

TO ASSIST OR NOT TO ASSIST? ASSESSING THE POTENTIAL MORAL COSTS OF
HUMANITARIAN INTERVENTION IN NATURE

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ABSTRACT

In light of the extent of wild animal suffering, some philosophers have adopted the view that we should cautiously assist wild animals on a large scale. Recently, their view has come under criticism. According to one objection, even cautious intervention is unjustified because fallibility is allegedly intractable. By contrast, a second objection states that we should abandon caution and intentionally destroy habitat in order to prevent wild animals from reproducing. In my paper, I argue that intentional habitat destruction is wrong because negative duties are more stringent than positive duties. However, I also argue that the possible benefits of ecological damage; combined with the excusability of unintended, unforeseeable harm; suggest that fallibility should not paralyze us.

KEYWORDS

animal rights, wild animal suffering, Utilitarianism, fallibility, r-Strategists

1. INTRODUCTION

In light of their growing appreciation for the extent of wild animal suffering, a number of animal rights theorists (henceforth to be called 'AR theorists') have adopted a qualified commitment to humanitarian intervention in the wild.¹ More specifically, they've adopted a view some call 'fallibility-constrained interventionism'.² According to this view, preventing wild animal suffering is desirable and thus we should intervene in

¹ I use the term 'animal rights theory' quite broadly in this paper. My use of it includes not only the view that animals possess inviolable moral rights, but also the Utilitarian view that animals have moral status but not inviolable rights, as well as the Moderate Deontological view that animals have weighty but nonetheless defeasible rights that may sometimes be overridden for the sake of beneficence.

² Johannsen, 2017: 333.

nature, but we should proceed very cautiously in light of our limited understanding of ecosystems and the resulting ecological risks intervention poses.³

In this paper, I explain and respond to two objections to fallibility-constrained interventionism. Both objections attack the claim that cautious intervention is justified, but they do so on opposite fronts. According to the first objection, cautious intervention is unjustified because fallibility is allegedly intractable. Ecosystems' complexity entails not only that large scale interventions are at risk of causing unintended negative consequences, but that we're unable to reliably assess the extent of that risk.⁴ If this is right, then it would seem that proceeding both cautiously and on a large scale is impossible. Even the most well-researched, large scale intervention could be ecologically dangerous, and thus only very small scale interventions in nature are ever justified, e.g., rescuing deer trapped in barbed wire fences or helping beached sea mammals return to the ocean.

In contrast, the second objection claims that adopting a cautious attitude reflects a failure to appreciate the moral implications of wild animal suffering. From what we can tell about wild animal reproduction and the conditions wild animals face, most wild animals experience more suffering than enjoyment in their lives, i.e., their lives contain net suffering.⁵ If this is right, it seems odd to worry about the possibility that large scale interventions could unintentionally damage ecosystems. In fact, ecological damage could have positive consequences. Destroying wild animals' habitats would reduce the number of wild animals in the world, and since most wild animals' lives contain net suffering, reducing the number of wild animals would increase total utility. The upshot, it would seem, is that instead of carefully trying to avoid ecological damage, we should intentionally destroy wild animals' habitats.⁶

³ See Cowen, 2003; McMahan, 2010 and 2015; Sözmen, 2013; Horta, 2013 and 2015; Tomasik, 2015b; and Johannsen, 2017.

⁴ Delon and Purves, 2018: 244–50. Though the authors I cite in footnote 3 understand fallibility specifically as a constraint on intervention, the issue of fallibility is often raised in objection to the claim that intervention is justified. See, for example, Singer, 1975: 238–9; Simmons, 2009; and Ladwig, 2015: 297–9.

⁵ For work supporting the claim that most wild animals experience net suffering, see Ng, 1995; Horta, 2010 and 2015; and Tomasik, 2015b.

⁶ Tomasik, 2016.

In this paper, I grant, for the sake of argument, both the claim that fallibility is intractable and the claim that (some forms of) habitat destruction have positive consequences overall. I argue that even if one grants these claims, they fail to undermine a cautious commitment to large scale intervention. With respect to the second claim, even if nature (or the world) contains moral disvalue, intentional habitat destruction is only justified from a Utilitarian perspective. On the plausible, non-Utilitarian assumption that negative duties are much weightier than positive duties, our duty to refrain from causing the harms associated with habitat destruction trumps our duty to provide the benefits associated with it. However, that habitat destruction could have positive consequences overall, is morally significant. Any possible positive effects of ecological damage should be considered when morally evaluating the ecological risks of large scale intervention. Furthermore, the claim that fallibility is intractable suggests that any unintended harms caused by large scale intervention are not only unintended, but unforeseeable. From a deontological perspective, unintended, unforeseeable harm is more excusable than other kinds of harm. In combination, intractability and the positive consequences produced by some forms of habitat destruction suggest that we should proceed cautiously but not be paralyzed by our limited understanding of ecosystems.

2. Wild Animal Suffering and Fallibility-Constrained Interventionism

In recent years, AR theorists have increasingly come to appreciate the extent to which wild animals fail to live flourishing lives. Though we've always known that the wild is a nasty place where predators lethally attack prey, only recently have most AR theorists come to realize that most wild animals fail to flourish. In fact, what we know about wild animal reproduction suggests that the majority of sentient beings born into the world may not even live lives worth living. After all, only some wild animals (K-Strategists) protect their genes by restricting reproduction to a small number of cared-for offspring. Many animals protect their genes by producing large numbers of uncared-for offspring. This evolutionary reproductive strategy, normally referred to as the 'r-Strategy',⁷ is

⁷ See MacArthur and Wilson, 1967; and Pianka, 1970. It should be noted that my use of the terms 'K-Strategist' and 'r-Strategist' does not mean I endorse the theory with which they are associated. The predictions that theory makes about evolved traits have often proven false, but the classificatory terminology it employs is still helpful and in common use. It should also be noted that though using the terms 'K-Strategist' and 'r-Strategist' in a

used by many lizards, amphibians, fish, and small mammals. Instead of restricting reproduction and providing intensive care, r-Strategists produce a large quantity of offspring, the majority of whom die from disease, starvation, injury, exposure, or predation, shortly after birth. In some cases, the death that an r-Strategist infant experiences is quick, albeit painful, e.g., being quickly eaten by a predator. In other cases, it can be slow and gruelling (dying from starvation or exposure takes a while). And even when their death happens quickly, it typically occurs before they've had the opportunity to become comfortable with or competent to navigate their environment. In other words, your typical r-Strategist infant crawls around uncomfortably for a short while, after which she dies either a quick and painful death, or a slow and painful death. Only a very small number of r-Strategist offspring live long enough to reach a point in their lives where they're competent to manage the dangers of their environment and able to reproduce.

In combination, the fact that many wild animal species are r-Strategist, that r-Strategists (by definition) have far higher reproduction rates than K-Strategists, and that most r-Strategist young live short painful lives, is concerning. In light of the support that they provide for P2 and P3 in the below argument, I believe the argument is sound.

P1: A life that's filled with suffering and ends shortly after birth is not a flourishing one, and it may not be worth living.

P2: Most r-Strategists live lives that are filled with suffering and end shortly after birth.

P3: Most sentient individuals born into the world are r-Strategists.

C: Most sentient individuals born into the world do not live flourishing lives, and their lives may not be worth living.

There are, of course, a number of empirical questions concerning the extent of r-Strategist suffering. For one, there's a question about which r-Strategists are sentient and thus capable of feeling pain at all. Insects, for example, may very well not be sentient, and it's possible that some r-Strategists don't become sentient until a later

classificatory manner suggests a dichotomy, it's more accurate to think of them as opposite points on a spectrum: some animals are clearly K-Strategists, some are clearly r-Strategists, but many also lie somewhere in between. For a helpful secondary source concerning the r and K-Strategies, see Jeschke et al., 2008.

stage in their life e.g., amphibian r-Strategists who must initially must go through a larval stage. Additionally, some philosophers and cognitive scientists draw a distinction between 'mere pain', a purely physical experience, and 'suffering', an experience with both psychological and physical dimensions,⁸ and wonder what must be true of an organism for it to be capable of suffering. Though the available evidence suggests that non-human mammals can suffer, it's somewhat uncertain whether other non-human animals generally can.⁹ The possibility that many r-Strategists can only feel 'mere pain' – a cognitive state that's less unpleasant, and which presumably has less moral significance, than suffering – suggests that the lives of r-Strategists may not actually be as bad as they seem.

The empirical uncertainty surrounding the extent of r-Strategist suffering is important to note, but it should also be noted that the r-Strategy has significant implications for wild animal suffering on even conservative assumptions about the scope of sentience and the scope of the capacity to suffer. Suppose, for the sake of argument, that we were to restrict the scope of our moral attention to mammals, since they can certainly suffer and since suffering is certainly a morally significant mental state. Even with this restriction, it remains the case that the vast majority of individuals born into the moral community are r-Strategists. After all, the majority of mammals are small mammals, and small mammals tend to be closer to the r side of the r/K spectrum than large mammals.¹⁰ Consider, for example, the meadow vole (*Microtus pennsylvanicus*). According to one study, 88% of meadow vole young die during their first month of life, and as a result, the average meadow vole only lives for 0.7 months.¹¹ Furthermore, the cause of death for meadow vole infants is, in the majority of cases, a rather painful one: specifically predation.¹² Though not all small mammals are r-Strategists, it remains true that the r-Strategy is common enough among mammalian species. And so long as the r-Strategy is common among mammals, then the above argument holds true even when we replace the term 'sentient individuals' with

⁸ See, for example, Farah, 2008.

⁹ See Shriver, 2006; and Farah, 2008.

¹⁰ See the discussion of small mammals' life histories in chapter 1 of Stoddart, 1979.

¹¹ Getz, 1960: 398.

¹² Getz, 1960: 397.

‘mammalian individuals.’ In other words, the r-Strategy implies that the majority of mammalian individuals born into the world do not live flourishing lives, and that their lives may not be worth living.

In light of the above argument (or variations of it), a number of AR theorists have adopted ‘fallibility-constrained interventionism’.¹³ As I mentioned earlier, this view holds that humanitarian intervention in nature is warranted, but that a proper appreciation for our own fallibility and the associated ecological risks of intervention requires adopting a cautious attitude. For example, in previous work, I argue that a relatively new form of gene editing called CRISPR presents a promising means of intervention.¹⁴ I claim that CRISPR could hypothetically be used to modify r-Strategists so that they become more like K-Strategists, i.e., so that they produce a fewer number of offspring and invest the energy needed to ensure that their offspring have a decent shot at life. What’s more, I note that CRISPR-created traits like the above could easily be dispersed through wild animal populations via an ‘endonuclease gene drive’.¹⁵ However, I don’t think that we should immediately begin to bioengineer wildlife populations. A considerable amount of ecological research, as well as biotechnological research and testing, is required before any large scale genetic intervention would be ecologically safe. It’s also likely that supplementary interventions would have to be researched in order to avoid ecological catastrophe, e.g., engineering an alternative food source for predators who, due to the initial intervention, no longer have as many r-Strategists to eat.

In the following sections, I consider two objections to fallibility-constrained interventionism. According to the first, a cautious attitude toward intervention doesn’t

¹³ See footnote 3.

¹⁴ Johannsen, 2017: 339–43. The acronym ‘CRISPR’ stands for ‘Clustered Regularly Interspaced Short Palindromic Repeats’. Though the term refers to a structural feature present in the genomes of different bacteria, it’s now colloquially used to refer to a new form of gene editing (Doudna, 2014: 1 and 3). For an informative and accessible article about CRISPR, see Ledford, 2015.

¹⁵ For descriptions of how gene drives work, see Ledford, 2015: 22; and Esvelt, 2014: 3–4. For examples of successful gene drives that have been conducted in the laboratory setting, see Gantz et al., 2015; and Hammond et al., 2015. For some speculative thoughts about using gene drives to aid wild animals, see Esvelt, 2018.

take wild animal suffering seriously enough. According to the second, even a cautious attitude toward intervention is reckless.

3. Intentional Habitat Destruction

According to the first objection, the extent of wild animal suffering is too severe for caution to make sense. Wild animals aren't just experiencing *a lot of suffering*: in most cases, they are experiencing *net suffering*, i.e., their lives contain a greater amount of suffering than enjoyment.¹⁶ The upshot is that most (sentient) wild animals are better off never having been born at all. According to Brian Tomasik, this observation implies that the sort of intervention we should be pursuing is habitat destruction.¹⁷ Destroying wild animals' habitats would reduce the number of wild animals who are born, thereby reducing the amount of moral disvalue in nature. What's more, the longer we wait the worse things will be, since waiting just gives nature the opportunity to produce more generations of doomed animals.

A number of issues are worth mentioning with respect to Tomasik's argument. The first is whether he's right to claim that most wild animals don't live lives worth living. Given the prevalence of the r-Strategy and the manner in which most r-Strategist young die, it's highly probable that most wild animals live pretty terrible lives. However, a pretty terrible life isn't the same thing as a life not worth living.¹⁸ For example, the conditions that severely impoverished, third world citizens face are pretty terrible. It's pretty terrible to be perpetually malnourished, to lack easy access to clean water, to have inadequate shelter, to have inadequate access to medical assistance, etc. Still, it's likely that most severely impoverished, third world citizens live lives worth living. Most still have the opportunity to form friendships, have families, learn skills and develop talents, etc. Most r-Strategists, by contrast, don't get to enjoy rewarding experiences.

¹⁶ See footnote 5.

¹⁷ Tomasik, 2016. See also his somewhat more reserved comments about habitat destruction in Tomasik, 2015b: 145–6.

¹⁸ I assume that a life with more suffering than enjoyment is not a life worth living. However, I don't think that experiencing a lot of pleasure is sufficient to live a flourishing life, i.e., I don't have an entirely hedonic view of the good. A certain amount of pleasure is a necessary condition for flourishing, but the good is probably a plural thing containing a number of objective elements. For an account of (specifically human) flourishing that strikes me as plausible, see Sypnowich, 2017: chapter 7.

They just crawl around uncomfortably for a bit and then die painfully, so I think it's plausible to claim that their lives aren't worth living. Still, it's somewhat unclear whether their lives are merely pretty terrible (certainly not flourishing lives), or whether their lives aren't worth living at all.

For the sake of argument, let's assume that Tomasik's right to claim that most wild animals don't live lives worth living. The implications of this claim for overall utility remain an issue. If most wild animals experience more suffering than enjoyment in their lives, does that mean that the total amount of utility in nature is negative? That nature contains net suffering? Tomasik and others seems to think so. Furthermore, does it mean that the overall amount of utility in the world is negative, i.e., that the overall amount, considering the utility of human beings and domesticated animals as well, is negative?¹⁹ On the one hand, it's possible that the comparatively enjoyable lives that most human beings, and that *some* domesticated and wild animals live, outweigh the miserable lives that most r-Strategists live. However, on the assumption that most r-Strategist young don't live lives worth living, I think it's unlikely that their misery is outweighed. For one, some philosophers, including Tomasik,²⁰ maintain that there's an asymmetry between suffering and enjoyment. Though some extreme versions of this view deny that enjoyment has any positive value at all, the more moderate versions merely maintain – quite reasonably, I think – that the badness of an amount of suffering exceeds the goodness of an equal (or only marginally greater) amount of enjoyment.²¹ If, when calculating utility, a unit of suffering is accorded more negative value than a unit of enjoyment is positive value, it's quite likely that the suffering of r-Strategists outweighs the enjoyment of K-Strategists. But even if we deny that there's an asymmetry between suffering and enjoyment, it's unlikely that the suffering of r-Strategists is outweighed. After all, the number of r-Strategist individuals in the world dwarf the number of K-Strategist individuals (human beings included). This remains true even if we restrict our count to r-Strategist mammals, and it is especially true if we include in our count the number of individuals who were alive at some point during a

¹⁹ I might also have included liminal animals in this list. Liminal animals are undomesticated animals that live in human communities. See Donaldson and Kymlicka, 2011: chapter 7.

²⁰ Tomasik, 2015a.

²¹ See, for example, Mayerfeld, 1996: 324–5.

period of years – a few decades let’s say – instead of the number of individuals alive at any particular instant. Though there’s still some room for doubt, the claim that most r-Strategist young don’t live lives worth living plausibly entails that the overall amount of utility in the world is negative. And if most r-Strategists don’t live lives worth living, then reducing their populations via habitat destruction promises to reduce net suffering.

There are, of course, many harms associated with habitat destruction. The manner in which habitat destruction prevents disvaluable lives from coming into existence is specifically by killing existing wild animals. The idea is that without their habitats and the resources habitats contain, existing r-Strategist animals will die and will therefore be prevented from reproducing. Furthermore, habitat destruction would foreseeably cause considerable harm to K-Strategist animals (deer, bears, elephants, etc.), and to human beings (we rely on wild animal habitats in various ways, some of which I take note of below). However, if the r-Strategy does indeed entail that the overall amount of utility in the world is negative, it’s likely that the benefits of a significant, enduring reduction in the size of r-Strategist populations exceed any harms to existing (or future) individuals.

One might object that the case for habitat destruction presupposes that our goal should be to increase total (aggregate) utility, rather than average utility. After all, reducing the size of r-Strategist populations only increases average utility when doing so reduces the ratio of r-Strategists to K-Strategists. Since habitat destruction reduces the size of K-Strategist populations, too, it’s likely that, in many cases, it would leave the ratio of r-Strategists to K-Strategists more or less intact. In such cases, the immediate harms habitat destruction causes would not be outweighed by greater, compensating benefit, at least from a perspective focused on average utility.

The view that our goal should be to promote *average* utility, rather than *total* utility, is quite plausible when dealing with individuals whose net utility level is positive, i.e., individuals whose lives are worth living. The reason is because making total utility our goal counterintuitively implies that it would be good to bring to into existence as many individuals as possible, so long as they live minimally decent lives;²² or in other words, that we should prefer large, unhappy populations (where total utility

²² There’s a good discussion of this in Rawls, 1971: 161–4.

is high but average utility is low) over small, happy populations (where average utility is high but total utility is low). However, when dealing with individuals whose lives contain more suffering than enjoyment, considerations of total utility have special importance. To see why, compare two possible worlds with the same average level of net suffering, but one of which has a much higher population than the other. More specifically, let's say that the first possible world contains 5 people, all of whose lives are not worth living, whereas the second possible world contains 10000 people, all of whose lives are not worth living. We should all be able to agree that the world with 5 people in it is preferable to the world with 10000 people in it. However, the reason can't be differential average utility, since we've stipulated that each possible world possesses the same level of it. Instead, the reason must be differential total utility: the world with a population of 10000 has a much higher total level of net suffering, and that's why it's worse than the world with 5 people in it. I'd even go so far as to say that consideration of total utility can *trump* average utility, at least when we're dealing with net suffering. To see why, compare two possible worlds with different average levels of net suffering, one of which has a much higher population, but also a lower average level of net suffering. More specifically, let's say that the first possible world contains 5 people, all of whose lives are not worth living, and that the second possible world contains 10020 people, 10000 of whose lives are not worth living but 20 of whose lives aren't too bad – a world not unlike the one we actually live in, if r-Strategists' lives aren't worth living. Even though the second possible world has a lower average level of net suffering, it's still a worse world than the first, and the reason is because the second world's total level of net suffering is much higher. In light of this, it's appropriate for our goal to be the reduction of total, rather than average net suffering. If I'm right, then Tomasik's case for habitat destruction can't be deflected so easily, since habitat destruction promises to reduce total net suffering by reducing the size of r-Strategist populations.

It should be noted that only some kinds of habitat destruction consistently reduce the size of r-Strategist populations. Habitats that are significantly disrupted can become inhospitable to some species, particularly specialist species, without becoming inhospitable to other species. As a result, habitat destruction can sometimes lead to population increases among generalist species, including generalist r-Strategists.²³ In

²³ For a relevant study that focuses specifically on bird populations, see Devictor et al., 2008.

order for habitat destruction to reliably decrease the size of r-Strategist populations, then, it has to be the sort of destruction that renders a region thoroughly inhospitable for the majority of wild animals, e.g., desertification. It's specifically habitat destruction of this sort: the sort that dramatically reduces a region's biomass and primary productivity, that Tomasik has in mind.

For some readers, the claim that we should intentionally destroy habitat will seem absurd regardless of whether doing so improves overall utility. After all, the 'beneficiaries' of habitat destruction are the wild animals we thereby prevent from being born, not human beings. In fact, habitat destruction is clearly not in most human beings' interests. We benefit in various ways from many wild animal habitats, e.g., wild animal habitats are often aesthetically pleasing, they often contain economically valuable resources, the plants they contain produce oxygen that we enjoy breathing, etc. Thus, it might be argued that habitat destruction is unjustified because it's contrary to the interests of human beings. Of course, this counter-argument assumes human exceptionalism, i.e., it assumes that the interests of human beings matter more than the interests of animals. I think it's more interesting to ask whether Tomasik's conclusion can be plausibly rejected without assuming human exceptionalism. I think this, in part, because Tomasik is not a human exceptionalist and neither is much of his audience. I also think this because I think human exceptionalism is false.

It might be thought that we can simultaneously reply to Tomasik's argument and avoid human exceptionalism, by appealing to natural entities. On some philosophical views, particularly 'deep ecological' ones,²⁴ natural entities such as eco-systems, sets of eco-systemic relations, and species, have intrinsic moral value. If natural entities have intrinsic value, then our reasons for protecting and respecting them are to some extent independent of whether the sentient individuals who populate those eco-systems are living good lives. From this perspective, any changes to an eco-system that significantly reduces its biomass and primary productivity, would be *prima facie* objectionable. To use the language of resilience theory, habitat destruction of the sort Tomasik envisions would involve a 'regime' change, i.e., it would involve changing the eco-system to the point where it has a new structure and equilibrium point. According to resilience theorists, healthy or 'resilient' eco-systems are those which can withstand disruptions

²⁴ For an early collection of deep ecological work, see Tobias, 1988.

without crossing the threshold beyond which a new regime lies, and thus resilience should be protected.²⁵ As such, regime changes are thought of as something to be avoided. This sort of thinking fits well within deep ecology, and it supplies an objection to Tomasik's argument for habitat destruction. A regime change involves replacing one set of eco-systemic relations with another, and regime changes caused by habitat destruction could lead to the extinction of certain plant and animal species. If species, and existing sets of eco-system relations, possess intrinsic moral value, then we have utility-independent reasons to refrain from destroying habitat.

For my part, I'm skeptical that anything but sentient individuals possess intrinsic moral value. The claim that natural entities have intrinsic moral value seems to me to reflect a category error: many natural entities are beautiful and possess an impressive degree of complexity, but the value associated with beauty and complexity is specifically *aesthetic* value, not *moral* value. I won't press this point here, though. I think it's enough to note that even if natural entities possess intrinsic moral value, the claim that their value trumps the interests of sentient animals is only plausible if we accept human exceptionalism.²⁶ After all, we would never accept the claim that the value of natural entities outweighs the value of human interests. Though it's plausible to think that protecting the environment does, to some extent, trump the interests of existing humans (some of our economic interests, for example), we normally appeal to more than just the environment itself when justifying such protection, e.g., we appeal to the interests that future generations of humans have in a healthy environment. In the event that environmental protection and the interests of humans were to come apart – if allowing environmental degradation would somehow have positive overall consequences for both current and future generations of humans – environmental protection would no longer be justified. Similarly, then, I think we should accept that the interests of animals outweigh whatever intrinsic value natural entities may have.

The most obvious, non-human-exceptionalist reply to Tomasik's argument is that it assumes Utilitarianism, and Utilitarianism is not very plausible. Whether our actions produce positive consequences (or reduce disvalue) matters, of course, but it's not the only thing that matters. In particular, negative duties are weightier than positive

²⁵ See chapter 3 of Walker and Salt, 2006.

²⁶ For additional arguments in support of this conclusion, see Cunha, 2015.

duties, and as a result, doing the right thing sometimes requires that we refrain from performing the action that produces the best consequences. For example, in a situation where killing one person is necessary in order to save two people, killing that person would produce the best consequences. But that doesn't mean saving two people justifies killing one. Your positive duty to save two people is trumped by your negative duty to refrain from killing one. My own view is that, past some threshold, positive duties do trump negative duties, e.g., that saving ten billion people would justify killing one.²⁷ Whatever the threshold is, though, it's high enough that the duty to refrain from killing typically (but doesn't always) trump the duty to save lives, and I think that what's typically the case holds true with respect to habitat destruction. Tomasik thinks that the positive consequences of habitat destruction exceed the harms it would cause to existing animals and human beings, and he may be right about that. But on the plausible assumption that negative duties are more stringent than positive duties, it's unlikely that our duty to provide the benefits associated with habitat destruction trumps our duty to refrain from causing the harms. That Tomasik thinks otherwise reflects his commitment to Utilitarianism.

Though I disagree with the conclusion that we ought to intentionally destroy habitat, I agree that, on the assumption that nature contains net suffering, the sort of habitat destruction he has in mind likely has positive consequences overall. Furthermore, the possibility that some forms of habitat destruction have positive consequences overall, has implications for the second objection to fallibility-constrained interventionism, i.e., the objection that large scale interventions in nature are reckless even if carefully conducted.

4. Intractable Fallibility

The second objection to fallibility-constrained interventionism was put forward by Nicolas Delon and Duncan Purves.²⁸ They claim that those who see fallibility as a constraint on intervention, rather than as a straightforward bar to intervention, are underestimating the extent of our fallibility. After all, in order for fallibility to constrain but not entirely prevent intervention, it must currently, or at least eventually, be

²⁷ This view is sometimes labelled 'Moderate Deontology'. For examples of this view, see Ross, 1930: 88–9; and Nagel, 1991: 62–3.

²⁸ Delon and Purves, 2018: 244–50.

possible for us to reliably make *some* judgments concerning the effects of intervention. It's probably too much to hope that we'll ever be able to know precisely what the ecological effects of a given large scale intervention would be, but perhaps we can write up a list of possible effects, and with enough research, we might be able to reliably assign probabilities to them, along with error margins. If we can bring ourselves to the point where we can reliably predict the possible effects, their probabilities, and the error margins associated with those probabilities, then fallibility would be quite manageable. Even if we'll never be able to say precisely what's going to happen when we implement an intervention, we would be able to distinguish between interventions with acceptable risks and interventions with unacceptable risks.

According to Delon and Purves, however, there's good reason to think that fallibility isn't and may never become epistemically tractable. Their claim is partially justified in light of recent work in contemporary ecology that suggests eco-systems are more complex and less predictable than ecologists used to think. The main idea is that significant changes to an eco-system can reduce its resilience, i.e., its ability to absorb future disruptions without shifting to a new regime. What this means is that assessing the risks of an intervention involves more than just predicting its direct effects: we also have to predict its indirect effects. More specifically, we would have to predict whether an eco-system we've intervened in will be able to handle future disruptions that we may have rendered it more vulnerable to; and we'd have to predict and compare the effects that different possible regimes would have on animal and human welfare: a difficult set of epistemic tasks.²⁹

Additionally, they note that climate change undermines our ability to make reliable predictions.³⁰ Our predictions about the ecological effects of intervention depend upon our knowledge of a given eco-system's current state, but climate change threatens to significantly affect many eco-systems. We could, of course, make predictions that assume climate change, but it's difficult to know what the future climate situation will be, as that situation depends on a number of variables concerning collective human behavior. Perhaps we'll change our collective behavior and emissions

²⁹ Delon and Purves, 2018: 244–5. See also Walker and Salt, 2006.

³⁰ Delon and Purves, 2018: 248–50.

will drop considerably over the next 20 years. Or perhaps we won't. That and other climate change related matters are difficult to predict with much accuracy.

As with the previous objection, I'm going to grant Delon and Purves's worry for the sake of argument. My question is the following: Even if it's true that we'll never be able to reliably list all of the possible direct and indirect effects that an intervention could have, their probabilities, or the error margins associated with those probabilities, does it follow that we ought never to intervene on a large scale? I don't think it does follow, and I have two main reasons.

First, we noted in the previous section that the consequences of ecological damage are complicated. Admittedly, habitat destruction always causes some harm to existing wild animals, but in cases where it causes a region to become generally inhospitable, it also has the effect of reducing the size of r-Strategist populations and thus (probably) increasing total utility. In cases where habitat is merely disrupted, however, r-Strategist populations may not be reduced and could actually be increased, in so far as r-Strategists also tend to be adaptable generalists. Unless we can tell in advance how the damage being risked will affect r-Strategist populations, it isn't possible to say whether that damage, if it eventuates, will produce an overall good or an overall bad outcome. That there's uncertainty about how we should morally evaluate the outcomes being risked is something that should be taken into consideration when determining how best to respond to those risks. The possibility that unintended ecological damage would, if it eventuated, have overall positive consequences, lends justificatory support to the claim that fallibility should not paralyze efforts to develop and eventually implement large scale interventions.

Of course, it may turn out to be the case that most r-Strategists merely live terrible lives instead of lives that contain more suffering than enjoyment. If it turns out that most r-Strategists merely live terrible lives, then it's no longer likely that nature contains net suffering. And if nature doesn't contain net suffering, then habitat destruction (of the sort that reduces r-Strategist populations) won't have positive consequences overall. Though the case for large scale intervention is somewhat stronger if nature contains net suffering, the argument is defensible even if nature doesn't. For one, the suffering of r-Strategists would still be a strong reason to intervene. Successfully using gene drives to reduce r-Strategist populations and increase parental care would significantly benefit r-Strategist young, thereby increasing

the level of average utility in nature. Of course, gene drives, even when conducted carefully, could end up causing unintended ecological damage. But unintended damage is excusable under the right conditions, or so I argue below.

My second reason for rejecting Delon and Purves' conclusion concerns the harms associated with ecological damage. As mentioned earlier, Delon and Purves think that an inability to make reliable predictions implies that we should refrain from large scale intervention. It should be noted, however, that an inability to anticipate the negative effects of intervention has implications for how those effects should be categorized. Any harmful side-effects caused by intervening in the wild would not only be unintentional, but unforeseeable as well. This is important because whether a harm is intentional, and whether a harm is foreseeable, both matter for our moral assessment of it. Intentional harms are obviously the worst kind, e.g., someone who intentionally strikes or kills another person is guilty of assault or murder. Unintended harms, by contrast, are more easily excused. But whether an unintended harm is excusable depends on whether it was foreseeable. For example, a doctor who accidentally kills a patient is guilty of malpractice if the effects of her treatment were foreseeable. Perhaps the patient's medical records indicate that she's allergic to the medication administered, and thus her doctor should have been aware of her allergy. Conversely, if the doctor had no way of knowing that her patient was allergic, we'd normally say that the doctor isn't at fault.

The manner in which we should assess any unintended, negative consequences caused by intervention in nature is roughly analogous to the manner in which we assess the side effects of medical treatment. Like medical treatment, intervention in nature is meant to be beneficial. And like medical treatment, it can produce unintended negative consequences. Since we normally excuse cautious medical practitioners when they accidentally cause harms that could not reasonably have been foreseen, we should have the same attitude with respect to intervention in nature. Of course, there's a question about what qualifies as a sufficient degree of caution. For example, we might wonder how much time and resources should be devoted to testing and to ecological research before a large scale intervention can be responsibly conducted. Though it may be tempting to think that centuries of testing and research is needed,³¹ I think that a

³¹ Delon and Purves speculatively concede that, perhaps after centuries of research, the epistemic difficulties associated with large scale intervention could be overcome. In particular, they suggest that devoting research to

somewhat less conservative attitude is warranted. Consider again the analogy with medical treatment. Though we expect doctors to be cautious when deciding upon and administering a treatment, we also think that the appropriate degree of caution is sensitive to how urgent the situation is. In a medical emergency where the patient will soon die without intervention, we'd normally say that fast action on the doctor's part is morally required. But if that's the conclusion we draw in the medical case, we should draw a similar conclusion about intervention in the wild because waiting to intervene has significant negative consequences. Waiting means that more generations of r-Strategists will come into existence and live terrible lives, generations that we might have prevented from being born had we acted more quickly. Though we should wait until we've developed a degree of competence before intervening (much the way we expect those who respond to medical emergencies to undergo medical training), we needn't wait until we've achieved perfect reliability. We may never be able to make perfectly reliable judgments about the ecological risks of intervening in nature, and even if it is possible to achieve perfect reliability after centuries of testing and research, hundreds of years is too long to wait. Nature has created a perpetual, humanitarian emergency, and we should aim to intervene within our lifetime.

5. Conclusion

In summary, I've responded to two objections to fallibility-constrained interventionism. According to the first objection, taking a cautious attitude towards large scale intervention is inconsistent with fully appreciating the extent and moral significance of wild animal suffering. The objection states that we should embrace ecological destruction, rather than avoid it, since destroying habitats would reduce the size of wild animal populations, thereby reducing the amount of net suffering in nature.

By contrast, the second objection states that fallibility isn't tractable enough to function as a constraint. Eco-systems are too unpredictable for us to make reliable judgments about the risks of large scale intervention, so instead of constraining large scale intervention, fallibility should bar it.

In reply, I've argued that the first objection, though flawed, contains an important truth that helps us to address the second objection. More specifically,

'robustness analysis' – a method used to determine which theoretical models make reliable predictions – could be helpful. See Delon and Purves, 2018: 256–7; and Weisberg, 2006.

intentional ecological destruction is unjustified because our duty to refrain from causing the harms associated with it trumps our duty to provide the benefits. I acknowledge, however, that ecological destruction could potentially produce good consequences overall (by reducing r-Strategist populations), and that this should be considered when morally evaluating the risks of intervention. Furthermore, unlike the harms associated with intentional destruction, the harms associated with unintentional destruction are excusable, so long as the destruction was also unforeseeable. And that's exactly what epistemic intractability implies: that even with considerable testing and research, the ecological risks of large scale intervention are, to some extent, unforeseeable.

In light of the above, the correct conclusion is that we should maintain a cautious commitment to humanitarian intervention in nature. Large scale interventions such as CRISPR gene drives promise to significantly benefit wild animal populations, and though the ecological risks of intervention are difficult to accurately predict and assess, our fallibility shouldn't be paralyzing. The consequences of ecological destruction could potentially be positive overall, and insofar as ecological destruction is both unintentional and unforeseeable, then the harms associated with it are also excusable.

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