, 20,000 fry, a tuna or cod, a million fry or more; [...] and an oyster, perhaps a hundred million spat. If one assumes that the population of each of these species is, from generation to generation, roughly equal, then on average only one offspring will survive to replace each parent. All the other thousands and millions will die, one way or another.

As *Homo sapiens*, we are lucky to follow a *slow* life-history strategy, in which few offspring are born so that parents can invest great care in them, which results in a relatively high chance of survival. But most species adopt a *fast* life-history strategy, whereby they reproduce in larger numbers and invest less care, in the hope that at least one of those offspring will survive and have offspring of its own (Wang, Michalak, and Ackerman 2021). To make matters worse, mortality rates are highest during the juvenile stage in most species (Hecht 2021). Overall, most wild animals die having lived only to 20% of their theoretical longevity (Ibid.). Moreover, such low survival rates are indicative of an intensely competitive environment: one where gaining access to food and other resources, and avoiding threats like predation, is incredibly difficult. As such, we should expect that most of those who do survive into adulthood endure many of the same tribulations.

Of course, suffering is not all that these animals will experience. The early texts highlighting the severity of wild animal suffering (Horta 2010a; Tomasik 2015; Faria and Paez 2015; Ng 1995) often claimed that the lives of most wild animals are not worth living at all because they assumed that the pain of a young animal's death would outweigh any other experiences it has. Heather Browning and Walter Veit (2023) provide several reasons to be skeptical of this assumption: first, most deaths will be short, relative to the length of the animal's life; second, for the most intense deaths (most obviously, predation) a "shock response" may numb the pain that is felt; third, stressors experienced during the animals' lives (such as an awareness of proximate predators, or a disease response) are "not sufficient to assume negative experience without additional evidence linking this to welfare"; fourth, wild animals' lives will also be filled with many positive experiences, often paired with any bad affects (e.g. the pleasure of eating and the pain of hunger); and finally, the baseline, purely ordinary moments of life might be experienced positively, since it is advantageous if animals value their lives and seek to keep living, and especially exploring and discovering.

Browning and Veit's argument presents a compelling case for agnosticism regarding the balance of positive and negative experiences in the lives of wild animals: without really knowing how intense the bad and good experiences of wild animals are, we cannot say whether their lives are bad overall. But their optimism that wild animals will generally have positive lives is less convincing. Their arguments also provide reasons for discounting the badness of experiences that we normally consider terrible for humans, such as severe injury or violent death, the constant threat of danger or starvation. The fact that these experiences might be (respectively) partially numbed; brief; or paired with experiences that are good, does little to dampen their horror, especially for those who die due to such horrors at a young age. While we do not know how other animals will experience these states, it is at least reasonable to suppose that they involve a similar level of suffering. Secondly, while it is certainly possible that purely ordinary experiences of animals are positive, there is no evolutionary necessity for them to be so, since animals are already driven to keep living by negative experiences, such as hunger and fear. Lastly, the positive experiences which Browning and Veit point to, such as the joy of discovery, are equally paired with negative

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ones, such as boredom. Consequently, we still have strong reasons to think that wild animals suffer greatly, and a strong case for agnosticism about whether their lives are worth living. We can also say that, even if their lives are generally worth living, in many regards they are similar to human lives in times of famine or war; one could even argue that the lives of wild animals are likely to be worse, since their mortality rates are higher. This is not altogether denied by Browning and Veit, who acknowledge that “whether or not it dominates, there is a large amount of suffering in nature” (Ibid.).

It is worth noting that this argument does not depend on claims about the badness of death. The situation for wild animals would indeed seem worse if death itself is bad (e.g. as argued by Thomas Nagel in 1970). However, the badness of death has long been disputed, dating back to Epicurus, due to the absence of sensation, preferences or identity after death (Inwood and Gerson 1994, 29). But even if we assume that death itself is not bad, most deaths in the wild will involve suffering, so high mortality rates are still a cause for concern. Relatedly, short average lifespans are of concern not because the length of life itself necessarily matters, but because conditions are often harshest during youth, whereas those animals that are able to live longer lives tend to experience a longer period in which they are capable of finding food and evading predators with less stress (Hecht 2021).

What is clear is that the prevalence of suffering among wild animals is deeply concerning. As stated in section one, the incredible numbers of wild animals – orders of magnitude greater than humans or domesticated animals – magnify the weight of this concern. For that reason, it is not necessary to treat the suffering of wild animals as equal to the suffering of humans to see that its moral implications may be huge. This opens up the specific research questions of this thesis: whether we have a *pro tanto* moral duty to alleviate that suffering; whether that duty translates to real duties to intervene, given the practical challenges; and how any duty to alleviate wild animal suffering can be understood within conservation and wildlife management.

3. Methodology, assumptions, and limitations

The previous section established the scientific and ethical basis for this project: an investigation of the normative implications of wild animal suffering for wildlife management. In pursuing that end, the project adopts a *functional*, and therefore methodologically pluralist, approach to applied ethics. This pluralism is pragmatic rather than meta-ethical: I remain agnostic about whether a single comprehensive moral theory might ultimately be defensible.⁷ Here I will explain how I understand this functional approach, and how it will be employed in this thesis.

⁷ While the functional approach follows naturally from a coherentist understanding of moral justification, foundationalists may also find the functional approach useful as a strategy for seeking common ground in public decision-making contexts. Consider firstly that, where there is disagreement about the foundation of ethics (or if

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The overarching research question – what are the normative implications of wild animal suffering for wildlife management? – is pursued through three more specific questions that correspond to the three core parts of this thesis. The first explores the moral basis for a *pro-tanto* duty to alleviate wild animal suffering; the second zooms in on the practical challenge posed by ecological uncertainty; and the third zooms out to the question of how the duty to alleviate wild animal suffering can be understood within an existing ethical framework for conservation. The thesis thereby builds from a theoretical justification for intervention, to the challenges of applying that duty in the real world, to its integration into conservation ethics. These three levels of investigation justify the use of different ethical frameworks in the analysis.

Pluralism regarding ethical theory is somewhat unusual in a PhD dissertation; more commonly, an author argues for a particular ethical theory, and uses that theory to try to answer all the questions that may arise in their investigation, which ensures unity and consistency. In contrast, I adopt a functional approach to ethical theory, whereby different theories or frameworks are adopted primarily due to their ability to answer different kinds of ethical questions. This functional understanding is shared by pragmatists, who view ethical frameworks as instruments that guide decision-making by orienting the agent around generalized principles of conduct and moral ideals (Pappas 2008).

By understanding theories as guides, rather than directives, their value becomes a function of their ability to highlight ethical aspects of a situation and to help us identify ethical ways of acting. It is important that a theory coheres closely to one's other moral convictions, but it need not do so perfectly. John Dewey likens moral theories to that of a theory or technique one might use to build a tunnel: the best one is that which helps most for building the particular kind of tunnel you want to build, but it is only necessary that it approximates your tunnel; it need not offer a blueprint (Ibid.). Similarly, even if it were possible to use one framework for the analysis of all components of this thesis, since the questions pursued are distinct, different ethical frameworks help to achieve more insightful analyses in each part.

The ethical frameworks are matched to the specific areas of investigation as follows. In the first part of the thesis, I adopt a principlist methodology in order to determine the scope of our duties toward wild animals. Prior attempts to do so from the perspective of different ethical theories have produced incompatible answers, so I attempt to address this with principlism in two ways, through two separate papers. In the first, co-authored with Ivo Wallimann-Helmer, the principles are treated as reflecting common-sense morality, which

there is one at all), it can be useful to entertain different concepts and frameworks, since they may approximate the moral truth even if they do not reflect it perfectly. Secondly, the frameworks employed in this thesis are likely to be largely compatible with certain foundationalist views, and therefore offer ready-to-use tools for practical ethics, rather than having to build from the bottom up. And thirdly, by offering different framings, they have the ability to highlight different ethical aspects of a situation, which a more singular approach might otherwise overlook.

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we argue provides *prima facie* support for positions that acknowledge some positive, natural duty to assist wild animals, although those duties may be overridden by a duty of non-maleficence. In the second paper, I treat the principles as capturing the values shared by different ethical approaches, and thereby providing a widely-agreeable basis for ethical deliberation. I argue that the principles support a *pro-tanto* duty to intervene to mitigate wild animal suffering. The use of principlism was inspired by the project *Principles of Ethical Decision Making in Environmental Practice* (grant number: 197363), of which this thesis is a part, which argues that a principlist methodology can help to solve diverse environmental problems.

In the second part of the thesis, I adopt the narrower framework of welfare consequentialism to fit the more specific question of how uncertainty ought to restrict the duty to pursue compassionate interventions. This consequentialist framework proves useful for this question precisely because it rules out other reasons against intervention, allowing me to focus specifically on the risks of worsening wild animal welfare or reducing our ability to improve it in the future.

In the third part of the thesis, the implications of natural suffering for conservation practice are explored through the framework of compassionate conservation. Compassionate conservation is fitting for this question for three reasons: first, it has already gained significant attention within conservation science; second, it posits a largely plausible synthesis of virtue and action-guiding principles; and third, it assigns animal welfare a central place in conservation. While the framework of compassionate conservation as developed by Arian Wallach et al. (2018) at first glance appears very different to the two previous frameworks, I propose several revisions that create stronger connections between the frameworks. On the understanding of compassionate conservation I propose, it can be viewed as a form of the principlist approach, with the principles re-defined for the environmental context, and with a more explicit link to virtue theory. These similarities and connections are explained in the conclusion of the thesis.

Switching between ethical frameworks, and adjusting them as needed, is well justified with a pragmatist approach to ethical practice. This is because in pragmatism ethical frameworks are not superior to our moral experience. By applying a theory to a particular question, we might then find that it needs revision, either due to it not functioning well in that context or due to it not fitting the nature of the question asked. This may involve an iterative process, which can be seen in part one, where through two papers I explore two different ways of applying the framework of principlism. Similarly, in part two, rather than applying the consequentialist framework dogmatically, I take the concern that most people have for the uncertainty of intervention seriously, and seek a way to account for that uncertainty within the consequentialist framework. But the most significant revision of an ethical framework can be seen in part three, where I propose several modifications to Wallach et al.'s (2018) compassionate conservationist framework, in order to improve internal consistency and extend its notion of compassion to natural causes of harm.

Pragmatism and the functional approach adopt a coherence model of moral belief. This stands in contrast to foundational models, which claim that normative ethics has a foundation either in meta-ethics, or in some set of foundational moral principles. The problem with foundational models is that no single foundation has proven uncontroversial, and they therefore serve as a poor basis for public decision making (DeGrazia 1996). The coherence model assumes a broader and therefore more inclusive basis for moral justification, including considered judgements about particular cases, principles or moral rules, as well as aspects of ethical theories. Within this model, one's diverse ethical convictions can be imagined as a web: the greater the parts cohere, the more stable the structure is; some strands provide more important support than others; and new ideas may be rejected due to their incoherence with one's other beliefs; or they may displace any existing strand if they "increase coherence in one's system of ethical convictions" (Ibid. 14). In other words, new ideas that remove contradictions and better support one's other convictions are likely to be adopted, and those that support others will be only reluctantly let go. The ideal state of coherence between one's convictions is known as 'reflective equilibrium', and is sought out by identifying conflicts, adjusting the web to render them coherent, and testing the result against real or hypothetical cases (Rawls 1971).

To be clear, this should not be read as an argument in favor of the coherence model at the level of moral theory, but only at the level of applied ethics. In other words, I remain agnostic as to whether ethics has a singular foundation – it may or it may not – but assume that *for the purpose of public deliberation* it is better to focus on coherence between beliefs due to the disputed nature of any particular foundation. In this way, it is possible for a foundationalist (one who believes that ethical commitments are justified according to some irrefutable ethical foundation) to employ the coherence model for the purpose of collective decision-making, since although there is a lack of consensus about ethical foundationalism, there is a large degree of convergence about ethical beliefs and principles. A coherentist and ethical foundationalist can reach agreement about practical decisions by justifying them according to ethical principles that cohere well with their other ethical convictions. And it is sufficient that those ethical principles and convictions cohere well, rather than perfectly; a foundationalist may support them even if they only approximate those that would be properly justified by a particular ethical foundation, which allows for a greater pluralism of ethical principles at the level of practical decision making. For this reason, I will proceed by referring to coherence between ethical convictions and principles, but my doing so should not be understood as a commitment to the coherence model as an ultimate form of ethical justification.

With that out of the way, the ethical frameworks adopted in this thesis reflect areas of broad although uncertain support in my web of ethical convictions. While I take each one to capture some important moral truth, adjustments will be needed, and each part of the thesis will contribute to the overall analysis in different ways. The process of seeking reflective equilibrium is therefore applied throughout this thesis. It is most explicitly on

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display in part one, as principlism requires that one specify and weight the principles to bring them into coherence in a particular context. But it remains in use in parts two and three, and how the findings of all three inform each other will then be discussed in the conclusion.

Assumptions

As a cumulative thesis, each paper stands on its own and states its specific assumptions, justifying them where relevant. However, the work as a whole does assume a few positions which may not be explained in each article. To begin with, I have presented speciesism in the previous section as a form of discrimination and argued that we should treat animals from other species similarly *unless* reasons can be given for doing so beyond the mere fact of them being from another species. I assume that this will imply, among other things, treating the suffering of other animals as something deeply undesirable. Although this view has been challenged by many authors (Kagan 2016; Narveson 1977; Carruthers 2011; Leahy 2005), it has many defenders (Singer 2016; DeGrazia 1996; Veit and Browning 2023; Horta 2014a; Jaquet 2022), and has become the dominant view within animal ethics.

Secondly, I assume that we have direct moral duties only towards sentient beings, and not towards nonsentient environmental entities such as plants, species, or whole ecosystems. Sentientism has been argued for by many classical animal ethicists (e.g. Singer 1977; Regan 2010). Alastair Cochrane (2018, 7), however, puts the point in especially simple terms:

There is something different and something special about the capacity for sentience. For a sentient creature is not just an actor which shapes events; she is an individual with a life of her own, a life which matters *to her*. This capacity for conscious experience—this ability to be benefited and harmed and to experience those benefits and harms—is not only remarkable in and of itself, but is of profound ethical significance. And that is why the effects of my actions on a sentient animal matter in a way that the effects of my action on a particular bicycle, for example, do not.

The difference Cochrane is pointing to is that only sentient beings have *inherent* value: they are a source of value themselves because of their affective experiences. In this sense our moral duties to them are direct, whereas duties regarding nonsentient beings, such as ecosystems, are ‘indirect’, because the source of the duty can still be traced back to other sentient beings. In other words, the value of non-sentient beings is of a derivative kind (Jamieson 1998).

In part three of the thesis, I entertain the possibility of direct duties to ecological wholes (e.g. species or ecosystems), however this is only in order to develop an ethic for conservationists, who typically assume that non-sentient lifeforms (biocentrism) or whole parts of the environment (eco-holism) can have inherent value. Although some philosophers advocate for biocentrist and eco-holist positions (P. W. Taylor 2011; Rolston

1988; Naess 1972), their arguments tend to stem from a conflation of intrinsic value (valued for itself) and inherent value (valuable independent of any valuer) (Singer 2003; Regan 1992). They also tend to be expressed inconsistently, prioritizing the value of environmental wholes over individual animals without being willing to sacrifice humans interest in a similar way. If they were to be consistent, then environmental entities would have a far weaker value than the interests, rights or value of sentient animals (Faria and Paez 2019).

While the role of *beneficence* is discussed at length in this thesis, I do make one assumption regarding its form: that it is, to some degree, an impersonal duty. This assumption is not shared by authors such as Christine Korsgaard (2018). Because Korsgaard assumes a purely person-affecting view whereby we only have moral duties regarding identifiable persons, she considers interventions such as genetic engineering, fertility control, or any significant change to habitat to be unjustifiable. This is because any intervention that changes the identities of future animals cannot benefit them personally, and these interventions do precisely that, while posing some risk of harm to presently living individuals. But strictly person-affecting views are highly counter-intuitive. Not only do they prevent us from helping future people as with the interventions just mentioned, they also make permissible some action that would significantly lower the quality of life of future people, as long as it also changes their identities (Parfit 1986). For this reason I take a version of *beneficence* that involves both personal and impersonal obligations to be far more plausible.

Limitations

The greatest challenge for thinking about wild animal suffering from an ethical perspective is the meagre amount of scientific research on the topic. In this thesis I will refer to what research is available and relevant, but as the thesis sits within applied ethics, I will not advance our scientific understanding of wild animal welfare or the ways in which it can be improved. The feasibility of most interventions considered is therefore uncertain. While some – such as wildlife vaccination against disease (Cross, Buddle, and Aldwell 2007) or fertility control (Kirkpatrick, Lyda, and Frank 2011) – are already implemented in the field, and our knowledge of their effects is growing, others – such as gene drives (Bier 2022) – have been demonstrated in the lab only, and for a limited number of species. Whether they can be successfully used to improve wild animal welfare remains to be seen. In part two, I intentionally refer to intervention “now or in the near future” because while several types of interventions are technically possible, they may only be developed for a limited number of species or may lack regulatory approval.

A second limitation is that, by focusing primarily on ethical questions, I also leave the important social and political questions relating to my research question aside. Most importantly, even if we have obligations to pursue compassionate interventions in certain cases, and even if doing so can be shown to be feasible and within an acceptable level of risk, that does not mean that interventions in nature will be socially or politically supported. The disregard for animal welfare in wildlife management is a product of the speciesism that

is ingrained in our society as a whole. Speciesism creates opposition to animal advocacy and leads animal issues to be de-politicized (Rutledge-Prior 2024). Although good work has been done in political theory to imagine how animals would be ideally represented (Cochrane 2018; Donaldson and Kymlicka 2011), we do not yet have a good account of how to move society and our political systems toward that ideal state.

In the following four sections, I will provide a background to the three specific areas of investigation, and a taxonomy of the interventions in nature that are considered in this thesis.

4. Background to part 1: Duties toward wild animals

Although many now share the conviction that all sentient beings are worthy of moral consideration, there remains significant disagreement about the moral relevance of the natural suffering of wild animals. In this section I will outline the diversity of positions on the matter, and argue that a more unifying approach is needed.

The debate from animal ethics

It has often been assumed that those arguing in favor of intervening in nature, in order to mitigate the suffering of wild animals (e.g. Horta 2010b; Pearce 2009; Tomasik 2015), must base their arguments on a consequentialist ethic.⁸ Even if this interpretation is not necessarily true (e.g. see Cowen 2003), it can be said that the primary concern of those advocating intervention is for the welfare of wild animals, and comparatively less attention is paid to the implications of autonomy, rights, justice, or the normative force of relationships.

It is perhaps unsurprising, then, that most of those who have opposed intervention have focused on those other considerations. And not only are there different perspectives on what those values entail in this context, scholars also disagree about their normative priority. Consider autonomy: although it was previously thought to be a quality exclusive to humans, in recent years a number of authors have argued that other animals also have an interest in autonomy – not in the same way as most humans, but in a morally relevant way nonetheless (Jeff Sebo 2017; Healey and Pepper 2021; Beauchamp and Wobber 2014). Autonomy, then, may be a value for wild animals independent from their welfare:⁹ Martha Nussbaum (2006, 26), for example, argues that “part of what it is to flourish, for a creature, is to settle certain very important matters on its own”. Since reducing wild animal suffering likely requires that we control natural environments and the lives of wild animals, doing so may compromise their flourishing more than promote it. But Nussbaum (Ibid.) still accepts that animal welfare and autonomy should be balanced, and argues for the creation of highly managed

⁸ Although this interpretation does not appear to have been stated in the literature, it has often been put to me by colleagues and students.

⁹ Here I use welfare in the narrow sense, as referring to one’s affective state and/or health.

wildlife parks, where wild animals would frequently be given veterinary care and controlled with contraceptive technologies. This, in the end, still entails very significant interventions in nature. Sue Donaldson and Will Kymlicka (2011, 170–77) prioritize autonomy more highly: they argue that because wild animals and wild animal communities are “competent” in securing their own flourishing, and because they resist intervention, we ought to avoid interfering at all, unless their normal ability to flourish is disrupted by some natural disaster or anthropogenic habitat degradation. And this argument translates well to our thinking about other humans: we do normally take autonomy, or sovereignty, to be a reason to refrain from meddling in the affairs of other communities, even if we might not agree with everything they do.

But others dispute that this is what autonomy entails in this context. As Cochrane (2013a), Oscar Horta (2013) and Adriano Mannino (2015) point out, wild animal communities are not often competent at securing the flourishing of their members, since they compete with each other, such that one’s flourishing often comes at the detriment of another’s. It is unclear, then, whether wild animals are able to live autonomously in light of the conditions they face, or whether that autonomy ought to be valued so far as to prevent us from trying to improve their situation.

But different scholars differ not only in the values they prioritize, but also in the theories and ethical concepts they use to support their arguments. For instance, Tom Regan (1983) argues against a duty to mitigate wild animal suffering based on his theory of rights; Clare Palmer (2010) opposes intervention based on a relational ethic; Korsgaard (2018) from a Kantian perspective; and Rosalind Hursthouse (2011) from the perspective of virtue ethics. In more recent years, arguments from more diverse theoretical perspectives have also been made to support the case for intervention (Faria 2023; Paez 2023, 2020; Johannsen 2020). Nonetheless, due to the ethical concepts and normative starting points these arguments rely on, the chance of one argument being widely persuasive appears slim, and for theory-agnostic decision makers, the different perspectives and ethical commitments will likely be impossible to assess. What is needed is some way of bridging these different perspectives, using principles that all can agree on, in order to understand their differences and to figure out the most reasonable way to interpret and weight those competing values.

A lesson from medical ethics

This problem is by no way unique to wild animal ethics. While not always an issue for philosophers, who may be content to pursue their own line of enquiry, a lack of consensus will be concerning to practitioners. And this is especially so for medical practitioners, who often need to make morally weighty decisions affecting others in a relatively short amount of time. And for this reason, when Tom Beauchamp and James Childress developed their theory of Principlism in 1979, it became especially popular with practitioners (Pellegrino 1999). They proposed that ethical decisions could be made by specifying and weighting four principles: *beneficence*, *non-maleficence*, *autonomy* and *justice*. These principles capture the

Background to part 1

core considerations of different ethical theories – most notably utilitarianism, kantianism and justice-based theories, and can work together with other ethical concepts such as virtue (Beauchamp and Childress 2019). The advantage of the theory is that, because the principles are so widely agreeable, people who otherwise have different theoretical inclinations can come to reach agreements on ethical questions. Despite some issues (such as its assertion that the principles reflect a universal morality; Turner 2003), principlism therefore offers a promising way to bring the different perspectives about wild animals together, and move the debate forwards. And that is what I try to do in part one of this thesis.

Environmental ethics

But since this question concerns wild animals, one might wonder whether we can't glean any wisdom from environmental ethicists. Indeed, it was Mark Sagoff – an environmental ethicist - who first argued in 1984 that a sentientist ethic might lead to large-scale intervention and management of nature. However, Sagoff's point in stating this was only to show that a sentientist cannot also be an environmentalist, by demonstrating the tradeoff between promoting animal flourishing and protecting environmental values. By taking nonsentient life, ecological wholes (such as species or ecosystems) or even non-living features to have independent value, environmental ethicists de-prioritize the suffering of wild animals or even disregard it as a moral problem. For example, according to Baird Callicott (1980), ecological wholes have normative priority over individuals, and since the natural suffering of wild animals contributes to the good of ecological wholes, it is both important and morally acceptable. Regan (1983) criticized such views as being a kind of “ecological fascism”, since they allow individuals to be sacrificed in much the same way as fascist regimes thought justified, but which most people find deeply objectionable.

But it is possible to take a middle road: to treat individuals and their wellbeing as having great value, while also valuing ecological wholes or nonsentient entities. Arne Naess (1991), who spearheaded the Deep Ecology movement, viewed the flourishing of whole ecosystems as something to be promoted, but also viewed instances of extreme suffering as regrettable, and worth interfering with – even justifying “planned interference at a greater scale” (135), if carried out with the right intentions and adequate knowledge. However, as Catia Faria and Eze Paez (2019) point out, granting any value to ecological wholes independent of the interests of sentient beings will inevitably lead to conflicts: either Naess would need to allow that, in some cases, the wellbeing of individuals must be sacrificed for the good of whole ecosystems, or Naess would need to admit that ecosystems have no real value beyond the interest of sentient individuals. Since we are only rarely willing to accept costs to human wellbeing for the sake of conservation, Faria and Paez argue that environmentalist views are not generally compatible with sentientism. For this reason, environmental ethics (at least in the form of biocentrist or eco-holist theories) is not well suited for addressing the questions of this thesis. Consequently, in part one of the thesis I

apply the methodology of principlism to adjudicate the positions of various authors who take the moral standing of wild animals seriously, but do not engage deeply with eco-holists.

5. Taxonomy of Interventions

In section six I will entertain the possibility that intervention to reduce wild animal suffering might be morally desirable in theory, and consider the challenges posed by various practical uncertainties. Before I get there, it will be helpful to have an idea of what I mean when I talk about interventions to reduce wild animal suffering. Here I provide a list of those that are considered in this thesis. They range from interventions that are already carried out to a limited extent (although for reasons other than the promotion of animal welfare), to highly speculative proposals; and from those that could be carried out at a small scale to those that necessarily entail large-scale modifications. It is important to note that, even among those who are pro-intervention, there is large disagreement about which interventions should be promoted. Furthermore, since the field is rapidly evolving, this list is unlikely to be complete.

1. Direct Interventions in the Wild

- 1.1. Food & Resource Provision
 - Supplemental feeding: Providing additional food resources during periods of scarcity (e.g., harsh winters, droughts) to reduce starvation.
 - Habitat enhancement: Offering shelters, nesting sites, or resources (e.g., artificial water holes in arid regions) to mitigate exposure-related suffering.
- 1.2 Medical & Veterinary Care
 - Vaccination programs: Administering vaccines to protect against contagious diseases (e.g., rabies, distemper).
 - Anti-parasitic treatments: Targeted use of treatments (e.g., oral anti-helminthic baits) to reduce parasite loads that cause suffering or high mortality.
 - Rescue & rehabilitation: Rescuing injured or orphaned animals and providing care until release or permanent sanctuary placement.
- 1.3. Population Management
 - Contraception or sterilization: Reducing excessive population growth to mitigate resource competition and mass starvation.
 - Reproductive interventions: Adjusting breeding patterns (e.g., discouraging reproduction in boom-bust cycles) to lower juvenile mortality rates.
 - Humane culling: Sometimes discussed to prevent prolonged suffering from overpopulation.

2. Ecosystem Engineering

- 2.1. Modifying Environments
 - Promoting high-welfare ecosystems: rewilding or promoting regime shifts to ecosystems that feature more species with slow life history strategies and fewer with fast life history strategies.
 - Adapting urban environments: e.g. by increasing habitat, and making structures more animal-friendly, such as by using bird-proof glass.
- 2.2. Creating new environments
 - Highly managed wildlife parks: Predator-free wildlife parks in which veterinary care or other interventions might be made.
 - Ecological islands: largely isolated ecosystems where more experimental interventions may be trialed.

3. Genetic & Biological Interventions

- 3.1. Gene Editing & Gene Drives
 - Disease control: Engineering or introducing genes that confer disease resistance (e.g., to reduce suffering from parasites or viruses).
 - Population regulation: Gene drives that reduce reproductive rates to increase the survivorship rate.
 - Genetic welfare enhancement: Introducing or selecting for traits that lower stress responses, reduce aggression, or otherwise diminish suffering.
 - Herbivorizing predators: Genetically modifying predators to become herbivorous and less aggressive towards prey species

6. Background to part 2: The practicability of compassionate action.

Even if we do have a *pro tanto* duty to reduce the suffering of wild animals (i.e. despite competing values, reducing wild animal suffering is ultimately desirable), we might not have a duty to do so all things considered. In specific cases we might face other conflicting values, but a more general problem is the difficulty in predicting the consequences of intervention. One might be skeptical of our ability to significantly or reliably mitigate natural sources of suffering; or more gravely, one might think that intervention risks exacerbating harm. Here I explain why interventions in ecosystems are so hard to predict; why the problems of cluelessness and complex cluelessness are concerning but not paralyzing; and lay out the questions that remain about how to mitigate wild animal suffering.

The unreliability of ecological interventions

Concerns about the practicability and risks of intervening have been expressed since the idea of intervention in nature was first seriously considered. In a response to the first edition of *Animal Liberation*, Singer (1977) wrote that, given humanity's poor track-record of large-scale interventions, "we would be more likely to increase the net amount of animal suffering...than to decrease it". Claims of "anthropocentric arrogance" and "playing God" (Hursthouse 2011) are also commonly heard when discussing the topic, and are best understood as the claim that, by considering intervention, we are tolerating too much uncertainty at too large of a scale, creating an unacceptably high risk of catastrophe.

Few have treated the risks associated with intervention in detail, but one notable exception is Nicolas Delon and Duncan Purves (2018). As they point out, predicting the effects of interventions in ecological systems is challenging because of the complexity and interrelatedness of ecosystems. Ecosystems feature complexity at multiple levels (the levels of genes, organisms, ecosystems etc.) and interactions occur within and between those levels (Levin 1998). The myth of the "balance of nature" is still commonly repeated today, perpetuating the idea that ecosystems are highly ordered and beneficent, yet delicate (Cuddington 2001; Werth and Allchin 2020). If this were the case, then any intervention would be likely to do more harm than good, and would risk catastrophic consequences. Fortunately, this does not reflect the modern understanding of ecosystems. We now know that while ecosystems do have a considerable degree of resilience to change, and although they self-organize to some extent, they are also characterized by "perpetual novelty, and far-from-equilibrium dynamics" (Ibid.). But while this means that a single intervention is unlikely to lead to ecosystem collapse, it also means that our ecological models can only ever approximate reality, making it difficult to predict the consequences of an intervention with accuracy.

Although a single intervention is unlikely to have disastrous effects, reducing wild animal suffering substantially will require numerous interventions (including experimental interventions), possibly at large scales. Such interventions are likely to decrease ecosystem resilience, which is an ecosystem's ability to maintain one regime. And a regime is a range of states maintained by mutually reinforcing processes that enable an ecosystem to rebound from particular changes, providing a degree of stability (Folke et al. 2004). Not all ecosystems exist in a stable regime state, but stability is common. Ecosystem resilience relies on sufficient biological diversity, and in particular, the presence of species that play important ecological functions or that constitute a trophic level (Ibid.). As Delon and Purves (2018) highlight, numerous or very substantial interventions of the kind proposed to reduce wild animal suffering pose a high risk of causing a loss of biodiversity and key species. This risks disrupting ecosystems to the extent that they shift to entirely new states. Given that many ecosystems are already stressed due to climate change and other anthropogenic disruptions, this risk should be taken seriously.

Of course, humanity already intervenes in almost all ecosystems, both for anthropocentric reasons (e.g. to build homes, farms, or roads) and for conservation

Background to part 2:

purposes (such as the reintroduction of species, or the use of poisons to eradicate invasive species). But anthropocentric disturbances often have ecologically catastrophic results. Conservation programs offer a better comparison, since they try to minimize ecological risk, while still sometimes pursuing uncertain interventions due to the urgency of conservation problems. Oscar Horta and Dayron Teran (2023) argue that compassionate interventions could proceed with a similar level of precaution, given a similar evidence base. But a key difference is that conservation programs typically try to return an ecosystem to the way it was, rather than changing it to a new state. So, while some effects of the conservation action (e.g., culling or the reintroduction of a species) are uncertain, a lot is already known about how species will likely interact if the intervention is successful. With interventions to reduce wild animal suffering, we only have a prediction of what the end-result will be, even if the intervention works exactly as intended.

Cluelessness & complex cluelessness

While Delon and Purves focus on the proximate risks of our interventions, one might also express concern about the flow-on effects. If beneficence is owed not just to wild animals now, but to all those that will continue to live, then we should be concerned about *all* the consequences of our actions. As James Lenman (2005) points out, an action's flow-on effects extend into the distant future and are largely unknowable in *any* decision situation. For example, if one were to save an animal from a forest fire, that animal would then go on to interact with other animals, affecting their behavior, whether they reproduce, who with and when. The effects of an action could thereby ripple through generations, such that after some point, we have no ability at all to predict the majority of an action's consequences, and are simply clueless about its overall effect. However, various authors have shown that cluelessness need not prevent us from acting (see Hare 2011, Dorsey 2012, Burch-Brown 2014, and Thorstad & Morgensen 2020). Key among those reasons is that there is a kind of equality in our not-knowing about the flow-on effects of our actions: there will be innumerable long-term, unknown effects for *any* decision, including the decision not to act. The unknowns then add the same (unknown) value to all decision options, and can justifiably be ignored.

But there is yet another way to characterize our uncertainty: when intervening in nature, we seem to also face *complex cluelessness* (McAuliffe 2023). With complex cluelessness, the more immediate outcomes of our actions are not merely uncertain; our judgment of those probabilities is subject to numerous reasons which we are unable to adequately assess, making it possible both that a given action is better than an alternative, and that it is not (Greaves, 2016). When intervening in nature we face cluelessness of this kind, due to uncertainties about how to empirically and morally evaluate the consequences of an intervention. For example, whether we think it likely that a particular species is sentient depends on what we believe is good evidence for sentience, for which there are competing plausible arguments. Similarly, an argument could be given that simpler organisms are likely

to have smaller welfare ranges (due to the smaller range of life choices they face), and therefore suffer less - or one could argue that their welfare ranges might be just as large (due to them still needing a signal for ‘maximal motivation’), and merely be more coarse-grained (Fischer 2024). Each of these questions has multiple competing and plausible answers, but there are too many such competing reasons, and too many questions, to possibly come up with sound judgements for each. This means that we are unable to form an expected-value estimate based on the consequences we can foresee, and are left with a range of plausible expected-value sums that include both those that favor the intervention and those that don’t. We are then forced to make an arbitrary assumption about the expected value of an intervention.

But complex cluelessness is a feature of many more ordinary decisions we face. We face complex cluelessness when deciding “which degree course to sign up for, which job to accept, whether or not to have children, how much to spend on clothes, [or] whether or not to give up caffeine” (Greaves 2016). In such cases, we are not only unsure how likely our decisions are to lead to particular outcomes, but we are also unsure about the reasons which would make those outcomes likely or would affect our assessment of them. Despite this, we are still willing to act in most cases, simply accepting that there is some arbitrariness in the expected-value estimates that we assume. Since we must make a decision, we devote some time to what seem to be the most important considerations, and make arbitrary assumptions about others. Similarly, given the severe suffering that many wild animals face, we should accept that some arbitrariness informs our expected-value estimates and try to act as well as we can in light of it.

The uncertain ethical implications of uncertainty

In practice, then, cluelessness is not a real concern. While complex cluelessness is concerning, it can be understood as simply exacerbating our uncertainty, rather than preventing us from making expected-value judgements altogether.

How concerning should this uncertainty be? Kyle Johannsen (2020) argues that unforeseeable outcomes are morally excusable, and so we need not worry about unforeseeable outcomes when intervening in nature. However, while the exact consequences of novel, large-scale interventions, are unforeseeable, we have very good reason to think that there may be undesirable consequences. In this sense, although not strictly speaking foreseeable, they are not *carte blanche* morally excusable.

A simple way to avoid this problem altogether is just to put off intervention until we have a strong scientific knowledge base on which to act. If the field of wild animal welfare science develops, we will understand the problem and how to address it much better in the future. For this reason, many of those who have discussed intervention have proposed that we focus on research for the time being (Ng 1995; Tomasik 2015; Horta 2010a). But given its scale and severity, wild animal suffering is an urgent problem. To put off intervention amounts to allowing animals living now and in the near future to suffer. Neither is the

Background to part 2:

growth of wild animal welfare science guaranteed, and in the best-case scenario it will take decades before we have a good knowledge base to inform most interventions. We therefore have strong reasons to consider whether intervention can be justified in the meantime, despite the uncertainties we face.

This depends on our moral beliefs as well as our understand of suffering in nature and how we think it can be addressed. First, opinions differ on the validity of concepts such as the act-omission distinction and the idea of precaution more generally (Delon and Purves 2018; Rachels 2019; Soule 2000; Mallatt 2017). Second, the way we think about unintended consequences depends on how bad we take the current situation of wild animals to be, and what value (if any) we place on ecosystem integrity (e.g. see: Rohwer and Marris 2021; Tomasik 2017). And third, how we can reduce our uncertainty depends on what we think effective intervention requires: if we can intervene in a piecemeal way by simply helping individuals we encounter, or if effective intervention requires large-scale interventions to address wild animal suffering's root causes (Horta and Teran 2023; Soryl et al. 2021). Answers to these questions are needed if intervention is to be considered any time in the near future, and are addressed in part two of this thesis.

7. Background to part 3: Animal welfare in wildlife management today

Suppose that compelling ethical principles can show that wild animal suffering is something of concern, and that we should try to alleviate – and suppose that it can be shown that interventions are worth pursuing in spite of the risks – what then for conservation and wildlife management? Compassionate interventions will often conflict with conservation goals. Rather than stubbornly arguing against the values that conservationists hold dear, a pragmatic approach should investigate how concern for wild animals can be integrated into a framework for conservation. In this section I will provide an overview of the values that have shaped, and continue to shape, the fields of conservation biology and wildlife management. In doing so I will show the importance of the new movement called ‘compassionate conservation’, which I contribute to in part three of this thesis.

The disregard for animal welfare in wildlife management

A practical challenge to addressing suffering in the wild is that the suffering of wild animals has, and largely continues to be, disregarded in wildlife management. This is perhaps unsurprising, since only relatively recently have those involved in wildlife management begun to express concern for the harms caused by management practices themselves. During the twentieth century “decision-making in public wildlife management...was grounded in two precepts: sufficiency of biology and expert authority” (Riley et al. 2003).

This changed in the 21st century, as wildlife management came to acknowledge the increasing relevance of diverse stakeholders, including animal advocates. Wildlife management today is defined as “the guidance of decision-making processes and implementation of practices to purposefully influence interactions among and between people, wildlife, and habitats to achieve impacts valued by stakeholders” (Ibid.). Wildlife are therefore seen as beings with agency, but the desired outcomes are still defined by (human) stakeholders. The anthropocentrism of wildlife management is seen clearly in how “the most prominent international conservation organizations do not attempt to promote animal welfare in their mission or vision statements or to safeguard animal welfare in their readily available public policies” (Sekar and Shiller 2020). Neither is the welfare of wild animals safeguarded in the law, which in all countries confers weaker protection to wild than captive animals (Macdonald 2023).

The sparse concern for individual animals is, however, most dramatically revealed by the rate and ways in which they are killed. The numbers are staggering: the USDA Wildlife Services “killed 2.6 million animals (including the ‘unintentional deaths’ of 23 black bears) in 2018 alone, and in Australia, 5,000,000 rabbits died of myxomatosis in the two years after the disease was introduced in the early 1950s” (Ibid.). Many more animals are killed by farmers or hunters who are given licenses by environmental agencies to do their work for them. Animal welfare is also a minor consideration in the methods used: for example, the poison of choice for controlling ‘pests’ in New Zealand, Sodium fluoroacetate (1080), is considered to have an “intermediate” effect on the welfare of brushtail possums, yet is active for on average 9.5 hours until death, causing “retching/vomiting, abnormal postures, which may be indicative of sickness or pain, incoordination and neurological effects including spasms and tremors, escalating to seizures” (Beausoleil et al. 2016). There is also evidence that the majority of possums only lose consciousness shortly before death (Ibid.). What is even more concerning is that there is often little oversight to these programs: only the occasional assessment by governmental departments, who often also promote those activities, or otherwise by charitable advocacy groups with extremely limited capacity (Hampton and Hyndman 2018).

The disregard for animal welfare in conservation biology

The science of conservation biology, which underpins much of wildlife management, has a similar history. When it emerged in the late 1970s, it was conceived of as a crisis discipline: one seeking to gain knowledge not just for knowledge’s sake, but for the purpose of addressing the biodiversity crisis. For this reason, conservation biology is inherently normative in its aims. In 1985 Miche Soulé (1985) declared its normative postulates as: diversity of organisms is good; ecological complexity is good; evolution is good; and biotic diversity has intrinsic value. Animal welfare was left out intentionally: Soulé stated that “conservation and animal welfare...are conceptually distinct, and they should remain

Background to part 2:

politically separate” (Ibid.). While this conception remains largely intact today,¹⁰ an increasing number of conservation scientists are calling for animal welfare to be better incorporated into their discipline (McMahon et al. 2012; Bekoff 2013; Beausoleil et al. 2018; K. M. Ferraro et al. 2023).

Many of the same voices from within conservation biology are also calling for changes to wildlife management. Indeed, as a mission-driven discipline, there is an intimate relationship between the two, and there is good reason to think that conservation biologists may be able to influence practice. There was virtually no discussion about the effects of wildlife management on animal welfare until 2010, when Mark Bekoff published an opinion piece titled "First Do No Harm," referring to the principle of *non-maleficence* that forms part of the framework of principlism. In that paper, Bekoff made a link between *non-maleficence* and the virtue of compassion, calling for an attitudinal change in conservation. Since then, a number of conservation biologists have joined Bekoff in advocating for compassionate conservation (Bekoff 2013; Wallach et al. 2018; Coghlan and Cardilini 2022). Although understandings of compassionate conservation vary, the most prominent among them presents it as an ethical framework that appeals to virtue ethics while also positing four action-guiding ethical principles that demand wildlife managers to treat individual animals as sentient beings capable of suffering (Wallach et al. 2018). Although it has faced significant opposition from within conservation science (e.g. Hayward et al. 2019; Callen et al. 2020), compassionate conservation continues to gather support (e.g. Anja Heister 2022). Because it calls for a nonspeciesist approach to wildlife management, while also accepting conservation goals, compassionate conservation presents an ideal framework within which to investigate the implications of wild animal suffering. This need has also been identified by Adam Cardilini and Simon Coghlan (2022, 12), who write that “compassionate conversation would benefit from further consideration of interventionist and predation questions.” If compassionate conservation can extend compassion to natural sources of harm, then it would offer a more effective to appeal to wildlife managers who both believe strongly in the inherent value of natural ecosystems and need action-guiding principles tailored to conservation practice.

8. Overview of the argument and outline of chapters

The previous four sections provided the background for the three specific areas of investigation in this thesis, as well as a taxonomy of interventions. Here I will outline the three parts that make up the body of the thesis, in which the argument builds from a

¹⁰ For example, the Society for Conservation Biology’s ‘about’ page (<https://conbio.org/about-scb/who-we-are>) asserts “the intrinsic value in the natural diversity of organisms, the complexity of ecological systems, and the resilience created by evolutionary processes”. Animal welfare is not mentioned.

theoretical justification for intervention, to the challenges of applying that duty in the real world, to its integration into an ethical framework for conservation.

Part 1

Part one consists of a conference paper, co-authored with Prof. Ivo Wallimann-Helmer, titled “Challenging Our Thinking About Wild Animals With Commonsense Ethical Principles” (Katz and Wallimann-Helmer 2022), as well as the first full-length paper of the thesis, titled “Widely Agreeable Moral Principles Support Efforts to Reduce Wild Animal Suffering” (Katz 2023). Both papers try to adjudicate the pre-existing philosophical debate about the duties that we have towards wild animals, in light of the suffering in nature. The two papers also address the same problem: that disagreement in the literature arises largely due to the different theoretical assumptions that the scholars make, and both treat the framework of principlism as a way to address that. However, they do so in different ways.

The first adopts Beauchamp and Childress’s (2019) understanding of the principles as capturing the common morality, referred to there as “commonsense” morality. But rather than claiming great authority to the common morality, we argue that the common morality simply provides *prima facie* support for one position, thereby assigning a burden of proof. In the method of principlism, the principles are first specified and then weighted to determine how to act. In this paper we argued only for the specification of the principles, showing that *beneficence*, *respect for autonomy* and *justice* can all be understood to support certain interventions. While *non-maleficence* gives us reasons against intervening, we argue it should be understood not as a blanket prohibition, but more as a demand for precaution. Theories that allow for a positive duty to intervene are therefore considered to align better with commonsense moral principles, giving them *prima facie* moral support.

In the second paper, the same four principles are adopted not for the fact that they refer to a common morality, but for the fact that they capture key values shared by most scholars who have written about wild animals. As widely held values, they help to clarify the differences between different arguments, and to propose a new argument based on the best interpretation and weighting of those principles with regards to wild animal suffering. For theory-agnostic decision makers, as I assume a wildlife manager might be, this should then provide a stronger argument than one that relies on a particular ethical theory. As in the first paper, I argue that the principles support precautionary intervention, with the difference being that they support a *pro tanto* duty to intervene (meaning, one that could be overridden by other considerations in a particular context).

Part 2

Having argued that we have a *pro tanto* duty to pursue precautionary intervention in nature, the question remains as to whether intervention can be justified in practice. Of course, such a broad question depends on the details of each case. But what is striking is that, if suffering in nature is understood not merely as a situational problem but a systemic one, then our

Background to part 2:

understanding of how to limit it in *any* case is limited. The epistemic challenge of alleviating wild animal suffering is then arguably the most significant challenge after having accepted a *pro tanto* duty to intervene. For this reason, I focus specifically on this challenge in the second part of the thesis.

Part two consists of a paper titled “Making Traction on Wild Animal Suffering: Compassionate Interventions in Nature Despite Uncertainty”. As stated in section three (methodology), part two assumes a welfare-consequentialist ethical framework in order to home in on the problem of uncertainty. The question then becomes whether the kinds of interventions outlined in section five (taxonomy) will reliably improve wild animal welfare, and whether our uncertainty is morally tolerable. I argue that many of the smaller-scale interventions proposed to date are unlikely to be effective, while the most effective interventions are likely to have significant and uncertain ecological effects. This is problematic, because in order to preserve options for intervention in the future, we should avoid causing irreversible ecological changes. However, I suggest that a precautionary approach can still allow for intervention where the benefits are expected to significantly outweigh any ecological risks.

Part 3

Parts one and two establish the ethical case for intervention, assuming that the reader is a theory-neutral acter, in a position to consider intervention in nature, and assuming a sentientist account of moral value. But those who are in positions to consider compassionate interventions are most often wildlife managers, who tend to be committed to environmental values (as discussed in section seven) and have a training in conservation biology. It is therefore important to consider how concern for the welfare of wild animals can be incorporated into a conservation ethic that assumes conservation values/goals.

This is the topic explored in the third part of the thesis, through the paper “Taking Natural Harms Seriously in Compassionate Conservation”. There I turn to compassionate conservation, focusing on the framework proposed by Wallach et al. (2018). Wallach et al. take virtue ethics as their inspiration – hence the focus on ‘compassion’ – but link that virtue to a set of action-guiding principles. I address some inconsistencies in the framework, and argue that the suffering of wild animals is also worthy of compassion. I end by showing that concern for wild animal suffering creates conflicts with conservation values, and suggest ways that these competing values can be balanced.

Conclusion

I will conclude the thesis by integrating the findings of the three parts to answer my overarching research question: how should wildlife managers respond to the prevalence of suffering in nature now and in the near future. In doing so, I will bring together the three frameworks – principlism, welfare-consequentialism, and compassionate conservation – and discuss how they work together within a pragmatist approach. I will show how they

inform and contribute to each other, and indicate the broader contributions this thesis makes to the ongoing debate about wild animal suffering. Finally, I will highlight open questions for future research.

Part 1: Potential duties in light of the suffering of wild animals

Introduction

As described in the introduction to this thesis, much of the ethical literature regarding wild animals presupposes some theoretical commitments. Either our moral duties can be purely cashed out in terms of what best promotes wellbeing; or in terms of the relationships we have with others; what best respects their rights, and so on. Given the range of ethical perspectives present, even if one is inclined towards a particular theoretical approach, it would be prudent to treat one's own convictions with uncertainty and consider other values or principles. A theory-agnostic approach is likely to be particularly appealing for conservationists and wildlife managers, who may find the array of positions disorientating.

In this first part of the thesis, I take a leaf from the book of medical ethics, adopting the framework of principlism to capture the ethical values of different theories and to deliberate about how they should be understood and balanced in this context.

The first article, 'Challenging Our Thinking About Wild Animals with Commonsense Ethical Principles', was co-authored together with Ivo Wallimann-Helmer, and published in *Transforming Food Systems: Ethics, Innovation and Responsibility*, the conference proceedings of the European Society of Agriculture Food and Ethics, held September 2022 in Edinburgh. In it, we argue that the principles reflect a common-sense approach to ethics that provides *prima facie* force in favor of certain positions. On that basis, we argue that a plausible theory must allow for positive duties of beneficence and autonomy toward wild animals, while allowing that the duty of *non-maleficence* may give us reason against intervention.

The second article, for which I am the sole author, is titled 'Widely Agreeable Moral Principles Support Efforts to Reduce Wild Animal Suffering' and was published in the *Journal of Applied Animal Ethics Research*. In it I build on the arguments of article one by arguing that the same principles should also be regarded generally agreeable to those involved in the debate on wild animal suffering. As widely agreeable principles, they can help to adjudicate the practical debate without needing to resolve the dispute between ethical theories. I go further than paper one by specifying and weighting the principles. This leads me to argue that, while *non-maleficence* requires a precautionary approach, our duties of *beneficence*, *autonomy* and *justice* appear strong enough in this context to establish a *pro tanto* duty to intervene in nature, albeit with precaution.

Challenging our thinking about wild animals with commonsense ethical principles

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Challenging our thinking about wild animals with commonsense ethical principles

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Abstract

Significant disagreement remains in ethics about the duties we have toward wild animals. This paper aims to mediate those disagreements by exploring how they are supported by, or diverge from, the common-sense ethical principles of *non-maleficence*, *beneficence*, *autonomy* and *justice* popular in medical ethics. We argue that these principles do not clearly justify traditional conservation or a ‘hands-off’ approach to wild-animal welfare; instead, they support natural negative duties to reduce the harms that we cause as well as natural positive duties to promote the welfare of wild animals.

Keywords: non-maleficence, beneficence, autonomy, justice, duties

1. Introduction

Wild animals are all around us, far outnumber us, and are impacted by us in numerous ways. Yet if one consults the ethical literature, one will find significant debate about the types of moral duties we have towards them (or if we have any at all). While various positions on this question have been produced, their incompatible starting positions often lead to wildly different conclusions. Although a fundamental resolution between these theories is unlikely, some positions claim greater plausibility by arguing that they cohere better with our basic moral beliefs.

The aim of this paper is to present a *prima-facie* argument in favor of positions which claim natural negative and (more importantly) natural positive duties toward wild animals by showing that they can be supported by ‘common-sense’ ethical principles. The argument is *prima-facie* in that common-sense morality gives us reasons in favor of certain views, absent any particular compelling or agreed-upon ethical theory.

We proceed as follows. First, we state our working assumptions. Secondly, we categorize theories within wild-animal-ethics according to the types of duties they propose. Thirdly, we describe four principles often taken to represent common-sense morality: *non-maleficence*, *beneficence*, *autonomy* and *justice*. Finally, we discuss how each principle should be understood with regards to wild animals and the types of duties each principle points towards.

2. Working assumptions

Part 1

As a starting point for our argument, we assume a sentientist account of moral status. Sentientism is the position that sentience is necessary and sufficient for moral status. Sentient beings are the source of value, however other living or non-living things may nonetheless have derivative and intrinsic value (Jamieson, 1998). As a consequence of this view, it is hard to justify discrimination on the basis of species alone, and it follows that, *ceteris paribus*, one should give the interests or rights of animals from different species equal consideration (Horta, 2010c).

3. Different views within wild-animal ethics

We group ethical theories about wild animals into five categories, based on the types of duties which they claim should guide our moral thinking toward wild animals. This categorization is not meant to be exhaustive, but simply to capture the different ways of thinking about wild animals. The order of the categories reflects a general trend from least to most demanding.

1. No duties.
2. Indirect duties.
3. Natural negative duties.
4. Natural negative and special positive duties.
5. Natural positive and negative duties.

Categories 1 and 2 are anthropocentric positions which deny the moral status of animals and are incompatible with our non-speciesist starting assumption. Category 2 includes theories inspired by Immanuel Kant which claim that, while we have no duties to animals themselves, harming them is wrong indirectly due to the effect it can have on our moral character.

Category 3 theories claim that we have a natural negative duty not to harm wild animals, but no positive duties to benefit them. Natural duties are grounded in the intrinsic nature of sentient beings, rather than any other fact about them, and for most theorists the specifically relevant aspect of animals' nature is their sentience. The rights-theorists Tom Regan (1983) and Gary Francione (2008) fit into this category. Regan (367) argues that we should “protect wild animals from those who would violate their rights”, but that “being neither the accountants nor managers of felicity in nature, wildlife managers should be principally concerned with *letting animals be*”. Similarly, the virtue-ethicist Rosalind Hursthouse (2011, 15) argues that, even when wild animals face great hardship, “respect still entails leaving them to live their own form of life”.

Category 4 theories agree with the natural negative duties of category 3, but argue in addition for special positive duties towards wild animals. Special duties are owed due to some non-intrinsic fact about an individual. The prototype of this category is Clare Palmer

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(2010), who argues that we only have positive duties towards wild animals when we have established certain relationships with them. In the absence of such special conditions, no positive duties pertain. Alongside her, Donaldson and Kymlicka (2011, 156-210) argue that the relationships wild animals have within self-regulating communities, and how they refuse human interference, gives us duties to respect their autonomy. While Donaldson and Kymlicka do accept natural, rights-based positive duties towards domesticated and 'liminal' animals, they argue that our relation-based duties to wild animals cancel out those positive duties in most cases, placing their theory most suitably in this category.

Finally, category 5 theories argue for both natural negative and natural positive duties. It is this category which we argue is best supported by common-sense ethical principles. Here the very nature of wild animals gives us reasons not only to avoid harming them, but also to promote their flourishing or well-being. Most notable in this category are Oscar Horta (2017), Martha Nussbaum (2006), and Jeff McMahan (2015). Importantly, claiming that we have natural positive duties toward wild animals does not exclude the possibility of having special duties in addition. This is evident in Cochrane's theory (2018), which claims that all sentient animals have rights based on their interests, however animals' political entitlements are based on their relationships with us. Although relationships play an important role in Cochrane's theory, all wild animals are said to have relationships with humans which justify political rights, making the question of sentience ultimately more decisive for defining our duties toward them.

4. The role of common-sense ethical principles

It is often thought that the coherence of an ethical theory to our ordinary moral thinking gives it greater *prima-facie* plausibility, but our ordinary moral thinking is notoriously prone to logical fallacies and biases. Capturing the common-sense morality in ethical principles and then applying them systematically can help to avoid such errors and provide a more solid basis for defending particular theories.

In the medical field, the four principles of *non-maleficence*, *beneficence*, *autonomy* and *justice* have gained wide popularity due to their ability to capture the moral concerns of different people both within academia and practice. We follow Beauchamp and Childress (2019) who argue that they capture the values of common-sense morality, at least in western democratic societies. They can be defined as follows:

1. *Non-maleficence*: abstain from causing harm to others.
2. *Beneficence*: act for the benefit of others (contribute to their health, welfare or flourishing).
3. *Autonomy*: support and respect autonomous choice of others.
4. *Justice*: ensure that individuals are treated fairly (treat equal cases equally and unequal cases unequally).

Part 1

As this paper remains at a very general level, looking at all the ways we can consider wild animals, we provide only a broad discussion of each principle and the duties they might entail. For ethical guidance in particular situations these principles would need to be further specified and then weighted against each other.

4.1 Non-maleficence

Beauchamp and Childress define *non-maleficence* as the avoidance of inflicting harm, in contrast with preventing harm which is captured by *beneficence*. Reasons to avoid harming others are therefore considered separately from reasons to protect or improve others' welfare, and *non-maleficence* establishes greater reason to avoid causing harm. In the environmental context this justifies taking a precautionary approach in decision-making, especially due to the complexity of ecosystem processes and our limited understanding about the determinants of wild-animal welfare.

All theories in animal ethics that are compatible with sentientism (categories 3-5) consider harms to sentient wild animals to be problematic regardless of context or other special conditions, and a straight-forward understanding of *non-maleficence* across different contexts implies no different. We therefore take this principle to uncontroversially establish a natural negative duty. It implies that we should identify harms and make efforts to reduce them – not merely intentional harms like hunting, but also unintentional harms, which account for a greater amount of wild-animal suffering (Fraser, 2019). This has large implications for many human activities: it gives us reason to consider and take seriously the wellbeing of wild animals whenever designing, constructing and managing urban areas (Animal Ethics, 2021); to reduce the harms to wild animals in our agricultural systems; to limit deforestation dramatically; and to prevent the introduction of alien species.

4.2 Beneficence

Beneficence is about improving the welfare or flourishing of others. Beneficence has been described both as a natural duty (e.g. owed to all sentient beings), and as a special duty (e.g. based on particular relationships or proximity). Here wild-animal ethicists tend to disagree, with those in category 5 understanding beneficence as a natural duty, and those in category 4 understanding it as a special duty. As a principle of common-sense morality, *beneficence* must be owed in some form to at least some wild animals, giving *prima-facie* reason against the validity of categories 3, 2 and 1.

To assess whether beneficence is best understood as a natural or special duty, it is useful to compare its application to human cases. We believe that wild animals are best compared to distant strangers because, in virtue of being wild, we typically have no relationship or shared background with them. Fortunately, there is a vast literature on the duty to aid distant strangers, and while there is significant disagreement about how much we owe to distant strangers, virtually all writers agree that some duty of beneficence is owed (Hadley, 2006). This is not because of any special relationship but because they matter, morally.

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Similarly, with nonhuman animals, some may argue that we have weaker duties towards them, just as we have weaker duties towards strangers when compared to friends. But it is not clear why the species category would affect the kind of duty beneficence is; rather, beneficence seems to extend to all who can be benefited.

In the case of wild animals, many authors have argued in recent years that most individuals endure very poor welfare (Horta, 2015; Ng, 1995; Tomasik, 2015). Wild animals frequently struggle to find food, water, and shelter, and face disease and violence from predators, parasites, members of other species or even their own. Because such suffering arises due to fundamental conditions of natural ecosystems, such as high reproductive rates and the scarcity of resources, in most cases it is not clear that there is any feasible action we could pursue to mitigate this suffering at little cost to ourselves or other sentient animals (Horta 2015). Nonetheless, there are at least some cases where such opportunities arise, such as encounters with injured or orphaned animals who can be rescued and taken to a rehabilitation facility. Moreover, we argue that Singer's postulate suggests that as a society we at least have a duty to research potential interventions in case effective and low-risk options can be identified.

Some writers such as Donaldson and Kymlicka (2011) have argued that other considerations, such as respect for autonomy, not only oppose duties of beneficence for wild animals but cancel them out completely. This question will be dealt with in the following section.

4.3 Respect for autonomy

The principle of *respect for autonomy* motivates us both to respect the autonomous choices and wishes of others and to support others to be able to express their autonomy. Consequently, it leads to both positive and negative duties. As a negative duty, *respect for autonomy* appears to be natural: we should respect individuals' informed choices or desires simply because they are agents capable of choice (i.e. have the ability to act intentionally), and this appears to apply to all agents regardless of species, relationship, distance and so on. Not all sentient wild animals have the ability to act intentionally, so the principle of *autonomy* will not apply in all cases. Nonetheless, the principle applies as long as at least some do (e.g. see Beauchamp and Wobber, 2014, for an argument for autonomy in chimpanzees).

But it is less clear in what cases we have positive duties to support the autonomy of wild animals. Donaldson and Kymlicka (2011) argue in favor of a very limited natural, positive duty on the grounds that, *qua* beings with a good that is promoted by autonomous living, wild animals confer on us a negative duty to intervene in their communities as little as is necessary. This is because, they argue, wild-animal communities are able to regulate themselves well, and because species have adapted to be able to survive despite predation and other environmental pressures. This negative duty (with the exception of natural disasters) cancels out any positive duties of beneficence we might owe wild animals.

Part 1

Contrary to Donaldson and Kymlicka, a proper understanding of natural processes makes clear that in most cases wild animal communities are not able to safeguard the wellbeing of their members. Most wild animals are unable to meaningfully express their autonomy due to the types of environmental pressures described in the previous section (Horta, 2013; Mannino, 2015). To use the terminology of Raz (1986, 32), one cannot be considered to have an “adequate range of options” when one is struggling (and often failing) to survive. As a consequence, it seems that *respect for autonomy* gives us much stronger positive, natural duties to help agency-possessing wild animals than Donaldson and Kymlicka assume. At the very least, *respect for autonomy* cannot be said to cancel out duties of beneficence in all cases, and it seems that in many cases it actually justifies natural positive duties.

4.4 Justice

The principle of *justice* mainly concerns fair distribution and treatment. For that reason, as with others in the literature (e.g. Johannsen, 2021), we focus on distributive and rectificatory justice. However, it is unclear whether the concept of distributive justice should be extended to wild animals.

Most conceptions of distributive justice define it according to a particular community or political group, thereby making it a special positive duty. Cochrane (2018) argues that, because we affect wild animals in numerous ways, we should consider them part of our community, giving them the right to a fair distribution of resources. However, it is not clear why merely affecting someone should make them part of your community. Alternatively, it could be argued that only rectification is needed for harms. Because this duty applies only where an individual is directly responsible or complicit in a harm, it is also best understood as a special positive duty. It may be then that we should avoid harming wild animals, try to rectify the situation when we do, but that ensuring a fair distribution, being based on community membership, in general is not required.

Due to the widespread nature of wild-animal suffering, if we were to extend distributive justice to wild animals, a fair distribution might be incredibly demanding. But assuming that distributive justice does not apply to wild animals, rectificatory justice may more intuitively capture what we think we owe wild animals. Indeed, environmental conservation can be understood as rectification. Still, with the widespread destruction of ecosystems and the effects of climate change, it seems that a very great amount is owed (Hettinger, 2018). But conservation faces two challenges: firstly, because ecological restoration takes time, many individuals who deserve compensation will not survive to benefit from it; and secondly, due to natural wild-animal suffering, conservation might not benefit the victims of injustice (if other competing populations increase) or it might cause harms to others. Nonetheless, rectificatory justice does support other interventions not necessarily aligned with conservation, such as rescuing animals from human-caused environmental disasters and caring for or rehabilitating them.

5. Conclusions

Two of the common-sense ethical principles discussed in this article supported natural positive duties towards wild animals (*beneficence* and *autonomy*), while two supported natural negative duties (*non-maleficence* and *autonomy*). Finally, the principle of *justice* supported positive special duties. Considered together, our application of the principles indicates that theories suggesting both natural negative and natural positive duties best cohere with our common-sense moral thinking. This analysis lends *prima facie* support for theories of category 5. Readers who disagree must show a more compelling account of common-sense ethical principles, or alternatively face the burden of proof to demonstrate why a particular theory of category 1-4 is more compelling. This conclusion will be surprising to many writers in the field, as it shows that positions in categories 1-4, which many defend on the basis of their coherence with common morality, are not in fact supported by common-sense ethical principles.

Widely Agreeable Moral Principles Support Efforts to Reduce Wild Animal Suffering

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Abstract

Every day, wild animals suffer and die from myriad natural causes. For those committed to non-speciesism, what wild animal suffering entails for us morally is a question of the utmost importance, and yet there remains significant disagreement at the level of normative theory. In this paper I argue that in situations of moral urgency environmental managers and policy makers should refer to widely agreeable moral principles for guidance. I claim that the principles of *beneficence*, *non-maleficence*, *autonomy* and *justice* do well to capture our widely-held values, and that the first three principles all support large-scale interventions in nature. I then argue that balancing these against *non-maleficence* will still allow for the careful consideration of interventions, although is unlikely to support lethal methods. This argument is intended to provide a reasonable starting point for theory-agnostic decision-makers, and places the burden of proof on those who oppose intervention.

Keywords: animals, autonomy, beneficence, justice, nature, non-maleficence, principles, wild

1. Introduction

Most wild animals live very difficult lives, and often dramatically foreshortened ones. On some accounts, this is enough to establish stringent moral duties to alter natural environments in order to aid them. Unsurprisingly, this claim has generated an ongoing debate – yet these animals are suffering now, and one way or another the decisions that environmental managers make will determine their lives. Even if we only consider intervening in the future, deciding now whether to scale up the research needed to conduct such interventions could make a crucial difference for an uncountable number of future animals. For these reasons, the question of intervention should be understood as one of urgency.

In order to determine the appropriate response to the suffering of wild animals, one might refer to top-down theories such as utilitarianism or Kantian ethics, so-named because of their ability to be systematically applied from the level of theory down to the level of practice. However, of these theories, no single approach is supported by a majority of people, and their stark differences make it unlikely that any decision based on a particular

theory will make sense to those convinced of another. Fortunately for decision-makers, there is more in the ethical toolbox than top-down theories. What seems preferable for practical decision-making is an analysis of the problem with reference to mid-level ethical principles, representing widely-held values. This approach is common in medical ethics, where the most well-known form is referred to as ‘Principlism’. While I do not claim that a principlist analysis can disprove a top-down theory, it nonetheless has several practical advantages: first, by relying on widely-held values it offers a common moral starting point, and language, which most in the debate should be able to agree on. This allows the debate to focus directly on the moral issues, rather than on differences between incompatible theories. Secondly, by capturing those values shared by those in this debate, the principlist analysis provides greater credence to certain positions while assigning a greater burden of proof to others. This allows competing positions to be prioritized and acted on in cases of urgency. Lastly, by considering the application of these values in context, principlism moves the debate forward to consider *which* interventions may be acceptable, and for what reasons.

In this paper I use a principlist analysis to argue in favor of large-scale interventions to help wild animals. I begin in section two by outlining the problem of wild animal suffering, and in section three I describe a few key interventions to address the problem. In section four, I describe the stark disagreements that exist, and as a solution I propose in section five that widely-agreeable moral principles can play an important role in guiding decision-makers, and that the principles of *beneficence*, *non-maleficence*, *autonomy* and *justice* are apt to do so. In the sixth section I will apply these principles to the problem of wild animal suffering and argue that together they support non-lethal interventions in the near-term future.

2. The Situation of Animals in the Wild

Numerous ethicists have in recent years pointed their attention to the vast scale of suffering in nature (e.g., Ng 1995; Cowen 2003; Hadley 2006; Horta 2010a; Mannino 2015; McMahan 2015; Faria & Paez 2015; Pearce 2015; Johannsen 2020; Faria 2022). However, the idea of suffering in nature is not new. For example, in *The Origin of Species* Darwin (1859, 55) wrote that “each species, even where it most abounds, is constantly suffering enormous destruction at some period of its life”. Consider the following (Hapgood 1979, 34):

All species reproduce in excess, way past the carrying capacity of their niche. In her lifetime a lioness might have 20 cubs; a pigeon, 150 chicks; a mouse, 1000 kits; a trout, 20,000 fry, a tuna or cod, a million fry or more [...] If one assumes that the population of each of these species is, from generation to generation, roughly equal, then on average only one offspring will survive to replace each parent. All the other thousands and millions will die, one way or another.

With such low survival rates most will die young, when they are most vulnerable, and those that survive will do so despite the intense competition and environmental pressures

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they are faced with (Dawkins, 2008). Of course, the struggle for existence will be orders of magnitude worse for species with extremely high reproductive rates, such as tuna or cod. Nonetheless, as all species reproduce at a rate which (under ideal conditions) would lead to exponential growth, competition and high mortality rates are characteristic of virtually all wild populations.

What does this mean for the experiences of individual animals? There is now a scientific consensus on the sentience of mammals, birds, and octopuses, and more recently, strong evidence has arisen for the sentience of fish, other cephalopods (the class containing octopuses), reptiles and decapod crustaceans (the order containing lobsters and crabs) (Low et al., 2012). The evidence of sentience in amphibians and arthropods remains more limited (DeGrazia, 2020; see also Browning and Birch, 2022, 2–5). Given this uncertainty, Birch (2017) has argued that we should take a precautionary approach when attributing sentience, which would justify treating at least most wild vertebrate species as well as decapod crustaceans and octopuses as sentient. Unfortunately, there is no scientific discipline dedicated to the welfare of wild animals, so little can be said about their experiences with certainty. For this reason, the claim made by authors such as Ng (1995), Horta (2010a), and Tomasik (2015) that wild animals’ lives are “net negative” is dubious – for even assessments of whether particular human lives are worth living are controversial. But such a judgement is also unnecessary, as the high mortality rates and intense competition in nature alone give us strong reason to expect a high frequency and intensity of suffering. While there is disagreement about whether suffering in nature is morally bad *all things considered*, in the sense of requiring action, it is not controversial to say that it is bad *pro tanto*, in the sense that there is something lamentable about it. In this sense, at least, it calls for our ethical attention to be examined further, to investigate whether it deserves a moral response.

There are at least three reasons why suffering in nature tends to be under- appreciated.¹¹ Firstly, we tend to romanticize nature – we perceive nature as valuable, and of wild animals as being free and happy (Horta 2010a). Secondly, when we think of wild animals we typically think of large, charismatic mammals, which tend to have lower reproductive rates than smaller mammals or those of other classes (Soryl 2018, 20). Thirdly, we tend not to notice wild animals suffering both due to an inability to understand them (due to the absence of a shared language), due to the relatively few encounters that most modern people have with wild animals, and because they, seeing us as potential predators, hide their suffering from us.

Furthermore, the scale of the problem is easy to underappreciate. Rough estimates of the number of wild birds sit at around 100–400 billion, and mammals are higher at over 500 billion (Tomasik, 2009). When we move to reptiles, amphibians, and fish, the estimates rise by several orders of magnitude. The number of wild individuals that are likely to be

¹¹ By “suffering” here I mean to capture all unpleasant experiences, including pain, discomfort, frustration and so on.

suffering, then, is beyond all reasonable comprehension. It follows that if their suffering deserves any moral consideration at all, then it deserves very serious consideration.

3. Interventions to Alleviate Suffering

Given the concerning nature of this suffering, it is worth considering what options have been suggested to prevent it. Some approaches focus on helping individual animals, such as rescuing those we find trapped or providing feed in times of scarcity (Animal Ethics, 2023). These actions also typically increase the chance of those animals surviving. But we should be skeptical of such proposals, given that suffering in nature is largely caused by limited resources and high reproductive rates. Preventing the deaths of a few individuals will raise the population above the environment's carrying capacity, resulting in fewer resources available and more competition. This essentially transfers the likelihood of death from some individuals to others, and without knowing exactly what pressures they will face we cannot say that the latter will suffer less than the former.

Addressing suffering in nature more fundamentally requires large-scale interventions, and here I will focus on three forms of intervention which I take to be the most promising. Although it would be beyond the scope of this paper to discuss all other proposals in depth, I want to first briefly give my reasons for not including two proposals which are often mentioned in the literature.

Firstly, Pearce (2009) suggests the idea of genetically engineering predators to be herbivorous. This proposal faces the serious challenge that it entails introducing a completely different herbivorous species into an ecosystem, which would impose significant ecological risk. It seems both easier and less risky to simply remove the predators from that area (via hunting or contraception).

The second proposal comes from Faria and Horta (2020), who suggest that we promote ecosystems with large herbivores, such as elephants, which consume a lot of resources and thereby exclude the presence of smaller animals. Their argument is that smaller animals tend to live for a shorter time and suffer more, as their deaths constitute a greater proportion of their lives, so promoting ecosystems with large herbivores would reduce suffering overall. However, it is not clear that larger species such as elephants do in fact decrease the abundance of smaller species: Guldmond, Purdon and van Aarde (2017), who they rely on for this claim, themselves found no correlation between the presence of elephants and the abundance of smaller mammals. More empirical data is needed to support this idea before it can be seriously considered.

The large-scale interventions I want to focus on instead are vaccination, population control, and the eradication of parasites and predators. In the rest of section 3 I will describe these interventions in detail both to demonstrate that they have a real chance of achieving their ends and to make their more problematic features salient.

But before I proceed, it is necessary to describe the emerging technology of gene drives, as gene drives are relevant for all three types of intervention. Also known as 'selfish genes',

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gene drives are inserted into a few individuals who are then released to breed with a wild population, and through breeding the inserted gene can become dominant over several dozen generations even if it is deleterious (Esvelt et al. 2014). This is because gene drives bypass Mendelian inheritance “by cutting the homologous chromosome, inducing the cell to copy them when it repairs the break” (Ibid., 1). Although gene drives are a new technology still in the early phase of development, introducing them in the wild is being seriously considered for the near future (in order to eliminating disease-bearing or economically destructive insects) (Bier 2022, 17). Although gene drives carry risks, there is the potential to control or reverse them, or to first experiment with time-limited (also called ‘daisy-chain’) drives (Johannsen 2020, 69).

3.1 Vaccination against Diseases

Arguably some of the worst suffering in nature is due to particularly horrible diseases, which can cause intense pain over a long period of time. While vaccination against diseases would not solve the problems of competition and limited resources, it could nonetheless eliminate some of the worst suffering. Vaccinating wild animals has already been carried out for decades to prevent the spread of zoonotic diseases to humans (Baer, Abelseth & Debbie 1971). While dart-administered vaccinations involve a significant cost, the development of oral vaccines which may be distributed by air, or immunization through the use of gene drives, offer the possibility of more efficient and widespread protection against disease. As vaccination reduces mortality, in most cases it should be combined with population control.

3.2 Population Control: Hunting, Contraceptives and Gene Drives

As the main cause of suffering in nature is the intense competition for resources which results from high reproductive rates, the most logical solution is to limit populations to a level which ensures enough resources for each individual to flourish (Liedholm 2022, 756). Many wild populations are already controlled through lethal methods such as hunting and trapping. This often involves hunting for sport, but when hunting is carried out professionally shooting can “achieve a high frequency of immediate insensibility while achieving near-zero nonfatal wounding” (Hampton, Warburton & Sandøe 2019). The goal of lethal control is typically to keep the population at a level that promotes either some environmental or social value (Heffelfinger, Geist & Wishart 2013), but reducing the population to a level below the carrying capacity also reduces mortality rates and competition. The flourishing of wild animals could presumably be promoted to an even greater degree if this level was set with the goal of promoting animal welfare, and population management could be expanded to new populations.

Of course, it is often thought that death itself is a harm, and for people who assume such a view, contraceptives may present a promising alternative. Contraceptives are already used in several species to control their populations, such as the white-tailed deer in urban areas of the US (Asa & Moresco 2019). Currently the most promising technology for future

control is with non-endocrine immunocontraceptives, which are administered either with a dart, orally, or oro-nasally; and there is also research into administration via infectious vectors (Ibid., 7). While current applications are limited and comparatively costly, more scalable methods may become available in the near future.

The fertility of a target species could also be reduced using gene-drives, for example by altering the sex ratio (Esvelt et al. 2014, 3). This has the potential to lower reproductive rates with greater efficacy and with less impact on animal welfare than either contraceptives or hunting.

3.3 Eradication of Parasites and Predators Using Gene Drives

Gene drives could also be used to eliminate an undesirable population completely and without causing any direct harm. This could be considered for parasitic species, which can cause significant suffering to their hosts over the course of their lives while playing only a minor ecological role (Johannsen 2020, 73). There is currently no strong evidence of sentience for most parasites, and gene drives would pose no direct welfare impacts in any case because they would simply cause the population to breed itself out of existence.

A similar argument can be made for predator species. While the violent death at the hands of a predator may be relatively swift, the threat of predation can impose constant fear and stress over the course of herbivores' lives (Horta 2010b, 165–168). Of course, predators play an important role in controlling the populations of herbivore species; yet such control can also be exerted via hunting, which delivers a much swifter and less anticipated death, or via fertility control methods. Such methods could allow predator populations to be controlled or eradicated altogether using gene drives. Naturally, due to the greater ecological role that predators play, greater caution would be needed before any such decision is made. Nonetheless, human populations already suppress and, in many cases, have already eradicated predator populations. While this has in some cases had disastrous effects, recent advances in management techniques have allowed for more effective management of herbivores via hunting or fertility control (e.g. see Warren 2011; Ramsey et al. 2021).

4. Disagreement in the Literature

The arguments and proposals just described have caused a flurry of debate within animal ethics, and many have strongly opposed intervention.¹² Using different ethical theories, they have argued either that there is no specific obligation to intervene in nature, or even an obligation not to intervene. For example, according to Regan's (1983, 357) rights-based approach, while natural forms of violence and harm are said not to involve any rights

¹² Further reasons to oppose intervention could be considered from other perspectives, such as that of environmental ethics. However, for the purpose of this paper I will constrain the discussion to only those arguments which have been presented by the key voices in this debate, which have come from within animal ethics.

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infringements, interventions by humans (who are moral agents) do; this then gives us reason against intervening in nature, but no positive reason to prevent the suffering of wild animals. According to Hursthouse's (2011, 15) virtue-ethics approach, 'respectful love' entails that we leave wild animals to fight for their own good. Intervening to create better outcomes for them is said to be a manifestation of the vice of arrogance. According to Palmer's (2010) relational ethic, positive ethical duties stem entirely from interpersonal relationships; as we have no morally significant relationships with wild animals, we therefore have no duty to alleviate their suffering. Donaldson and Kymlicka (2011, 154–159) also take a relational approach, yet argue from the other side: that because wild animals form what they call self-regulating communities and seem to resist interference, we should treat them like sovereign states not to be interfered with. Finally, Korsgaard (2018, 173–209) argues from a Kantian point of view, from which we are said to have clear duties towards identifiable individuals, but no clear duty to take on "the role of a creator", determining which individuals come into existence. As intervention into nature involves changing which future individuals exist, it cannot be said to benefit any particular individual, yet any intervention is likely to harm some presently living individuals, giving us greater reason to refrain from intervention.

Arguing *pro* intervention, we have authors such as Tomasik (2017) and Faria (2022) who can be read as taking a consequentialist approach, as they are willing to accept high-risk interventions as long as the expected value of the outcome is positive – that is to say, they are willing to aggregate the potential harms and potential benefits, treating each equally. Meanwhile, Nussbaum (2006, 399–400) argues from the perspective of the capabilities approach, arguing that nonhuman animals are entitled to a list of capabilities, including the capability of living "in relation to other animals, plants, and the world of nature". Given the prevalence of harms in nature, this would require the "gradual formation of an interdependent world in which all species will enjoy cooperative and mutually supportive relations", and "the gradual supplanting of the natural by the just" (Ibid.). As a last example, Cochrane (2018) advocates for a rights-based cosmopolitanism.

While the above is not an exhaustive list of the arguments on each side of the debate, it is intended to show that there are a range of arguments employing starkly different concepts due to the different theories they take as their starting points. Now it should not be assumed from this outline that these positions necessarily follow from these theories – indeed, intervention has also been opposed on consequentialist grounds (Delon & Purves, 2018) and supported within a Kantian framework (Paez, 2020) – yet my argument is that the mere fact that the authors rely on such different, fundamentally incompatible normative theories, means that their arguments are limited in their appeal to those with different theoretical commitments. By taking for granted the assumptions underpinning each ethical theory, the chance that any of these authors will be persuaded by those with different normative assumptions is slim.

5. Appealing to Widely-Agreeable Principles

As the problem of natural suffering is a present one, the decision to intervene or not intervene cannot be avoided – it will be made, one way or the other, so some greater consensus is desperately needed. We should try to overcome any theory-based gridlock and, where we cannot, decisions should be made on the basis of values that are widely agreeable, not those held by any particular individual. To do this, it is helpful to refer to Beauchamp and Childress' (2019) theory of Principlism, which was developed to help medical practitioners deal with ethical questions in practice. Beauchamp and Childress rely on four principles: *beneficence*, *non-maleficence*, *respect for autonomy* and *justice*. These principles capture the core concepts of different ethical theories (Consequentialist, Kantian and justice-based theories) – thus going part of the way in overcoming the gridlock – but are also claimed to be widely agreeable and to capture our main ethical concerns in different contexts. They are defined roughly as follows:

Beneficence: act for the benefit of others (contribute to their health, welfare or flourishing).

Non-maleficence: avoid causing harm to others.

Respect for autonomy: respect and support the autonomous choices of others.

Justice: ensure that individuals are treated fairly.

As should be clear, these principles capture familiar ideas and people will mostly be able to agree on how to understand them in different cases. For example, as children we are taught not to harm others, to help others when we can, to respect their choices, and what it means to get a fair share.

Importantly, the principles have normative force in a diverse range of contexts. We can say with confidence that benefitting others, avoiding harm, respecting autonomy and ensuring fair outcomes are generally valuable-end goals. This is in stark contrast to judgements in specific cases, because such judgements (usually referred to as 'intuitions') have been shown to be unreliable and prone to change depending on how a question or problem is framed (Ichikawa 2014). Of course, that we have a higher degree of confidence in the principles is to a large extent due to their generality, and they must be specified (given a more specific definition) for each particular context. It is also notable that they will often conflict, and so while each holds *prima facie* normative force, our obligations are determined by weighting the principles against each other in each context (Beauchamp & Childress, 2019, 15). Both specifying and weighting occur through the method of reflective equilibrium, in which each possible specification or weighting is assessed against its coherence with our already well-considered judgements, such that the final judgement we arrive on is held with high confidence.

In the context of wild animals this is particularly valuable. For example, in her book *Animal Ethics in Context*, Palmer (2010, 1–4) describes the case of a herd of wildebeest

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drowning due to natural causes, and relies on her intuition that we have no duty to save them as a basis to build her argument – yet this judgement is clearly not widely held, as it is exactly that which pro-interventionists disagree with, so it should not be considered reliable. Of course, specifying and weighting general principles through reflective equilibrium will not be uncontroversial either, as subjectivity creeps in when determining what judgements are reliable. Nonetheless, using the principles as a common starting point focuses the debate on what the best specification and weighting of the principles is. Here I propose one plausible account, but which interpretation best reflects the common understanding of the principles should then be decided among decision makers by way of consensus.

Principlism has received considerable criticism for Beauchamp and Childress' claim that the principles capture universal moral values. Various critics have questioned whether these values are in fact held across cultures in different parts of the world (Westra, Willems & Smit 2009; Turner 2003), or different time periods (Karlsen & Solbakk 2011). Rauprich (2008, 58–60) has further argued that even if universal moral norms were identifiable, they would be very few and abstract, and exclude relatively modern values such as autonomy and individual equality. Sticking to universal norms would therefore prevent Principlism from constraining us against developing deeply objectionable moralities and make genuine moral progress difficult. For the purpose of this paper, the claim to universality is unnecessary. Given that most of those who I am addressing (animal/environmental ethicists, wildlife researchers and sympathetic policy makers) sit within a similar (globalized) culture and time, I assume that *for them* these principles will be widely agreeable and will provide a useful starting point for moral decision-making.

It may also be objected that the four principles – *beneficence*, *non-maleficence*, *respect for autonomy* and *justice* – were developed for use in the medical practice, and are inappropriate for thinking about wild animals. However, very similar principles have now been applied to a diverse range of fields (Mepham 1996; Beever & Brightman 2016; Biasetti & Mori 2021). In his book *Wild Animal Ethics*, Johannsen (2020, 44) focuses specifically on the problem of wild animal suffering and touches on all four principles, described by him as theory-neutral considerations. However, Johannsen focuses strongly on the principle of *beneficence*, claiming that the other three have a lesser role to play. Against this, Katz and Wallimann-Helmer (2022) have argued that all four principles are relevant to the problem of wild animal suffering, and that different specifications or weightings of the principles can explain the different positions in the literature. In the following, I wish to show that the most plausible specification and weighting of *all* four principles lends support for interventions to reduce wild animal suffering.

6. Application of the Principles to the Problem of Wild Animal Suffering

Although my use of principlism deviates from that of Beauchamp and Childress (2019) in the aforementioned ways, their analysis of the principles in the medical context remains informative. I therefore assume the broad definition of each principle given by them before

specifying each principle further. I begin with *beneficence*, *autonomy* and *justice*, leaving *non-maleficence* for last as I take it to most clearly oppose and balance the other three. In doing so, I will argue that the most plausible interpretation of the principles offers general support for interventions to reduce wild animal suffering. However, it is important to keep in mind that to determine the permissibility of specific interventions the principles would need to be specified further and weighted for each case.

6.1 Beneficence

According to Beauchamp and Childress (2019, 203), beneficence “includes all forms of action intended to benefit other persons”, with ‘benefit’ here meaning to contribute to others’ welfare. It captures both specific obligations (those owed on the basis of “moral relations, contracts, or special commitments”) and general ones (owed to all persons; *Ibid.*). Concepts such as care and solidarity are subsumed under specific obligations of beneficence, but it is general obligations of beneficence which best justify intervening in nature.

Johannsen (2020, 41–48) focuses his argument on such a general obligation of beneficence. Palmer (2010) directly opposes him in this regard, arguing that we only have specific obligations of beneficence (in the form of relational obligations). Given that we usually have no specific relations or commitments to wild animals, Palmer argues that we usually have no reason to intervene in nature. However, in order to make this move, she denies that we have any general moral obligation of beneficence at all: the reason why we owe beneficence to human strangers, on Palmer’s (*Ibid.*, 121) view, is because we have relations to them based on “mutually recognized communication, the ability of humans to justify themselves to others, reciprocity in economic relations, mutual cooperation, [and] the joint organization of political and other institutions”.

As should be apparent, Palmer’s claim is vulnerable to the Argument from Species Overlap. While a full account of this argument is beyond the scope of this paper, in short: species membership itself is said to be a morally arbitrary criterion, and any more specific criterion either fails to include all humans (e.g. rationality) or also includes many nonhuman animals (e.g. culture; Horta, 2014b).

Johannsen (2020, 33–35) accordingly points out that not all human beings would in fact be included according to the criteria which she claims our morally-relevant relationships are based on: those with severe cognitive disabilities, for example. But we do usually think that some degree of beneficence is owed to all humans, such as humanitarian assistance when distant peoples are struck by disaster. It is notable that, in the philosophical literature on the duty to aid distant strangers, while there is large disagreement about how much we owe to distant strangers, virtually all writers agree that some duty of beneficence is owed (Hadley 2006). Pointing out the different ways in which we are related to others misses the point: even if people existed to whom none of those factors applied, we would still owe them *some* degree of beneficence (Hedberg 2016, 439–440). And if we accept that we have a general

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obligation of beneficence to all humans, then to avoid the charge of speciesism we should also extend that general obligation to wild animals.

Accepting that we owe wild animals beneficence, the question remains as to how much. It is common to say that general duties are weaker than specific ones, yet even a weak general duty gives us reason to act to help others when they are in dire need, such as in the face of terrible tragedy. The facts presented about wild animal suffering so far show that they are in *exactly* such a situation. It follows that even a weak, general obligation of beneficence gives us a reason in favor of intervening in nature.

6.2 Respect for Autonomy

Even if interventions improve the overall welfare of wild animals, they might still be objectionable if they do not properly respect their autonomy. In this section I will explain how intervening in nature can be done while properly respecting wild animals' autonomy.

Beauchamp and Childress (2019, 104) define autonomous action as that which is done out of agency, with understanding, and freedom from control. Agency (or intentionality) is a pre-requisite for autonomy – it only makes sense to talk about respecting autonomy in relation to agents. To what degree agents can act with understanding and freedom from control then determines their autonomy.

To ground autonomy's value, Beauchamp and Childress refer to the Kantian notion of respect, which entails recognizing others as having their own ends, requiring us both to avoid treating them as mere means and to support them in achieving their ends (Ibid., 107). It has also been argued that this form of respect follows from the virtue of humility, requiring that we do not assume that we know others' interests better than they do, or to put our own interests above theirs (Müller 2022, 153–159). In practice this demands a default position of supporting and not interfering with others' wishes, yet it still allows us to act against others' wishes if we have good reason to believe that they lack the appropriate level of agency or understanding to act autonomously in a particular situation. For example, a doctor who respects a patient's autonomy should in general assume they have a weaker grasp of that patient's best interests than the patient does, yet they may still act against the patient's request if they have good reason to believe that the patient's ability to reason regarding that decision has been undermined (e.g. due to the severity of their illness). With this understanding, criticisms that interventions to reduce natural suffering lack humility or amount to "playing God" can be read as claims that autonomy is not being properly respected (e.g. Hursthouse, 2011, 15; Hettinger, 2018, 70–71). This is particularly understandable given the bad historical record of intentional interventions in nature (such as deforestation or the introduction of alien species), which have often been incredibly harmful for wild animals. Yet it is worth noting that virtually none of the interventions in the past were carried out with the goal of promoting good outcomes for animals, but most often for economic reasons and with little understanding of the local ecosystems and their

functioning. Meanwhile, large-scale interventions, guided by new insights in ecology, continue today with greater success (Hobbs & Cramer 2008).

The notion of autonomy used by Beauchamp and Childress should not be confused with a very different notion that is often referred to in environmental philosophy, namely, the notion of the autonomy of nature as a whole. Autonomous nature (understood as that which exists independently from humanity) has no agency, nor does it understand, so this particular usage places value solely on the freedom of nature from human control (Hettinger 2002; Lee, 2005). It is not clear why independence alone should demand our respect and non-interference. Consider that droughts are natural, yet no serious person would blame a people suffering from drought from using river water for irrigation.¹³ Nor would any compassionate person express concern about undermining nature's autonomy when rescuing whales that have become stranded on a beach. Although we may wonder at nature's grandeur, it is clearly also the source of incredible amounts of suffering, so its independence *per se* cannot be said to be valuable. If we extend our compassion to all sentient beings, acknowledging that most suffer far more than the average whale, then it seems that we can put the issue of nature's autonomy in this sense firmly to one side.

Unlike nature as a whole, individual animals can be understood as agents with the capacity to act autonomously in ways that demand our respect. Beauchamp and Childress (2019, 104) define agency as the ability to make "plans in the form of representations of the series of events proposed for the execution of an action". Beauchamp has argued elsewhere that chimpanzees satisfy this understanding of agency (Beauchamp & Wobber, 2014). However, this is a rather demanding sense of agency – even most adult human behavior is not carried out on the basis of explicit plans, let alone that of children. As Sebo (2017) points out, "we need more than one conception of agency, since human and nonhuman animals are capable of thinking and acting in more than one kind of way". Other concepts include perceptual agency (recognizing certain objects as "calling out" to be treated in certain ways) or simply the freedom to act on the basis of reasons, both of which have been argued to be observable in nonhuman animals (Ibid; Thomas 2016, 75). These more modest concepts seem to do a better job of capturing what we normally mean by agency, and with them many wild animals can be understood to behave autonomously, at least in relation to most of the decisions which they ordinarily face (what to eat, who to spend time with, etc.).

If many wild animals are understood as agents, it is clear that the problem of natural suffering is not one which any of them are able to understand, as it requires not only an understanding of ecosystem dynamics, but also of the plight of other populations and species as well as future generations to come. Nor is it one which we can realistically support them in understanding. By way of analogy, a child may require an injection of life-saving medicine, but refuses it due to a fear of needles. While the child is able to express their

¹³ Assuming here, for the sake of argument, that the impacts on sentient animals in the river are minor.

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autonomy to some extent, their inability to understand their dire situation gives the doctor a good reason to act against the child's will. Similarly, because wild animals are unable to understand their predicament, *respect for autonomy* allows interventions to be carried out even if those animals resist them.

The point made so far is that wild animals are unlikely to have the understanding and agency necessary to reason about the dire state that they find themselves in and the possible solutions. Proper respect, then, could allow for interventions, as long as they are carried out with the animals' best interests in mind. However, autonomy is also about freedom from control, and some may object that, as the interventions considered here require continuous control (e.g. population management, vaccination), the future lives of wild animals would be less autonomous ones (e.g. Donaldson & Kymlicka 2011, 165). But a greater degree of control over nature could actually leave wild animals with greater freedom regarding other choices in their lives. This is because the conditions that most wild animals naturally endure are themselves constraining: they are constrained by hunger, cold, disease, the threat of predation – natural suffering largely determines the way wild animals live and die. A more tightly controlled nature thus represents a future where wild animals could live more autonomously.

Of course, it must be acknowledged that all of the interventions considered here will reduce the level of autonomy of certain animals: this is most starkly the case for lethal methods of population management, or for wild animals captured to conduct research on gene drives. Given these harms, the claim to humility may seem disingenuous. There is some truth to this point, however respect should not be restricted to one individual: rather, environmental managers should act with respect for all wild animals. Given the conditions wild animals are faced with, this necessitates hard choices in which the autonomy of some must be infringed upon in order to promote the autonomy of others. Indeed, freeing wild animals of the constraints they currently endure is the only way to ensure that they will enjoy autonomous lives in the future.

6.3 Justice

Beauchamp and Childress describe justice as fair, equitable, and appropriate treatment in light of what is due or owed to others. While they consider all prominent theories of justice to be valid in capturing different *prima-facie* duties, here I will focus first on communitarian and cosmopolitan theories due to their particular relevance for the question of intervening in nature, and will follow with a discussion on distributive justice.

Communitarian theories state that “what is owed to individuals and groups depends on...community-derived standards” (Beauchamp & Childress 2019, 258). It may be tempting, then, to think that while in human societies we set such standards and then have duties of justice to each other as a result, wild animals live in separate communities with their own standards. Such a move is made by Donaldson and Kymlicka (2011, 175) in their book *Zoopolis*, which claims that wild animals form self-regulating communities which are

able to “respond to the challenges” they face and “provide a social context in which [their] individual members can grow and flourish”. Because these communities resist alien rule, they argue that they should be largely left to their own devices.

A communitarian account of this type faces two powerful challenges. Firstly, Cochrane (2013a) has argued that we cannot truly say that wild animals live in communities, when their relationships are often antagonistic, many are solitary, and no clear boundaries to those communities can be defined. Moreover, even if we could say that they live in communities, they are not competent ones. Mannino (2015) has described natural ecosystems as more akin to “failed states” due to the antagonistic relationships which most wild animals have with each other, and highlights that most die young, rather than flourish. Given that wild animals do not obviously live in communities, and those communities do not have any significant moral value, communitarian theories do not provide any clear reason in favor or against interventions in nature.

It is commonly accepted, however, that some duties of justice extend beyond our communities and are owed to all persons – as explicated by the idea of human rights (e.g. Miller 2007, 163–200). Such views are captured by cosmopolitan theories of justice. Of course, human rights only extend to other humans, but due to the argument from Species Overlap explained in section 6.1, species membership cannot be considered a good foundation for any ethical standard. Fundamental rights cannot then be for humans only be definition.

While there are a few different possible criteria for grounding basic rights, sentience has received wide appeal within animal ethics over the last few decades (e.g. Singer 1977; Rega, 1983; Francione 2008; DeGrazia 1996). Perhaps the simplest argument for why sentience grounds basic rights is simply because only conscious, affective experiences allow one’s life to go well or worse for the individual whose life it is, thereby giving such individuals “a stake in their own lives and interests in how their lives fare” (Cochrane 2018, 27; see also Cochrane 2013b; Pepper 2017).

If we accept that all sentient individuals have some basic entitlements, the question remains as to what those are. For Nussbaum (2011, 16), each sentient being is said to have the right to pursue their own good, understood as “the activation of [their] major capacities”, conferring a duty on us to protect and promote the goods of other animals. Cochrane (2018, 26–30) offers a more modest proposal, suggesting that all sentient beings have two fundamental rights, conferring on us positive and negative duties: the right to life, and the right not to be made to suffer. For the sake of argument, I will now consider the implications of Cochrane’s more modest account.

As described in section 2, most wild animals are made to suffer and die due to causes such as predation, disease, hunger or cold, typically before reaching maturity. Their rights to life and to not be made to suffer entail that, where it is within our power to do so, we have a duty to prevent such harms. The methods described in section 3 – vaccination against disease, population control, and the eradication of parasitic and predatory species –

all aim to reduce the frequency or intensity of suffering and death at the population level. At the individual level, lethal methods of population control or eradication could be said to violate the right to life that they are trying to protect, so might not be defensible – however, non-lethal methods such as contraception and the use of gene-drives would have *pro-tanto* support. It follows that, provided that we have good reason to think that such techniques will be efficacious, cosmopolitan justice establishes a duty to consider those interventions.

A further question is whether we have good reasons in terms of distributive justice to prioritize helping wild animals. On first glance, it may be tempting to argue that before helping wild animals we should first help humans facing poverty or other challenges. Yet, in the global distribution of well-being, wild animals tend to be the worst-off; even humans who live in extreme poverty do not normally face conditions so harsh that a majority do not survive to reach adulthood. While we are currently more confident about the ways to help other humans than the ways to help wild animals, our uncertainty in the latter case is counter-balanced by the sheer number of animals suffering in the wild. This means that even though we may have a relatively low chance of success, we still ought to devote significant resources to investigating such interventions (Horta 2014a; Cochrane 2018). With further research, some avenues of feasible intervention might be identified, which would then give us greater reason to commit additional resources.

To conclude this section, I have argued that we should adopt a cosmopolitan view when considering justice for wild animals, entitling them at least to the right to life and freedom from suffering, which establishes a positive duty to aid. Given that wild animals are some of the worst-off sentient beings in the world, and by far the most numerous, distributive justice gives us reason to commit significant resources to investigating large-scale interventions, even though we are at present uncertain about their feasibility.

6.4 Non-Maleficence

So far, I have argued that the first three principles not only permit but in fact support interventions in nature for the purpose of reducing wild animal suffering, albeit to a lesser degree for lethal methods of population control or eradication. This is not so with *non-maleficence*. *Non-maleficence* distinguishes itself from *beneficence* in that, while the latter focuses on promoting welfare in general, *non-maleficence* focuses on the harms that we cause (Beauchamp & Childress 2019, 151). Encapsulating this in a separate principle reflects how, in ordinary moral thinking, reasons to avoid harming others are often given additional weight over reasons to protect or promote others' welfare. Of course, *non-maleficence* cannot be considered in isolation and must be weighed against the other three principles. This means that harm may still be justified when the positive outcomes for *beneficence*, *justice* or *autonomy* are sufficiently great. This has different implications for the imposition of risks and of certain harm, so I will address each in turn.

All of the interventions considered here impose considerable risks which are amplified both by the complexity of natural processes and by our limited understanding of wild

animal welfare (see Kopf et al. 2017). This is less so for already established practices, such as population control or wildlife vaccination, for which we already have many years of experience which can inform future interventions. Nevertheless, even established practices would need to be applied in new ways or at greater scales: for example, contraceptive use for population control is currently quite limited, and some adverse effects may become more pronounced at greater scales or over longer time periods, or there may be different effects on different species. Completely novel interventions such as gene drives, which aim either to eradicate or to alter certain species (such as by reducing their fertility), involve additional risks due to their novelty and their ability to cause rapid environmental change (Rode et al. 2019). For commentators such as Delon and Purves (2018), the risks that all (large-scale) interventions pose are said to be so great that the issue is “intractable”; or, in principlist terms, *non-maleficence* outweighs the other principles in all cases.

It is worth noting that few if any of the authors who advocate for such interventions deny these risks. Rather, they either suggest that we start with smaller, acceptably low-risk interventions and scale up; or they are optimistic that with further research the risk of intervention might be brought down to an acceptable level; or they believe that the enormous amount of suffering in nature justifies taking large risks (Mannino, 2015; Soryl et al. 2021). It can be added that wild animals already face enormous risks on a daily basis, so while interventions such as population control impose risks, they also aim to counteract existing risks, such that the total amount of risk imposition – if done correctly – would be nil.

But zooming out and considering only the overall effects of an intervention ignores the concern that we have with causing harm to individuals. A more reasonable balancing of *non-maleficence* against the other principles requires that environmental managers employ the ‘principle of proportionality’. This principle would require that any intervention involving significant risk of harm is 1) likely to achieve its end; 2) is likely to cause the least harm of all viable alternatives; 3) is reasonable, meaning that the violation of any fundamental rights must be balanced against the benefits obtained, understood as improvements in well-being, in autonomy, justice, and freedom from future harms.¹⁴

However, the understanding of ‘reasonable’ in this context is particularly challenging, given the great uncertainties. Brister, Holbrook and Palmer (2021, 381) argue that “in dire emergencies, when the timeframe for initiating successful action is short and the costs of waiting for more complete data to reduce uncertainty are high, policymakers should tend toward proaction” (i.e., to act on incomplete information). For wild animals, if ‘success’ is understood merely as reducing the amount of suffering at any point in the future, then there is no emergency. But wild animals are suffering and dying in incomprehensible numbers right now, so the timeframe for success could not be smaller. In such an emergency, the

¹⁴ The principle of proportionality was first proposed to justify interventions in this context by Cochrane (2018, 96), and is familiar from the human rights literature, e.g., see Cianciardo (2010).

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benefit of acting sooner rather than later justifies a significant degree of uncertainty, so some degree of proactive action is justified. It is hard to say exactly what level of proactive action is appropriate, but a greatly cautious approach seems hard to justify when we already intervene in the wild for many reasons aside from the promotion of animal welfare, and are likely to continue to do so with new technologies such as gene drives. At the very least, the ‘reasonable’ standard of the proportionality test should allow for some degree of uncertainty. With further research, it is likely that at least some interventions will be able to pass this test.

On the other hand, some interventions entail certain harms: most clearly in the case of lethal methods; or for the development of gene drives some animals will need to be captured and kept in laboratories, tested on, and then possibly released. Johannsen (2020) argues that the vast scale of wild animal suffering – which will likely continue indefinitely unless nature is manipulated in this way – means that harms to a few are justifiable, even if deeply regrettable, provided that we have a good reason to think that such interventions will ultimately succeed. As he says, “only a very strict deontologist would think that those [harms] aren’t outweighed by the interests of the great many future animals”, and ensuring this level of certainty would require researchers to first undertake sufficient “knowledge and capacity building before they move on to experiments with sentient animals” (Ibid., 71). In the case of gene-drives, if there is a high chance of them being employed safely in the wild, then the harms to a few would indeed be vastly outweighed by immense benefits for possibly all wild animals, satisfying the ‘reasonable’ criterion. However, lethal methods of population control or eradication have severe costs for a great number of animals. For this reason, they do not seem to satisfy the proportionality test, nor are they well supported by the principle of *justice*. As a result, they are not well supported by a principlist analysis.

2. Conclusion

The four principles analyzed here have been argued to justify large-scale interventions in nature for the purpose of reducing wild animal suffering. The interventions focused on were: vaccination against disease, population control, and the eradication of predator and parasite species. These interventions hold the potential to dramatically reduce the level of suffering in nature, which I have argued should be considered as a matter of urgency. In situations of urgency, we should avoid getting stuck in debates about moral theory, and the mid-level principles of *beneficence*, *non-maleficence*, *autonomy* and *justice* offer a good alternative. By capturing widely-held moral values they provide a more agreeable moral starting point, offering a better basis for practical deliberation. The process of specifying and weighting the principles, however, can proceed in different ways, and so different specifications and weightings must be debated in order to reach some kind of consensus about the best understanding of them in this context.

I have argued that a plausible understanding of *beneficence*, *autonomy* and *justice* supports large-scale interventions. These principles must be balanced against *non-maleficence*, which

on this understanding requires interventions to be justified by the principle of proportionality. In addition, given that the situation is one of moral emergency, a proactive approach should be justified. This balancing offers broad support for many of the large-scale interventions considered here, but notably not for lethal methods of population control or eradication, which not only cause significant harm but also violate basic rights. It should also be noted that, because this analysis has considered several large-scale interventions together, this conclusion can only be understood as a generalization. For specific policies, not only would the principles need to be specified further, but their relative weightings may differ significantly if the policy happened to cause greater harm, or to have greater implications for justice, autonomy, or animal well-being. The conclusion arrived at here should therefore be understood as an argument in favor of further research and investigation, as well as for further ethical analysis on more concrete policy proposals.

Part 2: Navigating the risks of intervention in nature

Introduction

In part one I argued that, based on a plausible interpretation of widely agreeable principles, we have a *pro tanto* obligation to mitigate the suffering of wild animals. However, I argued that the balance of *beneficence* and *non-maleficence* creates a duty to do so with precaution. These arguments are not intended to be absolute, and in an ideal world decision makers would consider diverse arguments for how the principles should be specified and weighted. Nonetheless, I have argued that they are plausible interpretations, and I will proceed now on the assumption that they do hold up against other accounts.

In part two I zoom in on the principles of *beneficence* and *non-maleficence*. To do so, I take a consequentialist approach, assuming welfare to be the primary unit of value. By narrowing the analysis in this way I do not mean to deny the relevance of considerations of justice or respect for autonomy, or duties of beneficence that extend beyond the promotion of welfare. Rather, my intention is to focus on what I take to be the two principles with the strongest normative force in this context, and the most pressing duty of beneficence – to promote wellbeing.

A more important reason for focusing on these two principles – and for isolating them from other ethical considerations – is that how the two should be balanced is unclear, and raises what may be the strongest objection to the idea of compassionate intervention in nature. As will be shown, the deep uncertainties that arise with large-scale interventions in nature make their benefits, and potential harms, highly uncertain. Although many understand the tradeoff between *beneficence* and *non-maleficence* to entail a general risk-aversion, I argue against this view. Instead, I argue for precaution specifically with regards to the risk of losing biodiversity or causing other hard-to-reverse ecological changes. This is because the loss of biodiversity, or the degradation of certain ecological features are likely to reduce our potential to shape ecosystems in beneficial ways in the future, and in the future we are likely to have much better ideas about how to conduct beneficial interventions. I refer to this as an ‘irreversibility premium’, and argue that it should still permit intervention where the ratio of ecological risk to animal welfare benefits is particularly low. I end by suggesting several types of interventions that I believe are especially promising in this regard.

The paper ‘Gaining Traction on Wild Animal Suffering: Compassionate Interventions in Nature Despite Uncertainty’ on which part two is based, was published in September 2024 in *Biological Conservation*. It was authored solely by me.

Gaining Traction on Wild Animal Suffering: Compassionate Interventions in Nature Despite Uncertainty

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Abstract

Wild animals suffer due to human activity, yet natural factors contribute far more significantly to their suffering. In light of this, some propose that we have a *pro tanto* obligation to intervene in ecosystems to improve wild animal welfare. However, critics contend that the complexity of nature renders such interventions unpredictable, ineffective, or potentially harmful. This paper seeks to reconcile the moral imperative to reduce wild animal suffering and the widespread concern about the inherent risks of such interventions. The paper begins with the premise that, if we have a *pro tanto* obligation to reduce wild animal suffering, to only conduct research for the purpose of informing well-informed interventions in some distant future would be insufficient. Wild animals are suffering *en masse* now, and we must consider whether interventions can be justified despite incomplete knowledge. This question is explored here within a consequentialist and sentientist ethical framework. The paper argues that, while precaution is crucial to avoid irreversible ecological changes, interventions can be justified if they offer significant welfare benefits to animals while posing relatively small ecological risks. The paper concludes by proposing four types of interventions that are likely to meet these criteria.

Keywords: wild animal suffering, uncertainty, welfare, consequentialism

1. Introduction

For those who take the wellbeing of nonhuman animals to be of moral importance, wild nature (i.e. that which is not controlled directly)¹⁵ presents a situation of ongoing catastrophe. Suffering in nature is both widespread and severe, and some argue this gives us a *pro tanto* obligation to intervene in order to protect free-living wild animals¹⁶ from natural harms, through methods such as immunocontraception for fertility control (Horta and Teran 2023), vaccination against illnesses (Animal Ethics 2023), and even genetic engineering (Johannsen 2020, 67–76). However, others – most notably Delon and Purves (2018) – have expressed concern about our ability to improve the welfare of wild animals, due to the complexity of ecosystems and the interdependence of different organisms, among other reasons. This means that, despite a *pro tanto* duty to assist wild animals, such interventions may be undesirable *all things considered* due to the risk imposed. Of course, one

¹⁵ This includes nature parks as well as smaller areas of unmanaged vegetation that may be found in or around cities.

¹⁶ Hereafter I will refer to all free-living wild animals simply as ‘wild animals’.

solution is to pursue smaller interventions – however, as I will show, this ignores the systemic nature of the problem, which requires significant, large-scale interventions. Another solution would be to put intervention on hold until we have carried out sufficient scientific research; that way, we might be able to intervene in a well-informed way at some point in the distant future (Ng 1995; Tomasik 2015; Horta 2010a). But in the face of severe, widespread suffering, such patience is a hard pill to swallow. It is therefore worth considering more closely whether the uncertainty regarding compassionate interventions in nature can still permit action in some cases.

In this paper I will make the case for pursuing some large-scale interventions in the near future despite the uncertainties involved. After stating the paper's assumptions in section two, I start in section three by summarizing the main arguments for why we should expect wild animals to typically endure low levels of welfare, and why this should be understood primarily as a result of natural conditions. However, I stress that the problem of suffering in nature is a systemic one, and therefore requires systemic solutions. This leads me in section three to dismiss the more modest proposal of helping individual animals, due to such interventions being unreliably beneficial, and potentially counterproductive. In section four, I turn to large-scale, systemic interventions and explain the challenge posed by Delon and Purves of predicting the outcomes of such interventions. In section five I argue that the best explanation for our discomfort in light of such uncertainty is best explained not by a general position of risk-aversion, but a specific aversion to causing irreversible ecological changes. In section 6, I argue that this more specific type of risk-aversion should still allow for some limited types of interventions: either those of smaller scale that target particularly severe or particularly 'redundant' suffering; interventions in urban areas; or interventions in sufficiently isolated ecosystems (ecological islands).

2. Assumptions

In this paper, I take the *pro tanto* obligation to aid wild animals as a given. This duty has been defended based on deontological (Johannsen 2020), Kantian (Paez 2020), deep ecology (Naess 1991), utilitarian (Ng 1995), feminist (Faria 2024) and virtue-based frameworks (Katz 2024), among others. Furthermore, people commonly express it in their actions, such as when they rescue wild animals that they find trapped, badly injured or orphaned.

Of course, we may also be subject to other *pro tanto* obligations, which could restrict the duty to aid wild animals. Two notable duties that have been argued for in the literature are:

1. The obligation to respect the autonomy of wild animals (or wild animal communities).¹⁷

¹⁷ E.g. (Donaldson and Kymlicka 2011, 163–209).

2. The obligation to protect or conserve ecological phenomena, such as biodiversity, ecosystems or natural processes.¹⁸

If we recognize such obligations, we face trade-offs between reducing the suffering of wild animals and respecting their natural way of life or preserving the value of non-sentient ecological entities. These considerations do not necessarily preclude intervention but do narrow the range of circumstances in which it may be justified. However, whether we actually have these obligations is a matter of debate. On the one hand, we can question whether the autonomy of wild animals should be valued independently of their wellbeing (Browning and Veit 2021), or whether it really opposes intervention (Faria 2023; Paez 2023). On the other, many reject the idea that non-sentient entities – lacking the capacity to think or feel – can possess inherent value (Varner 2002, 201–2). At the very least, these reasons against intervention are contentious.

In this paper, I focus on a more significant challenge: the problem of uncertainty. As will be seen, uncertainty about the consequences of our interventions is an issue for all intervention options, and whether we can reliably improve wild animal welfare at all is an open question. That question, then, should be of interest to all those considering intervention, regardless of their normative commitments. But since I want to focus on the consequences of our actions, and our uncertainty about our ability to mitigate suffering, I will assume a welfare-consequentialist framework in this paper. As we will see, justifying intervention for even a consequentialist is no easy task. My hope is that the conclusions of this paper will be of interest also to those who hold additional values, as they may be understood to further restrict the kinds of interventions I will argue may be justified.

3. The suffering of free-living wild animals

Many harms to wild animals are clearly of anthropogenic origin: only 23.2% of terrestrial ecosystems and 13.2% of marine ecosystems are considered to be mostly free from human disturbance (Watson et al. 2016, 1; Jones et al. 2018, 1). Those who assume a sentientist view often take this to reinforce the case for environmental conservation – i.e., to keep nature as free from human disturbance as possible (e.g. Bobier and Allen 2022a). But this overlooks the fact that even in well-conserved ecosystems most animals suffer and struggle to survive. This is most fundamentally the result of high reproductive rates, as Hapgood (1979) illustrates:

All species reproduce in excess, way past the carrying capacity of their niche. In her lifetime a lioness might have 20 cubs; a pigeon, 150 chicks; a mouse, 1000 kits; a trout, 20,000 fry, a tuna or cod, a million fry or more [...] If one assumes that the population of each of these species is, from generation to generation, roughly equal, then on average only one offspring will survive to replace each parent. All the other thousands and millions will die, one way or another.

¹⁸ E.g. (Sagoff 1984).

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Of course, the assumption that populations and environments remain stable rarely reflects reality; ecosystems are more often characterized by fluctuating environmental conditions and populations (Price 1999, 14–21). But populations do usually fluctuate around a mean, and each species does typically reproduce in excess of that level. The statement by Hapgood is therefore true as a generalization: wild populations reproduce at rates far above that which can typically survive, given the food and habitat available to them and the competition from other species. Although some life-history strategies favor far higher fertility rates than others, at least in an ideal state of oscillating equilibrium species tend to reproduce in excess. The resulting competition over scarce resources in turn creates a selective pressure for species to develop various antagonisms (such as competition, parasitism, predation, and disease). The problem can then be condensed into three factors:

1. High fertility rates
2. Limited resources, and
3. Antagonistic behaviors.

Various authors have argued that these factors should be expected to result in generally poor welfare across all wild animals (e.g. Dawkins 2008, 131–32; Ng 1995, 269–72; Horta 2017, 263–67). Furthermore, we should expect that these factors strongly influence wild animal welfare across all ecosystem types: although competition between species is perhaps most obvious in highly productive ecosystems, such as tropical rainforests, even in deserts, alpine or arctic regions species still reproduce in higher numbers than can typically survive, and still compete over those even scarcer resources. Similarly, while in urban environments anthropogenic factors play a great role in shaping population dynamics, the high fertility of wild animals still ensures a state of competition and generally low welfare. This means that, although we can do a lot to reduce the harms that humans impose on wild animals, we should still expect them to face severe natural harms unless something is done to address those underling factors. This makes suffering in nature a *systemic* problem, because it arises due to competition at the ecosystem level.

4. The need for a systemic approach

As long as the causes of suffering in nature (high reproductive rates, antagonistic adaptations and limited resources) remain, wild animals will continue to suffer. This makes efforts that target only the proximate causes of suffering in particular situations an unreliable way to improve wild animal welfare overall (Soryl et al. 2021, 7).

This point is worth emphasizing for two reasons. First is that the way we see the world as individuals tends to miss the systemic nature of suffering in the wild – we are more tuned in to what happens in particular situations. Second is that, in light of the risks imposed by interventions that target the root-causes of wild animal suffering (which I will expand on in section 5), interventions that target only particular instances of suffering may seem appealing. For example, some have suggested that we should expand efforts to rehabilitate

and release injured or orphaned animals (Horta 2017); aid wild animals in extreme weather events (Faria 2024, 170; Horta and Teran 2023); improve tree canopy cover in cities; construct buildings with glass that reduces bird collisions; or improve urban habitat connectivity (White et al. 2024). These interventions appeal because they clearly do help some animals: those who are rescued, who are provided with habitat or are no longer harmed by human constructions. They also are small enough so as to have no major ecological effects.

But these interventions do not improve wild animal welfare effectively, because by preventing the death of some individual(s), they will increase competition in the ecosystem, potentially depriving others of much-needed resources. This should be uncontroversial, because it is already well accepted for feral cats or dogs. Although these animals live close to humans, they face similar threats to those in the wild: a scarcity of food, inter- and intra-specific competition, predation and environmental dangers (e.g. cars) (Robertson 2008). And in cities where cat populations are not well controlled, they live in a state of fierce competition, resulting in very poor welfare: the majority die as kittens, and adults tend to have low body conditions. If we only feed them or provide veterinary care, the population would simply grow, until the supply of food or care was again insufficient. But campaigns to neuter feral cats improve their welfare significantly, since by reducing the population, competition in turn decreases (Slater 2007).

There may be some limited exceptions where preventing harm to one animal has no risk of increasing the hardship for others, such as in small and isolated ecosystems, or where one sentient species competes with a non-sentient one. But such cases are few and far between, and it remains the case that the suffering of most wild animals will be highly interrelated with that of others.

Delon and Purves (2018) also point out that small scale interventions will not significantly affect wild animal suffering as a whole *by definition*. And as soon as they are scaled up, such that their effects are great enough to make a significant difference to wild animal welfare overall, then concerns about indirect effects as well as the other uncertainties come back into play.

5. The problem with systemic interventions

Given the need to target the root causes of suffering in nature, several scholars have advocated for large-scale interventions that hope to reduce suffering at the level of the ecosystem (Faria 2024; Soryl 2018; Johannsen 2020; Tomasik 2015). These can be categorized as follows:

1. Fertility control, to reduce competition. This may be carried out via hormonal contraceptives; immunocontraceptive vaccines; or genetic engineering (Horta 2023). As mentioned, fertility control is already practiced for feral cats and dogs - however, the methods used there (typically trap, neuter, and release (ICAM, 2011)) are not scalable to all wild populations. For other wild animals, hormonal contraceptives and

immunocontraceptives are administered via injection, dart, or via pellets which are eaten (Asa and Moresco 2019, 8–11). Fertility control could also be possible using the technology of gene drives. A gene drive is a genetic element that copies itself onto the other chromosome, such that it is inherited >50% of the time. By inserting a gene coding for a particular trait (e.g. reduced fertility) into a few individuals and subsequently releasing them into a wild population, that trait can become dominant within a number of generations, depending on how many individuals are released and the fitness cost of the trait. Although not yet tested in the field, this is due to social and ethical concerns, rather than a lack of scientific evidence (Bier 2022).

2. Providing food or water in times of drought or harsh winters, to reduce scarcity. This has already been carried out on compassionate grounds in some rare occasions (e.g. Kenya Wildlife Service 2012), but could become a more standard and widespread practice. That this type of compassionate intervention has not been the focus of much writing on the topic is likely only because it so obviously leads to population growth. And yet it is widely acknowledged that much of the mortality of wild animals is due to droughts and winter starvation. Providing food or water during such times alongside fertility control efforts could therefore be an important way to improve wild animal welfare.
3. The third category of interventions targets antagonistic interactions, and includes efforts to eradicate predatory or otherwise especially aggressive species; vaccinations to protect animals against disease; treatment of parasites; or the modification of antagonistic behaviors (Johannsen 2020, McMahan 2015). While many interventions of this sort involve very serious risks, not all do. Some have already been implemented without dramatic consequences: for example, certain diseases have already been treated in wild populations using vaccines with relative success (Baer, Abelseth & Debbie, 1971). The idea of intentionally eradicating predator species is more radical, but predators often impose extreme fear and suffering on prey species (Laundré, Hernández, and Ripple 2010), and could be eradicated either with lethal methods or non-lethally e.g. using gene drives.¹⁹ Similarly, parasites could be targeted either with vaccines or with gene drives, and gene drives could also be used to reduce antagonistic behaviors. Both predators and parasites have been (and continue to be) eradicated where they pose a serious threat to humans, so it would be a speciesist inconsistency to not at least consider whether such policies are worthwhile for the sake of other species.

To address the suffering of wild animals, each type of intervention cannot be considered in isolation. The provision of food and water, or interventions to reduce antagonistic relationships, must always be combined with fertility control efforts, as otherwise they will

¹⁹ It is suggested that gene drives could be used to alter the sex ratio in a population such that eventually all individuals are male, leading the population to crash: (Leitschuh et al. 2018).

simply lead to population growth which in turn will lead to other harms. Such interventions may also need to be carried out in a coordinated fashion over a large area and targeting various species, to ensure that a reduction in harms faced by one population does not lead to new or increased harms for another. These proposals are also speculative, as there has been very little research on the welfare of wild animals and ways to improve it (Soryl et al. 2021). But one can imagine that, if such research were scaled up, within a few decades there might be enough scientific data to inform interventions of these kinds in certain contexts.

However, several critics have warned against large-scale interventions due to the high risk of adverse effects (e.g. Donaldson and Kymlicka 2011, 163–67; Singer 1973; Simmons 2009, 22–24). By far the most powerfully elaborated argument, however, comes from (Delon and Purves 2018), and can be summarized as follows:

1. Any novel, large-scale ecological intervention runs the risk of having unintended, adverse effects, since “we lack empirically supported models of the range of possible outcomes of such interventions” (Ibid.).
2. This risk is particularly pronounced due to:
 - a. The complexity of ecosystems (that ecosystems consist of numerous parts with different interaction effects).
 - b. The interrelatedness of organisms (meaning that any particular effect is likely to have other indirect effects).
3. Such adverse effects are likely to reduce ecosystem diversity, in turn reducing the *resilience* of ecosystems, which would increase the risk of them shifting to entirely new regimes.
4. The effects of climate change will make ecosystems less predictable still.

The challenge Delon and Purves point to is that of predicting - even with a reasonable degree of confidence - the outcomes of any large-scale intervention. But the problem runs even deeper than this, for in addition to the difficulty of predicting outcomes, we also face uncertainty about how to *evaluate* any given outcome, due to the following:

1. Uncertainty about which animals are sentient, and what evidence should be sufficient to treat them as such.²⁰
2. Uncertainty about differences in the capacity for suffering between different species, and the intensity of sensation in a given situation.²¹
3. Expanding on (2): difficulty in judging whether other lives are worth living.

These three factors mean that, even if we *could* predict the outcomes of a particular intervention, we would still be very unsure about how to estimate the level of wellbeing overall in any given situation. Combined with the previous uncertainties, these challenges

²⁰ (Birch 2024, 230–96) provides the most comprehensive framework to date for assessing the different markers of sentience in other animals, and for understanding the normative implications of that uncertainty. Nonetheless, this framework only helps to manage our uncertainty, rather than eliminating it altogether. See also: (Brown 2017; Mallatt 2017; Woodruff 2017).

²¹ See (Browning 2023; Gaffney et al. 2023).

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make clear that we have a very limited ability to predict the effects of any intervention on wild animal welfare. Further research will help to reduce these uncertainties but, unless we carry out large-scale field experiments (which would entail high risk), we are unlikely to eliminate these uncertainties in the near future.

6. Precaution & the irreversibility premium

Most readers will feel uneasy with the amount of uncertainty that we have regarding the kinds of interventions described in the previous section. But it is worth questioning why we feel such unease about uncertainty in this context. Uncertainty, after all, is not inherently bad; what is bad is the risk of making things worse.

Many think that intervention is likely to make things worse. According to Singer, “judging from man’s past record of attempts to mold nature to his own aims...we would be more likely to increase the net amount of animal suffering if we interfered with wildlife, than to decrease it” (Singer 1973). History is riddled with ecological mishaps: to consider just one example, the European rabbit was introduced in New Zealand to provide a source of food and sport, but soon became a problem for farmers whose pasture they grazed on. In response, the stoat was introduced to control the rabbit population, but it instead preyed on native birds (Robert Peden 2008; Bob Brockie 2008).

However, when the stoat was introduced in the 1800s, ecology was still a young science, and substantial developments in environmental sciences have been made since then. Neither is it obvious that all historical environmental interventions were bad for the welfare of wild animals. Clearly, many historical interventions had far-reaching effects and were disastrous for biodiversity – but their effects on animal welfare at the ecosystem level are unknown. Horta illustrates this point with the example of the eradication, and subsequent reintroduction, of wolves in Yellowstone National Park, which is widely considered a conservation success story (Horta 2010b). Their eradication and reintroduction showed that they cause myriad cascading effects that come in the form of benefits and harms for different species, but so many that it is quite impossible to judge whether the wolves have a positive or negative effect overall. But even if historical interventions could be clearly judged as having worsened wild animal suffering, this would not prove too much, since they never aimed to improve animal welfare to begin with (Faria 2024, 94). For these reasons, historical interventions serve as a poor analogy for compassionate interventions today.

One might think that systemic interventions are likely to make things worse because well-conserved ecosystems support the flourishing of wild animals, so any disturbance risks to undermine that flourishing (e.g. Donaldson and Kymlicka 2011, 165). But as shown in section 2, well-conserved ecosystems do not support animal flourishing, since most wild animals suffer and die at a young age. Natural selection favors traits that increase the survival of the species, but the survival of the species is compatible with very poor welfare for individuals. This is why evolution has selected for very high reproductive rates in some

species, such that thousands are born while only a few can survive,²² or for traits that increase the reproductive success of the individual but cause great pain or risk of death.²³ Whether the wellbeing of wild animals is on expectation positive or negative overall is a matter of debate (Horta 2015; Tomasik 2017; Browning and Veit 2023; York 2024).

This admittedly grim view of nature and natural processes is not denied by the likes of Delon and Purves. Rather, they attribute their unease at the risks imposed by systemic interventions to their conviction in the act-omission distinction: that it is worse to cause harm than to let harm happen (Delon and Purves 2018, 25). This distinction is controversial, and almost universally denied by consequentialists, who are concerned with the outcomes for sentient beings, rather than on rules of action (Woollard and Howard-Snyder 2002). But even if acts are to be distinguished from omissions, they are not to be distinguished so strongly. The distinction is normally only thought to make a difference when other factors are held equal, such as in typical trolley thought experiments; in more realistic and asymmetric scenarios, many believe it is the other factors that make the difference (Thomson 1976). The distinction would be decisive, then, if our uncertainty was such that we expected to improve wild animal welfare just as much as to make it worse. But as long as we have greater reason to expect positive outcomes, it is not clear that the act-omission distinction should rule out intervention.

I want to tentatively suggest that there is also evidence for this in the way that we think about other large-scale policies. For example, when oppressive regimes are committing human rights abuses (e.g. genocide), many people think there is *some* point at which militarily intervention becomes justifiable, even though it entails great uncertainty and will inevitably harm some innocent people. Similarly, lockdowns were accepted by most people as a response to the COVID pandemic, despite them being unprecedented and imposing hardship on some parts of the population. Of course, these examples won't convince everyone, but they demonstrate that when a problem is sufficiently large and severe, most people are willing to consider risky actions to prevent harm, even where they will inevitably cause harm as well.

Both our poor historical record of interventions in nature and the possibility of an act-omission distinction are therefore insufficient reasons for a blanket opposition to systemic interventions in nature. But there is another reason for unease when intervening in nature, which has not yet been elaborated in the literature. Even if we assume that the unforeseeable consequences of intervention will, on average, be neutral in value, it remains problematic that many ecological changes will be difficult or impossible to reverse, such as the acidification or salination of soil; the collapse of a trophic order; or, most clearly of all, if species go extinct. Given that we currently have only very limited information about the best ways to intervene in nature, it is important that we keep our options open so that in

²² In the case of the sunfish, over 300 million eggs are laid: (Froese and Luna 2004).

²³ E.g. male *antechinus* go into such a state of frenzy during their short breeding period that all males die by the end of it. (Naylor, Richardson, and McAllan 2008).

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the future we can intervene more effectively. Species, inorganic matter (e.g. water, soils) and ecosystem structures can be considered like different pieces in a Lego set, which can be re-arranged to create some desirable structure – and if damaged or lost, reduce the range of possible ecosystems that we might hope to create. This justifies attaching extra weight to ecological risks – an ‘irreversibility premium’ – to account for the potential future value of ecological resources.²⁴ It can be formalized as follows, for a given intervention:

$$\text{Expected welfare} = W(s) - \lambda \times (\text{irreversibility premium}).^{25}$$

Where W is the expected welfare benefits given action s , and λ is the risk of causing irreversible ecological changes, and the irreversibility premium is the anticipated future opportunity cost of those losses. This entails that we should favor interventions where the degree of ecological risk is low relative to the welfare benefits, but the exact tradeoff between the two depends on the irreversibility premium.²⁶

Ecological risks warrant an irreversibility premium even where a clear explanation of how future value might be achieved is lacking, because there will be many future uses of ecological resources for which we are currently unaware. But ecological risks deserve especially strong weight where we can anticipate future value. For example, keystone species such as beavers play important roles as ecological engineers, while imposing few direct harms on others, so there is a high chance that they may be useful components of flourishing ecosystems (i.e. with high welfare) in the future.

Other species play a comparatively small ecological role, so such ecological risks deserve to be given a lower weighting. For example, Callies and Rohwer (2022, 199-200) describe *Anopheles gambiae*, the malaria-bearing mosquito, as “ecologically redundant”, because although it has some important ecosystem functions, it is not a sole or even a dominant provider of these roles. This leads biologists to think that other species would pick up the slack left behind, were we to eliminate *gambiae* from the ecosystems in which it is embedded.⁵⁸

In practice, considering the irreversibility premium of ecological risks will encourage decision makers to anticipate the future potential of ecological resources. But this should not entail an overly cautious stance: despite the alarming rate of the biodiversity crisis, we still live in a world with a substantial amount of ecological resources, not all of which are likely to be necessary for the future creation of flourishing ecosystems. On the other hand,

²⁴ This model assumes a neutral risk attitude. If the decision maker has any other attitudes to risk (concave EU, risk-weighted EU, or maximin) that should be added on to the function (Buchak 2013).

²⁵ This model assumes a neutral risk attitude. If the decision maker has any other attitudes to risk (concave EU, risk-weighted EU, or maximin), that should be added on to the function (Buchak 2013).

²⁶ To determine the irreversibility premium we would need to have a good understanding of the suffering of wild animals now, and the future opportunity cost of losing different ecological resources. Since this data is lacking, action in the near future will have to proceed on the basis of best guesses.

acknowledging the cost of causing irreversible changes makes high-risk interventions much harder to defend. For example, the idea of eradicating most predator species⁵⁹ certainly involves an unacceptably high level of risk, at least if carried out in the foreseeable future, since the disturbances we should expect would drastically reduce our options for compassionate intervention in the future.

7. Promising interventions given ecological risk-aversion.

With a precautionary approach, we should be more willing to consider interventions when the degree of ecological risk is low relative to the potential benefits. This could mean interventions that impose a relatively low risk and expect a moderate benefit, or those that impose a moderate risk and expect a high benefit. Such trade-offs are not altogether unfamiliar – the former is analogous to choosing a career: for many young people, the outcome of that choice is deeply uncertain, yet still they have the sense that what they choose has *some* positive expected value, while the risks are usually modest. Interventions of the latter type are perhaps more analogous to military intervention where some atrocity (e.g. genocide) is taking place: the risk of intervention is admittedly high, but the suffering averted is so significant that it can be thought to justify that risk.

It is likely impossible to specify the exact risk/benefit ratio that would make large-scale interventions in nature justifiable. But it is possible to rule out some options while pointing towards others that show particular promise. What would clearly involve an unacceptably high level of risk (at least in the foreseeable future) are proposals such as the eradication of most predator species, or the use of gene-drives to modify whole ecosystems (e.g. see Bramble 2021). While such proposals aim to achieve a dramatic reduction in wild animal suffering, they impose an unacceptably high risk of causing irreversible changes, which could drastically reduce our options for compassionate intervention in the future.

But gene drives can be considered with more nuance. To release ordinary gene drives in the hope of modifying species at large scales today would clearly impose objectionably high risks. These risks are moderated by the existence of ‘reversal drives’, which provide the possibility to reverse a gene-drive mediated change. But Delon and Purves rightly point out that reversal drives “would not guarantee the reversal of the ecological side-effects of gene drives” (Delon and Purves 2018, 247). As a back-up plan, reversal drives may have their effect too late, after some already vulnerable species have gone extinct, or there may even be ecosystem-wide changes that would be hard to reverse. However, other types of gene drives may mitigate the risks further. For example, ‘daisy-chain’ gene drives spread quickly but terminate after a certain number of generations (Noble et al. 2019). Alternatively, ‘underdominance’ drives can persist in a population, but require a critical mass to reach fixation, making them less likely to spread from one population to another (Dhole et al. 2018). These technologies are rapidly progressing, and it may soon be possible to experiment with gene drives *in situ*. If gene drives can begin with contained, small-scale field trials before being scaled up, they need not impose undue risks.

The remainder of this section will zoom in on some particularly promising avenues of intervention. It is worth emphasizing again that, although most of these interventions are not feasible today (due to the technologies not being widely developed or due to limited ecological knowledge), it is foreseeable that they could be developed in the near-term future if treated as a research priority.

7.1 Interventions to alleviate the most extreme suffering.

As explained in section 2, although fluctuations may occur, the size of populations in an ecosystem are constrained by some limiting factor(s). And these limiting factors may vary greatly in the amount of suffering they cause. By identifying those which cause the greatest suffering, interventions could be pursued to remove those factors. Notably, this would not address the systemic causes of suffering, but rather seek to address the worst symptoms.

For instance, it is possible that some of the worst suffering is caused by the worst diseases, since they can be both severe and prolonged.²⁷ Very little is currently known about how diseases in wildlife affect their welfare, so such interventions should be preceded by research aimed at identifying the most severe diseases (measured as a function of suffering over time). Some possible candidates are chronic wasting disease in deer (causing severe neurological symptoms and physical decline over 15-34 months; Williams et al. 2002, 557–58); sarcoptic mange (causing chronic intense itching, skin lesions, and secondary infections; Kerr and Donnelly 2013); myxomatosis in rabbits (causing severe skin tumors, convulsions or respiratory issues over 7-30 days; Ibid.); or the rabies virus (causing severe neurological symptoms for up to two weeks; Fekadu and Verwoerd 1993). Efforts could be made to eliminate such diseases through wildlife vaccination campaigns. Since diseases are usually one limiting factor for a population, their elimination might lead to population growth until the population is limited by some other factor (e.g. predation, food availability, or another disease). The suffering would then be ‘displaced’ to some degree, but if such diseases are the worst sources of suffering, the result is likely to be a net benefit. On the other hand, the ecological risks would be relatively small (since only a small number of diseases or other afflictions would be targeted), and would arguably be outweighed by the welfare benefits. Notably, vaccination to eliminate rabies in wild populations has already been carried out (although for the purpose of protecting humans from rabies), with relatively mild apparent ecological effects (Vos et al. 2021).

7.2 Interventions to alleviate ecologically redundant suffering.

²⁷ The desirability of such interventions was already acknowledged by Arne (Naess) in 1991. Naess describes the parasite *Cephenomyia trompe*, the larvae of which inhabit the nostrils of reindeer, causing respiratory issues and great discomfort, and in rare cases suffocation. Commenting on a scientist who claimed that the elimination of such a parasite would be undesirable, he wrote: “I agree that there is a presumption against it, but I disagree with his conclusion. The very prolonged, cruel sufferings of the reindeer count more.”

Some antagonistic behaviors can be addressed without imposing great ecological risks, due to the minor ecological role that those species play. This is clearest with species of parasites that cause discomfort to their host, but do not drastically change their mortality or behavior. For example, the warble fly (*Hypoderma*) burrows under the skin of cattle and deer before migrating through the tissue, causing great discomfort, and yet does not kill its host; is small in biomass; and, since it is host-specific, does not greatly affect other species (Jamil et al. 2023). Although it does reduce the grazing and reproductive activity of the host species, this effect could be substituted by non-invasive fertility control. Since the fly has been effectively eradicated in domesticated populations (primarily with insecticides), without any cascading ecological effects, we have good reason to suspect that its eradication in wilderness areas will not have great ecological consequences. Different methods of eradication would need to be considered that don't require close contact, such as vaccines or gene drives. Both methods involve ecological risks due to their novelty, but given the harm the warble fly causes and its apparent ecologically redundancy, such risks may be worth taking on.

7.3 Interventions in heavily modified environments.

There may be relatively low ecological risks when intervening in heavily modified environments, such as urban areas. The argument for risk-aversion applies best to ecosystems that are particularly vulnerable to disturbance, and/or have unique features (e.g. numerous endemic, endangered or keystone species). Urban areas have already faced significant anthropogenic disturbances, and so may be less vulnerable to regime changes than other less modified ecosystems. Furthermore, urban environments tend to contain fewer endemic species, and urbanization is a force of biotic homogenization, meaning that any intervention which causes the extinction of a species in an urban environment is unlikely to cause the extinction of that species globally or even regionally (McKinney 2006, 2008). Species in urban environments also tend to be generalists, capable of filling diverse niches and adapting to disruptions (Ibid.). Finally, the lower level of biodiversity in central urban cores reduces ecosystem complexity, allowing those areas to be more easily modelled in order to predict the consequences of intervention. These factors together mean that systemic interventions in urban areas would often impose a lower degree of ecological risk, and be less likely to have irreversible ecological effects than interventions carried out in well-preserved ecosystems.

Interventions in urban areas should still be preceded by research to predict the possible outcomes and compare different options. However, faced with a lower degree of ecological risk, more ambitious interventions can be considered, such as fertility control, protection against disease, the provision of food or shelter, or the eradication of particularly harmful species.

7.4 Interventions in ecological islands

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Lastly, risks of irreversible changes will also be lower if interventions are carried out in ecosystems that are well-separated and that are analogous to ecosystems existing elsewhere. This is the case in ‘ecological islands’: ecosystems that are sharply cut off from others, either due to a geographical barrier, such as a lake or an actual island, or due to a man-made barrier, such as an animal-proof fence (NUWAO). Such islands are already the sites of drastic ecological experiments for conservation purposes, where ecosystems are restored by planting native species and eradicating alien species (DOC). Ecological islands could also be created for the purpose of promoting wild animal welfare. Because they are contained areas, more high-risk interventions, such as the eradication of certain species, or the use of gene drives, would be less likely to spill over into other areas. If the island contains ecosystem(s) that have close analogues elsewhere, such interventions will also pose lower risks to ecological resources at the regional or global level. Ecological islands therefore present a safer way to test systemic interventions, which would contribute valuable data on their effectiveness and could inform future interventions in other contexts.

The usefulness of ecological islands would be, admittedly, fairly limited. First, it may be infeasible to construct ecological islands to contain marine, flying or migratory animals. Furthermore, uncertainty will re-emerge when interventions tested in ecological islands are then implemented in wider and connected areas. Delon and Purves argue that wild animal suffering “is a *global* problem, which no aggregate of local interventions can begin to address” (Delon and Purves 2018, 256, original emphasis). For highly connected ecosystems, such as marine ecosystems, or for species that migrate over large distances, this is clearly true: ecological islands cannot help us to understand how to promote the welfare of those species directly. They can, however, help us to test new interventions and technologies, such as widespread population control or the use of gene drives. Such experiments would in turn give us greater confidence in our ability to carry out those interventions in new ecosystems or to assist different species. Experiment within ecological islands could also help to build ecological models, which may help to predict the consequences of intervention in new contexts. As Delon and Purves (Ibid.) themselves note, such models would allow systemic interventions to be made within an *adaptive management* approach, whereby “hypotheses, models, and policies are continuously adjusted in response to experimental ecological interventions and unpredicted outcomes”, thereby containing risks further.

7.5 Promoting ecosystems with higher welfare states

Some management decisions concern not specific interventions, but programs to shift an ecosystem from one regime state to another. This could be in the form of ecological restoration, or programs such as desert greening. In each case, managers have quite a good idea about what the ecosystem will be like in the end, because either that ecosystem existed there before (restoration), or the aim is to create an ecosystem resembling one that exists elsewhere (e.g. desert greening). The uncertainty, then, is fairly low, yet as Horta and Teran

point out, because the new ecosystems contain different proportions of different species, with different life-history strategies, they could contain drastically different levels of wellbeing overall (Horta and Teran 2023). Since we are currently uncertain about whether animals such as insects are sentient, and about the how to measure the welfare of different species, there is uncertainty here as well. But the science of animal consciousness is progressing quickly, and if ecosystems differ quite greatly in their total level of welfare, we might be able to discern those differences even with relatively little information. If so, then perhaps in the near future restoring or transforming certain ecosystems will be a promising way to improve wild animal welfare.

8. Conclusion

In this paper I have argued that, within a sentientist and welfare-consequentialist framework, some compassionate interventions in nature should be possible in the near-term future. I have argued that effective interventions cannot merely help individuals but need to have positive expected outcomes for wild animals as a whole. I have further argued that while the act-omission distinction is controversial and would not rule out intervention in any case, a risk-averse approach to biodiversity and other ecological resources may be important to preserve our options for improving wild animal welfare in the future. Nonetheless, risk-aversion should still allow for certain more promising interventions in the near future: those that avert the very worst suffering, those that seek to eliminate ecologically ‘redundant’ suffering, interventions in urban areas or in ecological islands, and the restoration or transformation of certain ecosystems.

There may be other moral reasons that will weigh on the question of intervention aside from the risk of adverse ecological consequences. For example, Bossert and Potthast (2024) point out that the development and use of gene drives has the potential to perpetuate bad human-animal relations, since their development inevitably involves capturing and using some individuals. This risk is very real: most animal experimentation today is not conducted with adequate respect or compassion for animals. But gene drive research need not follow the same path, since the development of gene drives does not necessitate the killing of animals or their confinement in cruel conditions. Since these technologies would be developed to help animals, they could pioneer a new animal-friendly approach to animal experimentation.²⁸ Of course, idealism cannot dispel Bossert and Potthast’s concerns completely. But we should not let such concerns rule out the use of new technologies completely; rather, we should demand that if they are to be used, they must be used out of respect and compassion for all nonhuman animals.

²⁸ For example, the animals used could be compensated for the harms inflicted on them with the best possible care. They could be given large, stimulating areas to live in, and could be adopted or otherwise cared for at the end of the experiment. Harms that occur should then be viewed as deeply lamentable, and tributes could be paid to those animals who enabled solutions to be found to end the suffering of countless others.

Part 3: Integrating concern for wild animal suffering into conservation practice

Introduction

So far it has been argued that, following a plausible interpretation of widely agreeable principles, we have a *pro tanto* duty to intervene in nature to mitigate wild animal suffering. Secondly, in light of the epistemic uncertainties we have about the consequences of compassionate interventions, that *pro tanto* duty does appear to justify intervention in practice, either now in the near future. However, this argument has been made using two ethical theories that may seem foreign to conservation and wildlife managers – principlism and welfare-consequentialism. Most importantly, although I remain committed to a sentientist ethic, which fitted well with those two approaches, this perspective is unlikely to be shared by many in environmental practice. Most of those working in conservation or wildlife management are likely to place particular importance on the achievement of conservation goals, either due to their own appreciation of biodiversity and ecosystems free from human disturbance, or due to their conviction that ecological characteristics such as biodiversity, ecosystem integrity, and ecological processes have inherent value. To try to convince conservationists of sentientism would be daunting, given how conservation values underpin their discipline. Instead, in part three I try to convince those working in conservation and wildlife management of the need to mitigate the suffering of wild animals from within a conservation ethic that also leaves room for inherent ecological values.

To do so I turn to the framework of compassionate conservation. Compassionate conservation was developed to promote the ethical treatment of animals in conservation practice, and places particular emphasis on their suffering. However, compassionate conservation's blind spot has been the natural suffering of wild animals. I attempt to remedy this in part three by exploring the implications of natural suffering for compassionate conservation.

Like the principlist framework from part one, compassionate conservation proposes several mid-level ethical principles. And as with principlism, the framework is explicitly said to be compatible with virtue theory; however, here the links are made even more explicitly. Although the principles themselves differ, links between principlism and compassionate conservation can be seen, and through the revisions I propose, these similarities become stronger. As such, compassionate conservation can be understood as a version of principlism adapted for the conservation context. This relationship will be developed further in the conclusion to the thesis.

The conclusions of part two also contribute to my argument for how intervention should proceed in compassionate conservation, but in order to address the ethical concerns of

conservation managers more fully, I add additional non-consequentialist considerations. These are most clearly those that relate to the virtue of respect, such as the value of autonomy and individual lives. Respect is also very closely related to the principle of *justice*, linking back to part one. While the conclusions reached in part three are largely similar to those of part two, the integration of respect does lead to slightly different suggestions for how intervention should proceed.

Part three is based on the paper ‘Challenging our thinking about wild animals with commonsense ethical principles’, which was published in September 2024 in *Biological Conservation*. It was authored solely by me.

Taking Natural Harms Seriously in Compassionate Conservation

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Abstract

Compassionate conservation is an ethical framework proposed to instill greater compassion for individual animals in conservation science and practice. In addition to highlighting compassion as a virtue, compassionate conservationists propose four ethical principles (*first do no harm*, *individuals matter*, *inclusivity*, and *peaceful coexistence*) to capture what it means to act compassionately in conservation. In this paper I argue for a revision of this framework. I begin by showing how compassionate conservationists also implicitly promote the virtue of respect, which better accounts for the principles *individuals matter* and *inclusivity*, yet entails a further principle: *respect for autonomy*. I further suggest that, to reflect genuine compassion for wild animals, the principles *first, do no harm* and *peaceful coexistence* should be replaced by *empathy*, *understanding*, and *minimize harm*. In the second half of the paper, I discuss the implications of this revised framework. I argue that, due to the prevalence of suffering even in well-conserved ecosystems, compassion and respect motivate a more active management of natural environments in order to reduce the harms (natural and anthropogenic) that wild animals face. This reveals a greater need for discussions on how to balance the flourishing of wild animals against the preservation of biodiversity, as well as a need to identify new approaches to conservation which better promote both ends.

Keywords: non-maleficence, beneficence, autonomy, justice, duties

1. Introduction

In a 2010 paper provocatively titled “Conservation lacks compassion”, Mark Bekoff proposed a new ethical framework for conservation, calling it *Compassionate Conservation*. Since that article, a fierce debate has ignited over compassionate conservation, which many see as threatening the achievement of conservation goals (Coghlan and Cardilini 2020). In this paper I will suggest that, in light of the virtues that compassionate conservationists themselves champion, conservationists²⁹ ought to do *more* for wild animals than has previously been suggested.

Compassionate conservation can be understood as a new approach seeking to better protect the wellbeing of wild animals (through compassion) and to respect their intrinsic value (Coghlan and Cardilini 2022; Hunter and Gibbs 2011). Those following

²⁹ I use the term *conservationists* to refer to “scientists and practitioners informed by conservation science and biology and the norms enshrined within” (Ferraro et al., 2023). Accordingly, I will refer throughout this paper to both conservation science and conservation practice.

compassionate conservation criticize conventional conservation for prioritizing conservation objectives at the expense of individual animals. Although compassionate conservationists claim to promote solutions that are “mutually beneficial” for conservation objectives and individuals (Wallach et al. 2018), they have received criticism in turn for prioritizing the protection of individual animals at the expense of biodiversity conservation.

While this debate has occurred mostly within conservation science, a similar although markedly different debate has occurred in the field of animal ethics. What distinguishes the debate in animal ethics is that it centers on the *natural* harms wild animals face, rather than those caused by conservationists. These ethicists argue that the prevalence of suffering even in well-conserved nature gives us reason to try to reduce the (natural) suffering of wild animals. Such suggestions directly oppose conservation objectives and reflect a prioritization of compassion over biodiversity conservation (Faria and Paez 2019). Given that compassionate conservation and (wild) animal ethics both deal with the tension between compassion and conservation, it is surprising that the implications of natural suffering for compassionate conservation have not yet been considered in detail (Coghlan and Cardilini 2022).³⁰ While I will remain agnostic about how to make the right tradeoff between compassion and conservation, in this paper I will argue that compassionate conservation ought to also include concern for natural sources of harm.

My argument is structured in two halves. In the first, I argue for a conceptual revision of compassionate conservation. I begin in Section 2 by summarizing the critiques which compassionate conservationists have made against mainstream conservation science and practice. In Section 3 I explain how compassionate conservation seeks to remedy conservation's shortcomings by calling for greater compassion, and detail the framework developed by Wallach et al. (2018) which posits four principles to guide compassionate conservation action.

In Section 4 I argue for a revision to this framework, showing that compassionate conservationists also emphasize the virtue of respect for wild animals, and that respect in turn entails an additional principle of *respect for autonomy*. Furthermore, instead of the principles *first, do no harm* and *peaceful coexistence*, I argue that compassion is better captured by *empathy*, *compassion*, and *minimize harm*.

Through Section 5 I consider the implications of natural harms for this new framework. Given the prevalence of harms in nature, I argue that compassion and respect for wild animals entails a more active management of nature where efforts are made to reduce the

³⁰ Much of the literature appears to take the stance that natural suffering has little or no bearing on compassionate conservation. For example, in Wallach et al. (2015) a strict dichotomy is drawn between harms caused by humans and indirectly via (introduced) predators. More generally, there is scant mention of natural harms such as starvation, disease, or parasitism throughout the literature. Interestingly, in their critique of compassionate conservation, Hampton et al. (2019) do take natural harms to be morally relevant, but they attribute this to their reliance on consequentialism, rather than to a different understanding of compassion itself. <https://doi.org/10.1016/j.biocon.2024.110791>

natural harms wild animals face. This reveals a trade-off between compassion and respect for wild animals on one hand and conservation ideals on the other.

2. Conservation and the neglect of animal welfare

Conservation biology is a science driven by the goal of conserving Earth's biological diversity, understood as the “diversity of organisms, the complexity of ecological systems, and the resilience created by evolutionary processes” (Society for Conservation Biology 2022). Such features, although often considered to be distinct values, will for the purpose of this paper be referred to collectively with the term *biodiversity*.³¹

Historically, conservation biology was considered distinct from the protection of animal welfare (Soulé 1985), and this separation led to the use of especially harmful conservation methods. For example, predators and infectious diseases have been introduced to control invasive species (few of which led to extermination, but rather to states of continuous predation and disease); recreational hunting and poisons have been used to control native species that are perceived as overabundant or otherwise problematic; and painful and injury-causing traps and neuromuscular blockers have been used to capture live animals (Hampton and Hyndman 2018; Ramp et al. 2013). Increasingly, the relevance of animal welfare is being recognized in conservation biology (Dubois et al. 2017). Nevertheless, grave harms to individual animals continue to be justified for the sake of conservation, with wild animals slaughtered in the order of millions each year in some countries (For example, see Warburton et al. 2009). According to critics, this reflects a continuing prioritization of biodiversity over the lives and welfare of individual animals (Wallach et al. 2018; Wallach et al. 2020a).

3. Compassionate conservation

Those critical of the prioritization of biodiversity over individual animals have bannered in recent years around calls for compassionate conservation. As a movement *within* conservation science, compassionate conservationists still accept the goal (and value) of conserving biodiversity. However, in trying to protect ecological values, they call for greater attention to the moral virtue of compassion (Wallach et al. 2018).^{32,33} Compassion comes from the Latin *compati*, meaning to “suffer with” others; to take concern for their wellbeing – which requires that we respond to that suffering appropriately (Wallach et al. 2020a). In

³¹ While conservation practice often combines such ecosystemic values with anthropocentric values, for the purposes of this paper I will focus on more ‘pure’ conservation which takes the protection of biodiversity (and related values) as its primary goal.

³² Virtues are understood here as moral character traits, and should not be confused with emotions.

³³ Compassionate conservationists have also concerned themselves with the scientific goal of highlighting the importance of animal individuality for conservation science (Edelblutte et al., 2023; Baker and Winkler, 2020; Baker, 2017). Acknowledging the importance of animal individuality for conservation science can help to bolster arguments for more humane methods, yet conceptually these goals – one scientific and the other purely moral – are distinct. The emphasis in this paper will be on compassionate conservation as an ethical framework.

the context of conservation, this entails “empathy...for nonhuman animals and a drive to alleviate harm and suffering” (Ramp and Bekoff 2015, 325).

Compassionate conservationists are a diverse group with different ethical commitments and theoretical approaches. What unites them is a shared belief in the moral significance of individual animals, and the belief that such significance requires an attitudinal change within conservation science and practice. Given their focus on compassion, compassionate conservation could easily be understood as an extension of virtue ethics (Wallach et al. 2018). Yet, as Coghlan and Cardilini (2022, 5) point out, “compassionate conservation is logically consistent with diverse moral theories” because virtues also play an important role in ethical traditions such as consequentialism and deontology, despite the fact that they do not take central stage (Nussbaum 1999).

Without needing to commit to virtue ethics as a theory, then, we can critique compassionate conservation from various angles: is compassion the only virtue that must be fostered in light of the moral significance of wild animals? Does the understanding of compassion within compassionate conservation accurately reflect compassion as a virtue? And finally, what are its practical implications? All of these questions can be addressed *while holding separately* that environmental collectives and non-sentient entities have intrinsic value, or that there are other relevant moral considerations. To answer these questions, I will focus on Wallach et al.’s (2018) framework of compassionate conservation, since it presents an explicit and influential articulation of compassionate conservation. However, the main points I will argue for should be generalizable to all of compassionate conservation.

Wallach et al.’s (2018) framework begins with a call for greater compassion in conservation science, practice, and education, following which they offer four action-guiding principles (adapted from Bekoff 2013) that help to align the actions of the conservationist with that of an ideal, compassionate agent. In this way the principles can be understood to reinforce, rather than replace, the virtue of compassion. Those principles are (Wallach et al. 2018):

1. First, do no harm
2. Individuals matter
3. Inclusivity
4. Peaceful coexistence

There is considerable confusion about how these principles should be understood, so some clarification is needed. To begin with, several critics of Wallach et al. have confused these principles with inflexible moral rules (Bobier and Allen 2022a; Griffin et al. 2020; Hayward et al. 2019). However, Bekoff (2013) describes the principles as ideals that cannot be expected to obtain in all real-world situations. Rather than acting as prohibitions, they require “strong arguments” to be overridden (Ibid). We should understand the principles then as *pro tanto* rules: ones which we would *ideally* adhere to, but which we may in certain situations be justified in deviating away from.

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With this in mind, we should read *first, do no harm* not as requiring us to refrain from all forms of harm, but as an ideal of avoiding harm, requiring that harmful interventions be “carefully scrutinized and selectively pursued” (Wallach et al. 2018). That this principle comes “first” does not imply a hierarchical relationship (Wallach, personal communication, 2023). Rather, it implies that a precautionary approach should be taken: given that most interventions in the wild involve risk and uncertain benefit, options that involve less risk of harm should be favored.

Individuals matter asks environmental managers to be mindful of the intrinsic value of animals. Nothing mysterious is meant by intrinsic value, but merely the acknowledgment that many wild animals have lives which are valuable and meaningful in themselves. But even with this in mind, in practice it will often be more useful to talk about populations or species than individuals, so this principle too should be understood as a goal rather than a strict rule.³⁴

Inclusivity asks that we recognize the intrinsic value of *all* relevant individuals and do not exclude them on the basis of human-defined categories, such as being ‘alien’ (Wallach et al. 2018). Unfortunately, compassionate conservationists have proposed different understandings of who those individuals are. Wallach et al. (2018, 6) say that “all wildlife individuals” should be included, meaning both sentient and non-sentient individuals; however, four of the five same authors stated in a later paper that compassion applies only to sentient individuals (Wallach et al., 2020a). For the moment, I will follow those later authors in assuming the sentientist position, but will return to this question in Section 4.1.

Finally, *peaceful coexistence* is said to require that conservation managers faced with human-wildlife conflicts modify their own practices or those of other humans first, rather than resorting to violent methods (Wallach et al. 2018).

4. Re-conceptualizing compassionate conservation

On the face of it, there is much to credit compassionate conservation with. By emphasizing the importance of compassion, compassionate conservation places responsibility on conservation scientists and managers to act out of concern for the suffering of wild animals while pursuing conservation objectives. However, the framework developed by Wallach et al. (2018) has caused substantial confusion. I will show in this section that this is in part due to the missing virtue of respect, but also due to a mismatch between principles and virtues. I will then propose a new framework for compassionate conservation which corrects for these shortcomings, and which should more accurately capture the values that compassionate conservationists themselves espouse.

³⁴ Sebo (2024) makes the point that even if we consider individuals to be the only beings with intrinsic value, it may still make sense in some contexts to treat ecological wholes as the units of moral analysis (e.g. by talking about what is good for a species or ecosystem). However, acknowledging that individuals have intrinsic value makes the previous statement conditional on the good of the species or ecosystem aligning with the good of individuals.

4.1 The virtue of respect

The first issue is that not all four principles follow clearly from the virtue of compassion. Compassion has been defined here as an appropriate response to suffering: one that tries to reduce suffering as far as possible. But *individuals matter* and *inclusivity* do not directly have anything to do with the suffering of others. These principles do, however, capture what it means to act out of respect (Santiago-Avila' and Lynn 2020). Respect and related concepts are referred to throughout the compassionate conservation literature: for example, in addition to calling for greater concern for the suffering of wild animals, Wallach et al. (2020a 1101) ask us “to recognize [a wild animal] as...an intrinsically and uniquely valuable individual whose interests kindle one's concern and respect”. Most notably, when compassionate conservation was first proposed, Bekoff (2010, 24) formulated what would later become *individuals matter* and *inclusivity* as “treat all individuals with *respect* and dignity” and “*respect* all life” (emphasis added).

Respect means to acknowledge others as individuals with a good worth pursuing (Hursthouse 2011), or, in other words, with intrinsic value (Dillon 2003). This of course raises the question, put aside in Section 3, of *who* has such a good. While it is clear that sentient beings do (given that they *feel* certain states as worth pursuing or avoiding), some have claimed more controversially that nonsentient living beings such as plants should also be understood as having their own good (Taylor 2011). Addressing such positions fully would require a paper by itself, but there are at least two strong reasons to be skeptical of attributing this type of good to nonsentient beings. Firstly, although it is common in everyday language to talk about certain conditions as being “good for” plants and other nonsentient lifeforms, it turns out to be incredibly difficult to pin down exactly what the basis of that good is, and in a way which aligns with how we think about the moral ends of other sentient beings (McShane 2021). Secondly, the best attempts to do so problematically appear to include non-living entities, such as crystals, flames, or hurricanes (Holm 2017). Of course, it is possible that these challenges may still be overcome. But given the huge moral implications of extending respect to non-sentient beings, a greater evidential bar must be met. On the other hand, there is a clear reason for considering sentient beings as having a good worth pursuing: because they themselves *experience* it as such. For these briefly sketched reasons, I will proceed on the assumption that only sentient beings are the appropriate objects of respect.

In the conservation context there is a large overlap between compassionate and respectful action, but as character traits they are distinct. For example, respect means that we cannot treat others as mere resources (e.g., units of biodiversity) or as mere problems (such as invasive species). Trophy hunting presents one instance where compassionate and respectful action can be argued to point in different directions. Trophy hunting in less developed countries has been argued to benefit wild animals by generating revenue, which helps to protect animal populations from poachers (Gunn 2001). In some cases, only older

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individuals are selected, and the death is relatively swift (Ibid.), so one might argue that the practice is compassionate. Yet trophies (body parts collected for display) are disrespectful because they “invariably convey power, strength, and status” of the hunter over the animal victim (Batavia et al. 2019). Furthermore, as the killing occurs in the context of sport, the animals are relegated “to the sphere of mere things,” disregarded as individuals with lives and a good of their own (Ibid.).

The principle *individuals matter* captures the core of respect by asking us to acknowledge animals as individuals with intrinsic value. This means that environmental managers should avoid reducing wild animals “solely to their position as members of collectives,” such as species or populations (Wallach et al. 2018, 6). This is first and foremost a call for a particular attitude, one which would give us greater reason to protect individuals against harm, and which produces feelings of loss if killing is indeed necessary. This in turn challenges practices such as the culling of ‘surplus’ animals in captive breeding programs, or the culling of certain populations to protect smaller numbers of an endangered species (Ibid.).

In a similar vein, *inclusivity* functions to protect individuals by asking that we guard against the tendency to disregard certain categories of sentient beings. In the conservation context, *inclusivity* helps to counter the prevalence of nativism (the idea that introduced species are unnatural and harmful) which demonizes non-native species such that their value as individuals is often forgotten (Coghlan and Cardilini 2022). But it can also be understood as asking conservationists to be more inclusive regarding which species are assumed to be sentient to begin with. Since the study of animal sentience is still in its early days and quickly progressing, if conservationists were overly strict about what counts as evidence for a species' sentience, they would risk excluding species which might in fact be deserving of respect. Given this risk, a precautionary approach should be taken, whereby evidence of sentience in one species should be considered as sufficient to regard all species in that order as sentient (Birch 2017; Browning and Birch 2022).

Respect also entails that we do not put ourselves above others and assume a dominant position, which would entail the vice of arrogance (Hursthouse 2011). Because their flourishing depends on their own subjective feelings and desires, we ought to respect their choices even if we do not understand them. This can be captured by the principle of *respect for autonomy*. Here autonomy merely entails the capacity to choose according to one's best interests. Of course, in many cases conservationists may have good reason to believe wild animals are not able to choose according to their best interests, either because their options are unduly constrained, or because they lack sufficient understanding.³⁵ In such cases, respect for autonomy does not rule out paternalistic action. For example, respect for autonomy may still allow us to prevent a wild animal from consuming human food, if this

³⁵ This reflects Beauchamp and Childless' (2019) understanding of autonomy as requiring intentionality, understanding, and noncontrol.

food is known to be unhealthy for the animal. Similarly, we might restrict the movement of wild animals around dangerous areas such as motorways, since wild animals are not generally able to properly assess the risks. Where wild animals' choices are unduly constrained, respect for autonomy can also mean to remove barriers, such as by building wildlife crossings over roads. Although this principle has not been proposed by compassionate conservationists explicitly, issues of autonomy frequently surface in the compassionate conservation literature (e.g. Wallach et al. 2020b).

4.2 The virtue of compassion

The principles *first, do no harm* and *peaceful coexistence* relate more obviously to the virtue of compassion. Nevertheless, these principles capture only a partial and incomplete form of compassion.

The phrasing of *first, do no harm* generates two problems. “First” implies a presumption against causing harm in situations of uncertainty. But many conservation scenarios (most emblematically, the problem of invasive species) present wicked problems in which inaction leads to harm, while the most effective solutions require causing harm directly. Given the prevalence of such cases, Jordan Hampton et al. (2019) argue that a presumption against harm is likely to lead to greater suffering for wild animals by allowing ecosystems to be degraded, or for native species to be driven to extinction.

A second and related problem is that the principle of *first, do no harm* only requires conservationists to be mindful of the harms that they cause directly. This will lead them to ignore harms that arise indirectly or independently of their actions, which might lead them to choose actions which result in greater harm overall. For example, some compassionate conservationists favor introducing predators to control invasive species over direct lethal control, even though the predators cause greater suffering than most forms of direct lethal control (Allen et al. 2019). Alex Callen et al. (2020) believe that focusing only on direct harm could also make it difficult to control populations of overabundant species, allowing populations to expand beyond the environment's carrying capacity and possibly leading to worse welfare outcomes. This was seen most dramatically in the Oostvaardersplassen rewilding project, where populations of horse, deer, and cattle faced mass starvation during a harsh winter after having been allowed to reproduce with no restrictions for several years (Theunissen 2019). Although the Oostvaardersplassen is a confined area, the starvation of those animals was at best an intensification of what happens regularly in more natural ecosystems, where animals are more free to move but have to compete with populations living in adjacent areas, or may be restricted by natural or manmade boundaries.

More generally, if compassionate conservationists wish to exemplify compassion, it is not clear why this should be limited only to those instances of suffering that they cause, directly or indirectly; the focus of compassion is on the *other*, not on oneself. For this reason, Christopher Bobier and Benjamin Allen (2022b) suggest that compassion should lead us not to avoid causing harm, but rather to “minimize harm” in general, including those harms

that arise independently from human action. Importantly, this entails a holistic view, considering the complex interrelationships in ecosystems, and may sometimes require causing harm to prevent greater harm (Abbate 2014). Although Coghlan and Cardilini (2022) argue that *first, do no harm* already includes a “broader harm minimization imperative,” this is not reflected in the examples of compassionate action which compassionate conservationists provide. A principle of *minimize harm* will therefore do better to capture a general concern for suffering.

The final principle, *peaceful coexistence* – meaning to seek non-violent solutions to human-wildlife conflicts – also fails to focus directly on the harms experienced by wild animals. This is because many conflicts between humans and wild animals arise due to conflicts between wild animals themselves, e.g., because competition for food or habitat forces wild animals into human-occupied areas. Since nature is inherently competitive (Horta 2015; Ng, 1995), non-violent solutions may only move a conflict from one place to another. For example, compassionate conservationists suggest that farmers whose livestock are threatened by predators should deter them with guardian dogs instead of resorting to lethal control (Wallach et al. 2018), yet the predators need to eat, so deterring them will either lead them to hunt other prey or to starve. If compassionate conservationists are genuinely concerned with the suffering of wild animals, they should not restrict that concern to human-wildlife conflicts. Rather, they should compare various policies (violent and non-violent) and determine which best reduce the suffering of all animals which may be affected. Again, these concerns are better captured by a principle of *minimize harm*.

However, we can also consider another understanding of *peaceful coexistence*: as an end-state in which “the needs of both humans and wildlife are generally met” (Gross et al. 2021). Achieving this state would require two things: firstly, empathy and moral attention for wild animals, meaning to try to put ourselves in their shoes and understand the challenges they face; and secondly, empirical investigation to determine “how best to engage with wildlife in a way that minimizes avoidable suffering” (Sekar and Shiller 2020, 630). Both have been acknowledged previously as necessary components of compassion (Ramp and Bekoff 2015). Importantly, the latter requires that compassionate conservationists engage in wild animal welfare science (Soryl et al. 2021; Faria and Horta 2020; Fraser 2010).³⁶ Given these dual tasks, and the problems with *peaceful coexistence* mentioned earlier, we would do better to replace *peaceful coexistence* with two principles: *empathy* and *understanding*.

4.3 Grounding conservation within virtue ethics

The compassionate conservation framework focuses on the virtues that ground greater moral consideration for individual animals. But we can also use the language of virtue to ground the values of biodiversity and ecosystem structure, which underpin conservation. Here I want to sketch several options without arguing definitively in favor of any of them.

³⁶ Wild animal welfare science is also sometimes referred to as ‘welfare biology’.

The simplest way to ground conservation is with the virtue of prudence. Prudence, often referred to as *practical reason*, is the ability to balance moral principles with practical considerations, including considerations about the future. A prudential conservationist would be mindful of how healthy, well-functioning ecosystems are important for human and nonhuman individuals in the future, and would ensure that important ecosystem structures and functions (for humans and other animals) are sustained. Prudence, in other words, helps to link the conservation of biodiversity to the flourishing of individuals.

Many compassionate conservationists will want to value biodiversity and related values not only instrumentally, but also intrinsically. To do so, they could also ground prudence in the virtues of justice, respect or reverence for nature (Coghlan and Cardilini 2024). Of course, given that species and ecosystems are non-sentient entities, claims that they are the appropriate objects of justice or respect would need to overcome the problems mentioned in Section 4.1.

Those problems aside, this shows how additional virtues are relevant in the conservation context.³⁷ By emphasizing compassion and respect, compassionate conservationists do not deny these other virtues or values, but rather stress that compassion and respect are especially lacking in current conservation practice. The framework of compassionate conservation can then be understood as a way of making explicit what the moral significance of individual animals entails, thereby enabling practitioners to search for more compassionate and respectful ways of pursuing conservation objectives.

4.4 An updated framework

This establishes a new understanding of compassionate conservation, but one based on the virtues which compassionate conservationists already (implicitly) promote. It calls now for greater attention to the virtues of *compassion* and *respect*, which are supplemented by the following action-guiding principles:

Compassion

1. Empathy
2. Understanding
3. Minimize harm

Respect

4. Individuals matter
5. Inclusivity
6. Respect for autonomy

Bobier and Allen (2022b, 10) point out that *minimize harm* “closely mirrors the decision-making process of dispassionate consequentialists” which, they suggest, is the very kind ethic that compassionate conservationists, through their critique of conventional

³⁷ Similarly, other virtues relevant to our consideration of individual animals could also be considered, such as beneficence (to highlight the importance of positive welfare or flourishing for wild animals) or justice (to help with assigning blame for past wrongdoings).

conservation practices, were trying to avoid. But this is not quite correct – conventional conservation is underpinned by a consequentialism which largely *disregards* the interests of wild animals (Ramp and Bekoff 2015). It should not be surprising that consequentialism, when taking the interests of wild animals seriously, will point to similar policies. But Bobier and Allen (2022b) rightly acknowledge that for compassionate conservationists there may be *internally* “a profound difference”. This is because, by focusing on the virtues of compassion and respect, compassionate conservationists will strive to keep the suffering of wild animals, and those animals' value as individuals, at the forefront of their minds. They will be reluctant to trade off the lives or wellbeing of some individuals for the sake of others – and if they need to, they will do so only after carefully scrutinizing all options, and with deep regret. This will ensure that they do not forget the individuality of those animals.

It might also be noted that this new framework leans closer to the related approach of Conservation Welfare. Conservation Welfare explicitly adopts a principle of “minimize harm” while acknowledging the intrinsic value of individuals (Beausoleil 2020). However, the force of respect in Conservation Welfare is more limited, as the discipline accepts that “[wild] animals will continue to be used for human purposes” and is therefore willing to advocate for “moderate positions” that fall short of questioning fundamentally speciesist goals (Ibid). The compassionate conservation advocated for here would require a higher level of respect.

Finally, one could question why the framework should emphasize compassion and respect over other virtues or other moral concepts. Simply put, compassionate conservationists claim that a lack of compassion and respect is the cause of grave harms to wild animals in conservation. And as will become clear in the following section, conservationists are virtually always faced with suffering which we can respond to. But this should not be taken to mean that, e.g., the positive flourishing of wild animals is not also of value.

What I will show in Section 5 is that, in many situations, compassion and respect for wild animals lead to unavoidable conflicts with the goal of conserving biodiversity (as well as anthropocentric values), forcing compassionate conservationists to choose between conservation and promoting the wellbeing (or autonomy) of wild animals.

5. Natural suffering and its implications

Advocates for compassionate conservation have tended to focus on win-win solutions, seeking to protect individual animals while pursuing conservation objectives (e.g. Wallach et al. 2018). With the new framework proposed here, we center less on the harms that conservationists cause and rather on the animals themselves. In doing so, we will find that many of the harms wild animals face occur due to natural ecological processes, rather than human actions, and conservation can preserve, restore, or even exacerbate these processes. This creates a tension between conservation and compassion.

5.1 The problem of wild animal suffering

In recent years, there has been a flurry of literature within animal ethics on what has come to be known as the moral problem of wild animal suffering (e.g. Ng 1995; Horta 2010a; Tomasik 2015; Jeff McMahan 2015; Faria and Paez 2015; Johannsen 2020). These authors emphasize that suffering in nature is both common and severe, to the extent that it largely defines the lives of wild animals.³⁸ In contrast, a more ‘romantic’ view of nature is common in modern society, whereby wild animals are imagined as free, long-living, and generally happy (Horta 2010a). The reality is that even in well-conserved ecosystems very few animals survive to maturity; for most, survival is a constant struggle (Ng, 1995).³⁹ Even those who caution against exaggerating the negative aspects of wild animals’ lives acknowledge that “there is a large amount of suffering in nature, and this is not something we should just ignore” (Browning and Veit 2023, 19).

That nature is far from ideal should be unsurprising, given that evolution is a random and morally indifferent force (Rohwer 2023). Genes are selected not according to any moral principle, but only according to their chance of replicating, leading them to behave “selfishly” and with no regard for the harms that they might cause to individuals (Dawkins 2008). Competition creates selective forces for organisms to exploit others (such as predation, parasitism, or, in the case of microbes, infection); to exploit members of their own species (intra-specific competition); or even their own wellbeing – for example, evolution will tend to make organisms no more resilient to injury than is necessary for survival (Ibid.).

Some might think that such harms do not warrant our concern due to them being natural. However, this is an appeal to nature: a claim that what is natural is morally acceptable. Appeals to nature are fallacious because nature is not always good: when humans suffer from natural disasters, disease, and so on, we clearly see that it is appropriate to respond with compassion. *Inclusivity* requires us to include nonhuman animals in our moral thinking, and just as compassion for humans is not limited by what is natural, or to those for whom we are responsible, it should not be for nonhuman animals either.

³⁸ While some of the authors cited point to the prevalence of life history strategies whereby species have very large numbers of offspring with very low survival rates, even species which have few offspring and provide greater parental care still often endure severe natural harms (e.g. see Pearce, 2015).

³⁹ High mortality of juveniles is indicative of a high degree of suffering because, for most species, the juvenile stage is when they are most vulnerable to harms, and as such individuals that die young are likely to have experienced a greater proportion of suffering during their lives (Hecht, 2021). If most individuals die young, then the welfare of that population can be assumed in general to be low. In contrast, where juvenile mortality is lower, there will be a higher proportion of individuals enjoying a period during which they have been relatively free from threats. Of course, this is a broad generalization and will vary by species. Secondly, the kinds of threats that wild animals face should not be underappreciated. While some challenges can be rewarding or add meaning to one's life, this is less often true for particularly severe challenges and ones which the individual did not pursue. To illustrate, Zanette et al. (2019) find that the threat of predation in many wild animals causes effects similar to those of PTSD in humans. Other common sources of suffering for wild animals may include disease, parasitism, or starvation. Lastly, none of this should be taken to mean that wild animals do not also flourish at times, as the ecological relationships and dynamics which shape the wellbeing of wild animals are complex and varied. The statements made here are generalizations, but their generalization should not diminish their moral importance.

5.2 Compassion for natural suffering

How, then, should one respond with greater compassion to the suffering we observe in nature? What we can clearly rule out is the idea that compassion would simply bolster the case for biodiversity conservation (e.g. see Paquet and Darimont 2010; Bobier and Allen 2022b). As long as severe suffering is prevalent in natural ecosystems, conserving such conditions does not reflect compassion (although it may reflect other virtues, such as prudence). Instead, a more compassionate form of environmental management would seek to reduce the harms (natural and unnatural) that wild animals face.

Would respect for wild animals also entail such an approach? Hursthouse (2011, 15) argues that, in spite of the serious harms wild animals face in nature, respect requires “leaving them to live their own form of life”. We can understand Hursthouse as saying that respecting the autonomy of wild animals is more important than to intervene compassionately. But for most wild animals, “their own form of life” is a life where they die young, having failed to find enough food, or having failed to evade predators. Constrained by such threats, a natural life is one of greatly restricted autonomy. And the principle of respect for autonomy does not merely entail noninterference with others' choices; it also entails creating the conditions that enable genuinely autonomous choices (Beauchamp and Childress 2019; Faria 2022). For this reason, respect points us in the same direction as compassion: towards a type of environmental management that seeks to reduce the threats wild animals face.

Compassion and respect must then be balanced by other relevant virtues, such as respect for nature or prudence. Prudence requires that we assume humility in any attempt to improve the lives of wild animals, keeping in mind our limited knowledge. In practice, this demands a precautionary approach when considering new forms of intervention and management. However, there are already some approaches to conservation that head in a more compassionate direction without imposing great environmental risks or completely undermining a respect for nature itself. In 2020, Denmark announced the establishment of 15 National Nature Parks (DNNPs), involving the rewilding of several populations of previously domesticated ungulates (such as horses and cattle) which function as analogues to the populations that inhabited the area prior to human influence (Gamborg et al. 2022). The parks are fenced to keep the ungulates in, but cattle grids allow non-hoofed animals to move in and out of the parks. What is novel about these parks is that, because the introduced ungulates were once domesticated, they fall under the Danish Animal Welfare Act, which requires monitoring of their welfare and intervention when their welfare falls below a critical level. How exactly the Act will be interpreted in this context is unclear, but it has been suggested that, to avoid cases of extreme suffering, the parks should provide feed in times of food scarcity, and control the populations (via lethal or nonlethal methods) when they outgrow their area (Sandøe et al. 2022).

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With these measures, the introduced ungulates appear to be better off than in wild, well-conserved ecosystems. They do not need to fear extreme hunger, and even if the populations are controlled by lethal methods, those methods will harm them less, and enable them to live more autonomously, than with the overpopulation and subsequent starvation which they would otherwise face. Nor does this approach obviously jeopardize other species living in these areas, although such effects should be monitored. The DNNPs therefore offer one example of an approach to conservation that appears more compassionate and respectful than conventional conservation.

Of course, the degree of compassion and respect exercised in the DNNPs is still rather limited; because respect means focusing on individuals, lethal population control methods whereby some are sacrificed for the good of the population are hard to justify, and park managers should instead seek nonviolent forms of population control (such as non-invasive contraceptive technologies) where they prove feasible and involve minimal harms (Hampton et al. 2015). Although some might object that contraception is an infringement on wild animals' autonomy, it is not clear that any wild animals consciously choose to reproduce; the shortages of food and habitat resulting from overpopulation, on the other hand, clearly do limit their autonomy and ability to flourish. To further reduce suffering and promote greater autonomy, predator species could be prevented from entering the parks (Horta 2010b); the animals could be protected from other harms such as disease (Animal Ethics 2023); and welfare monitoring and compassionate interventions could be expanded to all sentient animals.

Of course, exactly which policies a more compassionate and respectful approach entails would need to be determined empirically on a case-by case basis. The broader point is that compassionate conservationists should consider a more active approach to wildlife management, one that seeks to promote the wellbeing of wild animals.⁴⁰

⁴⁰ For similar suggestions of more compassionate approaches to wildlife management, see: Nussbaum (2023); Pearce (2015).

5.3 Trading off compassion for conservation

The DNNPs and the suggestions I have made for making them even more compassionate and respectful represent one particular compromise between compassion and respect for individuals on one hand and biodiversity conservation on the other. While they are intended to improve biodiversity and provide greater ecosystem services, they do not intend to restore the historical integrity and biodiversity of the ecosystems completely; likewise, the Danish Animal Welfare Act requires that some efforts are made to protect the welfare of wild animals, but other natural factors which impede on the animals' welfare are allowed to continue. The additional policies suggested in Section 5.3 would push the parks toward a more compassionate and respectful approach, but further away from conservation ideals.

Similar meeting points between compassion and conservation can be imagined: David Pearce (2015) suggests that, where elephant populations have successfully rebounded, various further interventions could enhance their wellbeing, including: immune-contraceptive population control; neonatal care; veterinary care in case of injuries or disease; measures to ensure the supply of food or water in times of drought; and even psychiatric care. Such measures take elephant populations further away from an idealized 'wild' life, yet most elephant populations frequently interact with, or are controlled by, humanity already, so these interventions need not come with significant ecological risks.

Some conflicts between compassionate and more traditional conservation become less obvious when we also show compassion for natural harms. For example, compassionate conservationists tend to oppose invasive species control, as well as lethal control for overpopulated herbivore populations. When we show compassion also for the natural harms which invasive species impose – or the greater risk of starvation or disease for uncontrolled herbivore populations – a blanket prohibition on lethal methods becomes harder to justify. A compassionate approach does, however, create greater need for research into viable non-lethal forms of population control, such that these conflicts can be avoided altogether.

In other cases, conflicts between compassion and conservation may be harder to avoid. For example, Horta (2010b) argues that reintroductions of predator species into ecosystems which have had time to adjust to their absence should be avoided, due to the harms which predators impose on prey species. Such cases are admittedly challenging, since the impacts of re-introducing a predator species are complex. Yet with a precautionary approach we should err on the side of the status quo, which is now an ecosystem absent the predator: we should be modest in our ability to predict the effects of the reintroduction, and take seriously the risks in terms of welfare and autonomy of the other species effected.

What is clear is that greater discussion about how to balance the flourishing of wild animals (taking natural causes of suffering into account) against biodiversity conservation is needed, especially within compassionate conservation. In reality, the tradeoffs are more complicated still when various human interests are thrown into the mix, whether they be

indigenous land use, economic development, recreation, or cultural values. Still, acknowledging that individuals matter requires that their value is taken more seriously in such deliberations. A first small step would be for animal welfare to be included in the mission statements of conservation organizations (Sekar and Shiller 2020). Neither is it necessary to agree with compassionate conservation to understand that this is needed: the value of individual animals is now broadly recognized across animal and environmental ethics, and supported by a growing wealth of scientific evidence (Ibid; Andrews et al. 2024; Ferraro et al. 2023; Vucetich and Nelson 2007). Of course, conservation practice must also be socially accepted. The DNNPs, while receiving a significant amount of social as well as political support in Denmark, were still not without controversy (Gamborg et al. 2022). In other regions (especially areas which have not undergone such intensive human modification), it is likely that a similar approach would be more greatly contested. However, such controversies are in part due to misunderstandings among the general public about the lives of wild animals: that wild animals frequently face extreme hardships due to natural causes is only rarely acknowledged (Horta 2010a). An important task for compassionate conservationists is therefore to educate policymakers and the public about the harms (natural and anthropogenic) that wild animals face.

Finally, an understandable concern for many currently working in conservation will be the cost of the interventions that a more compassionate and respectful approach entails, when conservation budgets are already stretched. Even extending compassion and respect only to a limited degree and only to certain species, as in the DNNPs, entails new costs: extending compassion and respect to a greater extent or for all species would be far more demanding. Undoubtedly, this is a challenge: but it is not a challenge which should fall only on the shoulders of conservation scientists and managers. The load can be spread by institutionalize compassion for wild animals (Santiago-Avila' and Lynn 2020). By creating institutions that fund or conduct research on more compassionate environmental interventions, and support their implementation, the burdens of pursuing more compassionate conservation would be more evenly spread. Compassionate conservation also requires the scrutiny and possible cessation of harmful conservation practices currently in use, which may allow some funding to be diverted towards more compassionate and respectful policies.

6. Conclusion

In this paper I have argued for a new understanding of compassionate conservation. I argued that compassionate conservationists themselves appeal not only to the virtue of compassion, but also (implicitly) to the virtue of respect. Furthermore, I have argued that to properly capture what it means to act from compassion and respect, an update to the four principles is needed. To capture compassion, we need the principles: *empathy*, *understanding*, and *minimize harm*. This extends concern for suffering beyond the limited scope of anthropogenically caused harms to also encompass indirect and natural sources of

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suffering. The virtue of respect is captured by *individuals matter* and *inclusivity*, but also by *respect for autonomy*.

This new form of compassionate conservation, while seeking to preserve the concern for individual animals that motivated the movement to begin with, nonetheless has starkly different practical implications. It requires that current conservation policies be evaluated not only in terms of the suffering that they cause directly, but also in light of how they promote the flourishing of all affected animals. Given the severity of harms that wild animals face even in well-conserved ecosystems, such evaluations ought to seriously consider the suffering that arises due to natural processes. But it also requires that we investigate new ways to reduce the harms that wild animals face. However, efforts to promote animal flourishing, especially where it concerns natural sources of harm, will often come at a cost for biodiversity conservation. Greater discussion is needed about how to ethically make this trade-off, and greater scientific research is needed to identify solutions that promote animal welfare while also furthering conservation goals.

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1. The need for ethics in wildlife management

When we look back today at the way medicine was practiced one hundred years ago, we marvel at the progress that has been made. But we also shudder, thinking about the way patients were treated at the time. Many of the mistakes were due to an incomplete understanding of medicine – for example, it wasn't until the 1980s that it became widely acknowledged that infants could feel pain (Anand and Hickey 1987). But there were also moral mistakes: failure to seek patients' consent, to avoid inflicting harm, or to distribute scarce medical resources justly. Because medicine was viewed solely as a science, not enough questions were raised about the moral dimensions of the practice. If what I've argued in this thesis is correct, then in one hundred years (hopefully sooner) we may come to look back at wildlife management in the same way – as a practice that, while following the scientific knowledge of the time, neglected important ethical questions.

Until recently, one could account for the mistake as an empirical shortcoming. As with infants, we didn't know that nonhuman animals were sentient. But today this excuse holds up no longer. Its implications are at least taken seriously in the context of wildlife research, where any handling of an animal requires institutional approval. But in the context of wildlife management, millions of wild animals may be killed with methods that cause severe and prolonged suffering, with no oversight at all (Hampton and Hyndman 2018).

Until recently we also didn't know the extent to which wild animals suffer from natural causes. Although some ethicists toward the end of the 20th century expressed concern for the suffering of wild animals, it wasn't until 1995 that its systemic causes were described in detail, and not until 2010 that the idea of intervention to mediate those harms was seriously proposed (Horta 2010). But as I have detailed in this thesis, there are now a range of proposals on the table. Although our scientific understanding is inadequate to implement many of them today, some are already carried out for conservation or strictly anthropocentric reasons, and others may be possible soon if their research and development is supported. That is why determining whether and when such interventions would be morally desirable is of such great moral importance.

2. Summary & synthesis

In part one of this thesis, I assessed the pre-existing debate about the possible *pro-tanto* duty to mitigate wild animal suffering. Different authors have approached the question with different theoretical assumptions, leading to incompatible conclusions that are hard to

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reconcile with one another. To bring their different views together, I employed the framework of principlism. In the first article I argued, similar to Beauchamp and Childress (2019), that the principles of *beneficence*, *non-maleficence*, *autonomy* and *justice* reflect a common-sense approach to ethics, and used them to argue that positions that assert a positive, natural duty to assist wild animals should be considered more plausible. In the second article I employed a different understanding of the principles. There, I argued that they capture the key values of the authors involved in the debate, thereby offering a widely agreeable starting point for deliberation, and one which should appeal to theory-agnostic decision makers. I argued that *beneficence*, *respect for autonomy* and *justice* support intervention. When weighted against the principle of *non-maleficence*, they establish a duty to intervene with precaution, and possibly restrict interventions to non-lethal methods.

But applying precaution when intervening in complex ecosystems is easier said than done. As I have argued, different parts of ecosystems are highly interrelated, as are the causes of wild animal suffering: evolution drives all wild animals to reproduce in excess, leading to competition over scarce resources and the development of antagonistic adaptations. Effective interventions, then, need to ensure that they reduce suffering at the ecosystem level. This led me, in part two, to respond to the charge that wild animal suffering is “intractable” (Delon and Purves 2018).

In order to focus on the question of whether intervention is possible with a precautionous approach, I narrowed the analysis in part two. I focused on the strongest principle motivating intervention – *beneficence* – and explored how it could be reconciled that with the countervailing pull of *non-maleficence*. I did this by assuming a welfare-consequentialist ethical framework (reflecting beneficence), and tried, within that framework, to make sense of the desire for precaution. I argued that, given the dire situation of wild animals, our epistemic uncertainty regarding intervention is not in and of itself a strong reason for precaution. Neither do appeals to the act-omission distinction provide a strong reason against intervention, since the distinction is controversial and, seemingly, only significant if other reasons against acting are insignificant. But there is one stronger, context-specific reason for precaution: that we are likely to have a much better understanding of how to improve ecosystems in the future. To intervene recklessly now would therefore run the risk of closing off opportunities for compassionate intervention in the future. But precaution on this basis should still allow for intervention where the chance of mitigating suffering is high relative to the ecological risks imposed. I ended by suggesting several types of interventions that may strike a good benefit/risk ratio: those that focus on the very worst kinds of suffering (e.g. certain diseases); on ecologically redundant suffering (e.g. certain parasites); in urban areas; ecological islands; or that promote shifts to more high-welfare regimes.

But by assuming welfare to be the only inherent value, this consequentialist analysis excluded considerations of autonomy or justice that were treated as important in part one. Such considerations could push us towards different kinds of interventions. It also assumed

that the decision-maker in question is intrinsically and primarily motivated to help wild animals. In conservation and wildlife management, however, that isn't typically the case.

For that reason, in part three I turned to the framework of compassionate conservation, which seeks to bring greater compassion and respect for wild animals into conservation practice. I began by tidying up some internal inconsistencies in the framework: although compassionate conservationists talk a lot about respecting animals, and two of the framework's principles reflect that, it had not yet acknowledged as a virtue. Compassion, on the other hand, had been misunderstood as *non-maleficence*. I proposed that compassion should instead be captured by three principles: *empathy*, *understanding*, and *minimize harm*. With these principles, compassion would be extended to the suffering that wild animals endure from natural causes, and give us reason to manage nature where possible in so as to mitigate that suffering.

This shows how compassion is closely related to beneficence. While I focused solely on beneficence in part two of this thesis, in part three considerations of justice and respect for autonomy come back into the analysis through the virtue of respect, manifesting in the principles of *inclusivity* and *individuals matter* (reflecting justice), and *respect for autonomy*. This leads to a different approach to intervention: ones that is less willing to sacrifice some animals in order to help others, and that promote the autonomy of wild animals alongside their welfare. But compassionate conservation also assumes that there are instrumental or intrinsic ecological values, which must be balanced against compassion and respect for wild animals. I demonstrate through the example of rewilding that win-win solutions are possible: it is possible to promote biodiversity and ecosystem services while also protecting animals from disease, overpopulation, harsh weather and even predation.

3. Bringing the frameworks together

In this thesis I have argued that three distinct frameworks – principlism, welfare-consequentialism and compassionate conservation – can be made to work together. This was possible by taking a functional approach to ethical theory, whereby ethical frameworks are understood as tools that help to answer different questions or simply highlight different ethical features. This will undoubtedly be viewed skeptically by some, such as those who see compassionate conservation and consequentialism as at odds (Griffin et al. 2020). Although some have argued that compassionate conservation can be made compatible with a plurality of ethical frameworks, including consequentialism (Coghlan and Cardilini 2020), this becomes challenging when we acknowledge compassionate conservation as entailing both the virtues of compassion and respect. As I have shown, while the compassionate virtue of *minimize harm* aligns well with consequentialism, the principles of *individuals matter*, *inclusivity*, and *respect for autonomy* – reflecting the virtue of respect – place limits on the kinds of actions that could be pursued.

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The welfare-consequentialist framework applied in part two can be reconciled with these non-consequentialist principles if we understand it as a framework that hones in on the principle of *beneficence*. In this way, it offers an analysis focusing on what I have argued is the *most* important principle in this context. But this does not deny that there are other relevant principles or duties, and in this way the consequentialist analysis informs, rather than contradicts, the analyses based on principlism and compassionate conservation from parts one and three.

The primary contributions of the welfare-consequentialist analysis were to question the strength of nonmaleficence and offer an alternative way to justify precautionary intervention. Interestingly, this reaffirms the conclusion of part one – that a precautionary approach is needed – but shows that nonmaleficence need not be weighted so strongly.

The consequentialist account of precaution in turn informed my understanding of the virtue of prudence within the framework of compassionate conservation. The interventions proposed as a result of the consequentialist analysis in turn informed my idea of compassionate management, but were adjusted in order to account for the values of autonomy, conservation, and respect. Respect in particular adds an additional consideration by highlighting how ends-justify-the-means thinking can, in practice, lead one to lose sight of the value of individuals.

The principlist framework was also informative for my reconstruction of compassionate conservation. While principlism captures values that are relevant in a wide range of contexts, compassionate conservation focuses on the virtues and principles that are most relevant in the conservation context. In this way, the specification of *beneficence* and *non-maleficence* in part one, along with my interpretation of the virtue of compassion, informed the principles of *empathy*, *understanding* and *minimize harm* that I proposed in part three. Similarly, the principlist analysis demonstrated the need for *respect for autonomy* to be integrated into the compassionate conservation framework. Lastly, the principlist analysis informed my argument that the principles *individuals matter* and *inclusivity* have more to do with respect (which I understand as corresponding to the principle of justice) than compassion.

Although the complementary nature of virtues and principles is acknowledged in recent editions of Beauchamp and Childress's *The Principles of Biomedical Ethics* (2019), how they work together has not been well developed. The understanding of how principles derive from virtues that I have developed through the consequentialist analysis is therefore also informative for principlism.

Each analysis thereby adds something to the last. Their tensions highlight what is missing from each approach, examining the ethical question(s) from different sides to form a bigger picture. This ultimately brings the competing principles, values, virtues, and the competing intuitions I began with at the start of this thesis – such as the need to help wild animals, the concern for causing harm, and to respect wild animal autonomy - into greater coherence.

4. Contribution to the state of the art

The primary contribution of this thesis was to explore the implications of wild animal suffering for wildlife management today and in the near future. Much of the writing on this topic has argued for intervention only in theory, once we have built up a body of knowledge, akin our current knowledge of ecology, in wild animal welfare science (Horta 2015). Some have proposed intervening now, but have suggested helping individuals in ways that disregard the systemic causes of suffering in nature (Cowen 2003; Faria 2024). Others have taken an eye to the systemic nature of the problem, but have suggested interventions that, if carried out within our lifetimes, would inevitably entail extremely high degrees of risk (Moen 2016; Tomasik 2017; Johannsen 2020).

When I began work on this thesis in 2021, there was little discussion about how wildlife management should change in light of wild animal suffering that both showed an understanding the systemic nature of that suffering and that took the risks involved in intervening seriously. In 2023, Horta and Teran published an article that addressed this need, proposing two types of intervention that have been incorporated into part two of this thesis. Part two goes beyond that paper, however, by considering the ethical implications of uncertainty in this context in greater detail, and by proposing several other types of promising interventions.

Part one contributes to the literature by providing that pro-intervention positions are both better aligned with our common-sense moral beliefs, and are supported by values at the root of different ethical theories. While these arguments do give definitive proof for the pro-intervention position, they provide an important base from which ethicists can move forwards to questions of *how* or *when* intervention might be permissible.

Part three makes a long overdue link between the literatures on wild animal suffering and compassionate conservation. Cross-pollination was needed because those working in conservation practice are exactly those people in positions to promote the wellbeing of wild animals, and those in conservation science are well positioned to grow our understanding of how to do so. Scientifically, bridging these two fields was important because compassion for the natural suffering of wild animals presented a gaping hole in the ethic of compassionate conservation. By highlighting the moral implications of wild animal suffering *within* a conservation ethic, rather than from simply from the perspective of philosophy, and publishing in a conservation science journal, I hope to have brought these implications into the awareness of those working in conservation science. Lastly, part three uniquely contributes a virtue-based argument in favor of mitigating wild animal suffering.

And finally, the thesis demonstrates the relationships and synergies between the frameworks of principlism, consequentialism and compassionate conservation. This ultimately supports a pragmatist approach to wild animal ethics, and demonstrates the utility of a functional approach to moral theory. For those who accept the coherence theory of

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moral justification, this should be an appealing outcome. For foundationalists, while this should provide a strong argument for public discourse, whether it is convincing will ultimately depend on the degree to which the frameworks used are supported by some assumed moral foundation. Given that each part appeals to widely-held assumptions, and adjusts each framework in response to inconsistencies and elements that are weakly supported, I hope this to be the case.

5. Where to from here?

This leaves open many gaps for future research. Firstly, I focused, in part two, on the implications of uncertainty for beneficence toward wild animals because I took beneficence to provide the force motivating compassionate intervention. But it would also be important to explore the implications of uncertainty for autonomy and justice. This gap has partially been filled with publications by Faria (2023) and Paez (2023), who discussing the implications of interventions for vulnerability and freedom of wild animals (respectively). The implications of risk for considerations of justice are, to my knowledge, as of yet unexplored in this context.

Secondly, I have focused on wild animal suffering that occurs largely independently from human actions. But a large degree of wild animal suffering is tied up with the far-reaching effects that humanity has on the environment, and this can strengthen the case for intervention (Sebo 2022). Whether anthropogenic harms might increase our risk-tolerance when intervening, or change the tradeoff between conservation and compassion, would be well worth exploring.

Third, while compassionate conservation has received much more attention, it is not the only ethic for conservation that places significance importance on animal welfare. As mentioned in part two, wildlife welfare differs in that it places less emphasis on the virtue of respect. A wildlife welfare scientist may then tolerate interventions that pose more uncertain outcomes in terms of animal welfare, while still preferring that the ecological risks are low.

Fourth, there is a need for scientific and technological research to identify promising interventions & predict their effects. While this has already been emphasized in much of the literature, this thesis highlights the need for research into interventions (and their effects) that could be implemented now or in the near future. Based on my findings from part two, this could include the wider use of fertility control, and the further development of fertility control technologies; research to identify the worst wildlife diseases and parasites with little ecological role, and ways to eradicate them; research about the welfare benefits of restoring different degraded ecosystems; and research on interventions in ecological islands and urban areas. As I argue in part three, rewilding projects may present a good opportunity to investigate ways to promote animal welfare in.

Lastly, this thesis did not touch on the social and political barriers to reducing wild animal suffering. Political change requires social support, and the general public is largely unaware of the suffering of wild animals, let alone the sentience of animals (Horta 2010). But public policies can also shape social opinion. Animal advocates could push for special funding for wild animal welfare science, or for animal welfare and ethics to be included in the educational curricula.

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Appendix A: Curriculum Vitae

Tristan Katz

(June 2025)

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Work address

University of Fribourg

Ch. du Musée 4

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AOE Animal Ethics, Environmental Ethics, Utilitarianism.

AOC Philosophy of Biology, Political Philosophy, Applied Ethics.

Employment

04/2025 – present	Postdoctoral researcher Environmental Sciences and Humanities Institute, University of Fribourg
04/2021 – 03/2025	PhD researcher Environmental Sciences and Humanities Institute, University of Fribourg
03/2019 – 03/2021	Advisor Ethics, Ministry of Health (NZ)
04 - 07/2020	(Acting Senior Advisor)
11/2018 – 02/2019	Assistant Advisor Ethics, Ministry of Health (NZ)
08/2018 – 09/2018	Research Intern Animal Ethics (www.animal-ethics.org)
09/2017 – 01/2018	Student Assistant Institute of Philosophy, University of Bern

Education

04/2021 – 03/2025	PhD in Environmental Humanities Thesis: <i>The ethical implications of wild animal suffering for conservation and wildlife management</i> Committee: Prof. Ivo Wallimann-Helmer, Prof. Oscar Horta, Dr. Angela Martin, and Dr. Heather Browning
09/2023 – 02/2024	Visiting scholar at the University of Sheffield, UK

09/2016 – 08/2018	MA in Political, Legal and Economic Philosophy University of Bern, Switzerland (GPA = 5.49/6) Thesis: <i>Demanding Actions & Selfish actors: how a limited utilitarianism can establish an obligation to aid</i> Supervisor: Prof. Andreas Müller
09/2013 – 09/2016	BSC in Ecology and Biodiversity with a second major in Philosophy University of Wellington
09/2015 – 05/2016	Exchange at the University of Western Ontario Canada

Publications

<i>Journal articles</i>	Katz, Tristan David. "Widely Agreeable Moral Principles Support Efforts to Reduce Wild Animal Suffering." <i>Journal of Applied Animal Ethics Research</i> 1, no. aop (2023): 1-26. https://doi.org/10.1163/25889567-bja10038 Katz, Tristan. "Taking natural harms seriously in compassionate conservation." <i>Biological Conservation</i> 299 (2024): 110791. https://doi.org/10.1016/j.biocon.2024.110791
<i>Proceedings</i>	Katz, T., & Wallimann-Helmer, I. (2022). Challenging our thinking about wild animals with common-sense ethical principles. In <i>Transforming food systems: ethics, innovation and responsibility</i> (pp. 126-131). Wageningen Academic Publishers. https://doi.org/10.3920/978-90-8686-939-8_18
<i>Book reviews</i>	Katz, Tristan David. "Catia Faria: Animal Ethics in the Wild." <i>Ethical Theory and Moral Practice</i> (2023): 1-3. https://doi.org/10.1007/s10677-023-10406-z
<i>Work-in-progress</i>	Mitigating Wild Animal Suffering: When—and Whether—to Intervene Amid Ecological Uncertainty (to be submitted June 2025)

Academic talks

05/2025	‘Taking Natural Harms Seriously in Compassionate Conservation’ Course <i>Séminaire L'éthique environnementale</i> , Fribourg, Switzerland
07/2024	‘Taking Natural Harms Seriously in Compassionate Conservation’ <i>ISEE 21st Annual Summer Meeting</i> , Fribourg, Switzerland
05/2024	‘Taking Natural Harms Seriously in Compassionate Conservation’ <i>Environmental Science Seminar</i> , Basel, Switzerland

- 02/2024 'Reducing Wild Animal Suffering Systematically: The Need For Coherent Theories Of Change'
Sheffield-Santiago de Compostela Wild Animal Ethics Workshop (online)
- 12/2023 'Genuine Compassion in Conservation'
Environmental Politics Network, Sheffield, UK
- 11/2023 'Taking Wild Animal Suffering Seriously in Environmental Management',
2nd Swiss Animal-Environmental Ethics Networking Meeting, Fribourg
- 10/2023 'From Conservation to 'Compassionate Environmental Management'',
Graduate Philosophy conference, Oxford
- 09/2023 'From Conservation to 'Compassionate Environmental Management'',
University of Otago Bioethics Centre, Dunedin, New Zealand (online)
- 03/2023 'Real Compassion Means Environmental Management, Not Conservation'
Utopia Animalia, Monte Verita, Switzerland
- 03/2023 'Supporting Interventions to Reduce Wild Animal Suffering With Common-Sense Ethical Principles'
Nordic Environmental Ethics Winter Symposium, Copenhagen (with I.W-H)
- 05/2022 'Common Sense Moral Principles Support Efforts to Reduce Wild-Animal-Suffering',
What We Owe to Animals, Fribourg, Switzerland (with I.W-H)
- 04/2022 'Common Sense Moral Principles Support Efforts to Reduce Wild-Animal-Suffering'
Geocolloquium, Fribourg, Switzerland (with I.W-H)
- 02/2022 'Challenging Our Thinking About Wild Animals with Common-Sense Ethical Principles'
Philosophy Doctoral Students Day, Basel, Switzerland (with I.W-H)
- 01/2022 'Common Sense Moral Principles Support Efforts to Reduce Wild-Animal-Suffering'
Students Conference on Animal Ethics, Berlin (online, with I.W-H)

Teaching experience

Fall 2022	Reading Seminar for course <i>Principles of Environmental Ethics</i> by Ivo Wallimann-Helmer
Fall 2018	Tutorial for course <i>Philosophy of Law</i> for Prof. Markus Stepanians

Workshops & Conferences organized

06/2024	Co-organizer of the conference <i>ISEE 21st Annual Summer Meeting</i> , Fribourg
09/2023	Co-organizer of the workshop <i>Animals, Compassion and Conservation</i> , online
02/2023	Co-organizer of the MANCEPT workshop <i>Consequentialism and Environmental Ethics</i> , Manchester
03/2022	Co-organizer of the workshop <i>Principles for Environmental Practice</i> , Fribourg

Further Achievements

2024	Attended EA Global conference (London)
2022	Attended EA Global X conference (Berlin)
2020	Day course in 'introduction to health economics'
2020	Attended EA Global X conference (Sydney)
2019	Day course in 'introduction to good clinical practice'
2019 – 2021	Exec member and social media officer for the Wellington branch of Effective Altruism New Zealand
2014	Sponsored for RYLA (Rotary Youth Leadership Award), a five-day leadership program

Languages

English: Native	German: Proficient
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Referees

Ivo Wallimann-Helmer Professor in Environmental Humanities & Primary supervisor University of Fribourg +41 26 300 8826 Ivo.wallimann-helmer@unifr.ch Laura Garcia-Portela	Assistant Professor in Philosophy, member of supervising PhD jury. Erasmus University of Rotterdam +34 626 473 651 garciaportela@esphil.nl
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Appendix B: Published Papers

- Challenging Our Thinking About Wild Animals With Commonsense Ethical Principles (Part 1).
- Widely Agreeable Moral Principles Support Efforts to Reduce Wild Animal Suffering (Part 1).
- Taking Natural Harms Seriously in Compassionate Conservation (Part 2).
- Catia Faria: Animal Ethics in the Wild (as part of the literature review conducted before writing the thesis).