



## Review

# The value of argument analysis for understanding ethical considerations pertaining to trophy hunting and lion conservation



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## ABSTRACT

Wild lions are threatened by loss of habitat and prey and various forms of human-caused mortality. Despite examples of locally effective lion conservation, many populations have declined drastically over recent decades, and prospects for averting those threats over the long-term and at large spatial scales are not especially bright. Yet, many maintain hope for the future of lions. Some believe trophy hunting of lions is an appropriate measure for conserving lions because it can incentivize maintenance of lands in a condition suitable for lions and other wildlife. Others disagree. We analyze the issue with formal argument analysis, an important tool in applied ethics. The analysis indicates that in some regions of Africa trophy hunting of lions would be inappropriate inasmuch as at least one empirical premise – necessary for supporting the conclusion that trophy hunting of lions should be tolerated – does not hold. The analysis also draws on principles of utilitarianism and deontology. The value of this analysis does not emerge from expecting it to resolve the issue – that would be an inappropriate standard by which to judge even a purely scientific paper. Rather the value of argument analysis lies in clarifying premises and logic upon which an ethical view rests. While the authors are not uniform in their intuitions about one of the argument's ethical premises, we all agree the considerations offered here about that premise are essential for better understanding the issue. Reactions to this analysis – be they endorsements or criticisms – are vital for identifying critical points of disagreement more precisely than otherwise possible.

## 1. Introduction

An important tool of applied ethics is the construction and analysis of ethical arguments. An ethical argument is one whose conclusion can be expressed as “We should ...” or “We should not ...”. An ethical argument, like any kind of argument, is valid if it has a proper logical form – meaning that there are no mistakes in inference, which are often caused by missing premises. An argument is sound if it is valid and if all the premises are appropriate. If an argument is sound then the conclusion is appropriate. Argument analysis entails two basic steps. The first is converting a *reason* – i.e., an informal and typically incompletely expressed justificatory reason – into a formal argument, which requires discovering and stating all the premises that would have to be true for the argument to have a valid logical form. A second step is to evaluate the appropriateness of each premise. A value of argument analysis for public discourse is its clarity, precision, and transparency. Herein, we

conduct a formal ethical analysis of trophy hunting of lions. If we misapply the principles of argument analysis to the trophy hunting of lions, critics should be able to readily identify our error(s).

There may now be only 20,000 lions (*Panthera leo*) living in the wild (Bauer et al., 2016). They have disappeared from 92% of their historic range and have declined by 43% during the two decades (or three generations of lions) between 1993 and 2014. The extent to which populations of wild lions are threatened by various processes varies geographically. According to an IUCN (2006a,b) assessment, the most important threats in west and central Africa are, in ranked order: prey depletion, livestock encroachment, illegal killing due to conflict over livestock, and habitat conversion (see also Macdonald, 2016). In east and southern Africa, the primary threats are, in ranked order: illegal killing due to conflict with humans, prey depletion, habitat conversion, and livestock encroachment. Trophy hunting when poorly regulated has also been a threat to lion populations in significant portions of east

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and southern Africa (e.g., Packer et al., 2011; Creel et al., 2016). Indeed, a detailed study of lions around Hwange National Park, Zimbabwe, showed that trophy hunting was the primary cause of mortality, followed by retaliatory killing and illegal poaching (see Loveridge et al., 2016). The ranking of threats is less certain for many specific populations.

Trophy hunting of lions is currently legal in 18 countries and practiced at a significant level in at least 12 countries. Estimates of the number of wild lions killed by trophy hunting are not known with great precision. The number is likely approximately 150–250 per year and almost certainly less than 500 per year (USFWS, 2015; Macdonald, 2016). Those numbers do not include lions raised in captivity for the purpose of “canned” trophy hunts. As of 2012, trophy hunting of lions occurred over an estimated 1.4 million km<sup>2</sup> of lion range (22% more land than the area of national parks within lion range) (Lindsey et al., 2012). Trophy hunting (of all African species) is also a business that is estimated to generate more than US\$200 million dollars and 18,500 clients per year (Lindsey et al., 2007), and trophy hunting of lions has been estimated to represent about 5–17% of that business' economic value (Lindsey et al., 2012). Recently, it was suggested that a prohibition of lion hunting would lead to the cessation of all trophy hunting (i.e., of all trophy hunted species in Africa) over approximately 60,000 km<sup>2</sup> of lion range – which represents about 4% of the land area where trophy hunting of lions currently occurs (Lindsey et al., 2012).

Trophy hunting of large mammals (including lions) provides incentives for land owners/managers to maintain land in a condition suitable for lions and other wildlife (e.g., Lindsey et al., 2006; Lindsey et al., 2012; see also Macdonald, 2016; Macdonald et al., 2017). At the same time, some people are concerned that trophy hunting of lions (and other large mammals, especially predators) is inappropriate for reasons pertaining broadly to the wellbeing of individual animals. Moreover, some conservation professionals are concerned that a complete and immediate cessation of trophy hunting of lions would lead – rapidly and inescapably – to the loss of habitat necessary for the conservation of lions and other wildlife (Macdonald, 2016). The concern, more precisely, is that trophy hunting provides money to land managers, which motivates the maintenance of land in a state suitable for lions, as opposed to converting the land to other uses, such as livestock grazing. Evaluation of these concerns is challenged by various empirical uncertainties (reviewed by Macdonald et al., 2017) and the difficulty of handling certain formal ethical concepts with sufficient rigor.

Conservation professionals offer a variety of reasons to be either tolerant or intolerant of trophy hunting of lions. For example, some professionals believe trophy hunting should be allowed because it provides an economic benefit to local communities, governments, or to conservation itself (Lindsey et al., 2007). Some believe trophy hunting lions should be allowed because it has the potential to generate revenue while contributing to either control of problem lions in the context of managing livestock losses (Lindsey et al., 2012) or for reducing local

populations that have become over abundant (Snyman et al., 2015). Some believe trophy hunting of lions should be allowed because restrictions on hunting may reduce tolerance for lions among people who live near them (Bouché et al., 2016). Some believe that reduced tolerance would lead to increased rates of human-caused mortality (Lindsey et al., 2007). Some (including some who might otherwise oppose lion hunting) believe trophy hunting lions should be allowed because it is currently essential in some places for conserving lion populations by protecting lion habitat (Lindsey et al., 2006; Lindsey et al., 2012; see also Macdonald, 2016; Macdonald et al., 2017). Each of these reasons is sufficiently distinct from the other, such that each reason merits its own argument. In this analysis, we focus on the habitat-protection argument because this reason plays an important role in existing discourse and because formal evaluation of this argument reveals worthwhile insight that is likely applicable to the evaluation of other reasons. In the Discussion, we briefly comment on other reasons that have been offered in support of trophy hunting.

For emphasis, in this analysis we necessarily bracket those other reasons (mentioned above) to support trophy hunting of lions. We are not, thus, attempting to advance a definitive statement on the ethics of lion trophy hunting but are rather demonstrating how an argument analysis of one of the most popular reasons to support lion trophy hunting may be helpful in bringing clarity to the debate.

Definitive treatment of any complicated issue requires addressing both its breadth and depth. In ethics – just as it is so in ecology – it is impossible to be broad and probe deep in a single journal article. Each approach has complimentary advantages and limitations. While the present analysis probes deep into one element of trophy hunting (i.e., its use as a tool for protecting habitat), we direct readers to Coals et al. (2019) for an example of a paper that uses argument analysis to provide a broad view of an issue (traded against the value of probing deep).

## 2. Habitat protection argument

The assembly of any argument begins by stating the conclusion, preceded by providing a set of succinct premises that provide support for the conclusion by expressing the essence of the reason. The easiest explanation of an argument begins with a simpler and easier-to-understand argument. Then we will revise and add premises to this simple argument in response to objections that a person might raise – ending with the argument that appears in Table 1. This simpler, nascent argument is:

- P1. We should at least maintain the current status of wild lions.
- P2. Maintaining current status is threatened by habitat loss.
- P3. Trophy hunting lions facilitates the protection of habitat necessary for lion conservation.
- C. Therefore, we should tolerate the trophy hunting of lions as a tool for habitat protection.

**Table 1**

The habitat protection argument. The left column presents the premises that would have to be verifiably true (in the case of empirical claims) or appropriate (in the case of ethical claims) in order to say that the conclusion is well supported by the argument. The right column are comments summarizing the results of subsequent sections of text (below) that evaluate each premise.

Premise	Type	Geographic variation <sup>a</sup>
P1. We should at least maintain the current status of wild lions.	Ethical	N/A
P2a. Maintaining current status is threatened by habitat loss.	Empirical	Yes
P2b. Protecting lion habitat is a necessary and sufficient condition for maintaining current status (Sufficient in the sense that other threats are mitigated).	Empirical	Yes
P3a. Trophy hunting lions facilitates the protection of suitable lion habitat.	Empirical	Yes
P3b. Trophy hunting is currently the only means to protect existing lion habitat.	Empirical	Yes
P4. It is reasonable to expect that trophy hunts will be properly regulated in a manner that does not harm lions populations.	Empirical	Yes
P5. Individual lions possess intrinsic value. (In other words, we shouldn't kill lions without sufficient reason).	Ethical	N/A
P6. Maintaining current status of lion populations is a good reason to kill lions (in the context of properly regulated trophy hunting).	Ethical	N/A
C. Trophy hunting of lions should be tolerated as a tool for habitat protection.		

<sup>a</sup> Geographic variation is short-hand for truth-value of the premise varies across lions' geographic range.

Premise P1 is an ethical premise. The phrase “current status” in P1 refers to the approximately 20,000 lions that inhabit approximately 8% of their historic range (Bauer et al., 2016). Premise P1 is largely taken for granted by the conservation community, except they would generally aspire to more ambitious goals (Lindsey et al., 2017). While the appropriateness of P1 could be evaluated, we take this premise for granted for the purposes of this analysis. Information provided in the *Introduction* points to the truth of P2. The rationale behind premise P3 was briefly expressed in the *Introduction*; below, we consider that idea in greater detail. For the moment, we suppose all three premises are simply true and appropriate.

The conclusion of any argument is well supported if, and only if, two conditions hold: all the premises are appropriate and there are no missing premises (Vucetich and Nelson, 2017). With the nascent argument expressed above, a next step is to provisionally accept those premises as true and ask: are there missing premises? That is, are there other premises that would also have to be true in order to arrive at the conclusion? One way to discover a missing premise is to raise concerns about the argument. For example, one might say: the argument does not account for the possibility that habitat could be protected through some other means. This concern is not unique to this case of trophy hunting lions and was raised, for example, in discourse about foxhunting in the U.K. (Macdonald and Johnson, 2015).

To account for that general concern in this particular case, we can add a premise: *trophy hunting is currently the only means to protect habitat necessary for lion conservation*. Because this premise is so closely related to P3, relabelling these premises as P3a and P3b will help clarify their distinct contributions to the argument. For a brief account of how P3b is related to economic constraints, see [Appendix 1](#).

(For readers who recognize that premise P3b is more true for some lion populations than others, recall that argument analysis is a two-step process that entails first assembling the premises that would have to be true in order to arrive at the conclusion; then, as a separate step, evaluating whether [when, or where] those premises are true. We attend to the second step shortly.)

Similarly, one might say: If lion populations become extirpated due to prey depletion (e.g., Sandom et al., 2017) or illegal killing due to conflict with humans, while habitat was protected through trophy hunting, then one could reasonably be concerned that lions were hunted without adequate reason. With the phrase “without adequate reason,” we mean without achieving the purpose (i.e., lion conservation) of having hunted them. There is a rejoinder to this concern, but we save that for a subsequent section entitled, *Journey or Jump?*. For the moment, allow us to address this concern by replacing premise 2 with a pair of related premises, P2a and P2b.

These considerations yield the following argument:

- P1. *We should at least maintain the current status of wild lions.*
- P2a. *Maintaining current status is threatened by habitat loss.*
- P2b. *Protecting lion habitat is a necessary and sufficient condition for maintaining current status (Sufficient in the sense that other threats are mitigated).*
- P3a. *Trophy hunting lions facilitates the protection of suitable lion habitat.*
- P3b. *Trophy hunting is currently the least harmful means to protect existing lion habitat.*
- C. *Trophy hunting of lions should be tolerated as a tool for habitat protection.*

For emphasis and with respect to Premise P2b, “sufficient condition” is meant to indicate that the other threats to lion conservation are being mitigated. For example, protecting lion habitat would not be sufficient if lions were overharvested in what is otherwise suitable habitat. Recalling the caveat made just above, some readers may recognize that some of the premises (in particular, P2a, P2b, P3b and P4, which appears just below) are more true for some lion populations than

others. We discuss that circumstance and its implications below. Understanding what constitutes “currently the least harmful” in premise P3b may be more complicated than is initially apparent and further discussed in [Sections 3.1 and 3.4](#).

Another concern with this argument is that trophy hunting of lions is sometimes managed in an unsustainable manner that impairs conservation. For example, regulation may be lax (Packer et al., 2009; Packer et al., 2011) or quotas too high (Loveridge et al., 2016). To address this concern it is necessary to add:

- P4. *It is reasonable to expect that trophy hunts will be properly regulated in a manner that does not harm lion populations.*

Finally, one might be concerned that the argument neglects values pertaining to the intrinsic value of individual lions. Taking account of that concern requires this pair of premises:

- P5. *Individual lions possess intrinsic value. (In other words, we should not kill them without sufficient reason).*
- P6. *Maintaining the current status of lion populations is sufficient reason to kill lions (in the context of properly regulated trophy hunting).*

In premise P5, the phrase ‘intrinsic value’ is a technical term that will be explained below. The connection between P1 and intrinsic value is also discussed below.

### 3. Evaluation and insights

Ethical arguments are like ecological models in the sense that their value lies not in being perfect, complete representations of the world. Rather their value lies in the potential for revealing insight that might otherwise be overlooked. As such, rather than seeking additional and revised premises for an argument that more completely represents the case of interest, we instead now turn our attention to analyzing this six-premise argument that is developed thus far and summarized in [Table 1](#).

In particular we now begin to evaluate the appropriateness of the argument’s premises. By the rules of logic, the inappropriateness of just one premise makes the argument unsound. That an argument is unsound (or invalid) is not definitive proof that the conclusion of that argument is wrong, but it does mean that the conclusion is not supported by that given argument.

Ethical arguments are typically comprised of two kinds of premises. One kind is evaluated primarily with scientific evidence (empirical premises) and the other is primarily evaluated on the basis of ethical reasoning (ethical or normative premises). Some premises include significant elements of both empiricism and normativity. An argument is unsound unless all of the premises are appropriate.

Two salient points rise from those simple observations. First, an ethical conclusion may be unsound if even one empirical premise is false. That is, the robustness of ethical claims does not always depend on the sometimes difficult task of evaluating the appropriateness of ethical premises (e.g., P6 in [Table 1](#)). Second, the appropriateness of ethical premises are sometimes thought to be culturally heterogeneous to the point of precluding common understandings among cultures. We address this issue in [Intercultural differences in values and attitudes of the Discussion](#).

#### 3.1. Geographic variation (in truth-value of empirical premises)

If one accepts the argument in [Table 1](#) as even roughly capturing a reason for tolerating trophy hunting, then one would need to acknowledge that there is considerable variation across the geographic range of lions with respect to the truth of the four empirical premises (e.g. Dickman et al., *in review*):

- 1) With respect to premise P2a, the degree to which lion populations are threatened by habitat loss varies considerably across lions' geographic range. For example, lion habitat in Central Kalahari Game Reserve (Botswana) and Selous Game Reserve (Tanzania) appears relatively secure. But lion habitat in Nairobi National Park (Kenya) seems less secure as it is much closer to a major and expanding conurbation, and habitat in Central African Republic also seems less secure. Consequently, existing evidence suggests Premise P2a is true – at this point in time – in the area around Nairobi National Park, but false in Central Kalahari Game Reserve.
- 2) With respect to P2b, the degree to which lion populations are threatened by other unmitigated factors (such as prey depletion or killing due to conflict with humans) also varies considerably across lions' geographic range. In particular, prey depletion is a considerable risk in West Africa (Henschel et al., 2014), whereas killing in response to conflict is particularly high in other areas, for example, around Tanzania's Ruaha National Park (Dickman, 2015; Lindsey et al., 2017).
- 3) With respect to premise P3b, there are locations where lion habitat could be protected by means other than trophy hunting. For example, trophy hunting of lions was banned in Botswana in 2016. What remains to be seen is whether the lion trophy hunting is replaced by phototourism to any significant degree (Macdonald, 2016, p. 43). Furthermore, there are important instances of range land (used by livestock) also being suitable lion habitat. Maasai land in Kenya is an important example. Nevertheless, it remains to be seen is whether the lion habitat degrades in places where lion trophy hunting has been banned.
- 4) With respect to premise P4, the degree to which trophy hunting is managed sustainably also varies considerably across lions' geographic range. In particular, Packer (2015) emphasized the failure of Tanzania to enforce regulations and Bauer et al. (2017) doubt the veracity of quota calculations in the W-Arly-Pendjari Protected Area complex. However, adaptive management has been shown to improve the sustainability of trophy hunting around Hwange National Park (Macdonald, 2016, p. 83; Loveridge et al., 2016). Additionally, none of the above described conditions is necessarily static.

The critically important implication of geographic variation in the conservation ecology of lions is: in any location where one or more of the empirical premises is false, then the argument – whose conclusion is to tolerate trophy hunting – fails for that area. This prospect raises another notable feature of ethical arguments. That is, an argument can fail to support an ethical conclusion (tolerate trophy hunting) – not because of difficulty with an ethical premise (e.g., P6), but because of the falsity of an empirical premise.

Finally, another important feature of many arguments is that an empirical premise may be characterized by scientific uncertainty. In a formal sense, if an empirical claim is likely (but not certainly) true, then that uncertainty can be incorporated into the verbiage of the premise. Doing so would require the conclusion be expressed with the same level of uncertainty (see Appendix 2).

### 3.2. Journey or jump?

One may think trophy hunting should be permitted even if other threats to lions (e.g., poaching) are not mitigated. That thought may be justified by a belief that we might soon have the capacity to mitigate those other threats or because mitigation requires time that has not yet come to pass. A person holding this view would believe that the conclusion does not depend on premise P2b including the phrase “and sufficient” (Table 1). Consequently, this perspective leans toward tolerating trophy hunting of lions.

However, a critic of trophy hunting might be well-reasoned in expressing concern that trophy hunting *seems* to be the *only* feasible way to protect habitat because decision-makers, stakeholders, and other

responsible parties lack the imagination or motivation to develop alternative means. Critics especially taken by this concern may also be concerned that continuing to allow trophy hunting undermines the motivation to develop such alternatives. Such a critic would doubt the truth of Premise P3b (Table 1) and therefore cast aspersions on the conclusion that we should tolerate trophy hunting.

Those two perspectives include general features that arise in discourse about the killing of wolves for the purpose of protecting an endangered population of caribou in southern Alberta (Canada). In particular, advocates of killing wolves for that purpose have emphasized that the caribou need protection from predation *and* better habitat protection (e.g., Hervieux et al., 2014). And one concern – among at least some opposed to this wolf killing – has been the claim that the provincial government of Alberta has made no substantive effort to protect caribou habitat in the twelve years during which wolves have been killed for this purpose (Muzyka, 2016; Proulx et al., 2017). Similar concerns in other cases have been raised (e.g., Welch, 2009; Zuckerman, 2014).

A third position that seems to draw on elements of both those prior perspectives is captured by Macdonald (2016):

even those implacably opposed to lion hunting on ethical grounds might favour a ‘*journey*’ rather than a ‘*jump*’. For example, if society judged trophy hunting lions unacceptable, but also concluded that it benefited lion conservation, then this dilemma might be approached via a journey to find ways of replacing the benefits of hunting before jumping to end them.

This perspective leans toward tolerating trophy hunting for the time being, inasmuch as there is a reasonable chance and diligent effort to find alternative means in the foreseeable future.

### 3.3. Intrinsic value

An object is instrumentally valuable if it is valuable as a means to some other end, and intrinsically valuable if it is valuable beyond its instrumental value or valuable for its own sake (Sandler, 2010). While succinct definitions of intrinsic value tend to be abstract and easily misconstrued, the implication of something possessing intrinsic value is straightforward: if something possesses intrinsic value it means essentially that we have an obligation to treat it with respect or fairly and with at least some concern for its wellbeing or interests (Vucetich et al., 2015). As such, it is wrong to harm an intrinsically valuable entity without an adequate reason for doing so.

Sociological evidence indicates that most people in many cultures acknowledge the intrinsic value of individual vertebrate organisms (including lions) (Vucetich et al., 2015). No less important, the formal ethical reasoning supporting the claim is also robust (Appendix 3). An important basis for Premise P1 is that ecological collectives (populations, species, and ecosystems) also possess intrinsic value. Moreover, some conservation professionals believe conservation is essentially an anthropocentric endeavor, i.e., we should conserve ecological collectives because – and only to the extent that – doing so would be beneficial to humans (e.g., Pinchot, 1947; Kareiva and Marvier, 2007). From that perspective, Premise P1 would be supported only to the extent that lion populations have instrumental value to humans that cannot be readily replaced through some other means.

Adjudicating conflicts among various entities that may possess intrinsic value depends importantly on the reasons why those entities possess intrinsic value in the first place. Important as these reasons are, we relegate a summary of those reasons to Appendix 3 (to maintain direct pursuit of evaluating the central argument).

If a person were inclined to see trophy hunting of lions as wrong, in principle, their most basic reasoning is likely to involve an argument characterized (though not completely expressed) by three premises:

Pa. Trophy hunting is primarily motivated by the enjoyment



(recreation or utility) that comes from collecting a trophy, i.e., some body part or even bragging rights (Darimont et al., 2017; Simon, 2017).

Pb. Because lions possess intrinsic value they should not be killed without good reason.

Pc. The vital cost to the hunted lion is not outweighed by the relatively unimportant benefit to the trophy hunter – benefits that can be acquired through other means, even other means of hunting.

We will say that a person who holds these beliefs is opposed to trophy hunting *in principle*. For additional context, sociological evidence suggests that many are opposed to hunting when trophies are the primary motivation, and many are more supportive when acquisition of meat is the primary motivation (Decker et al., 2015; Duda and Jones, 2009) – though the separation and distinction among motivations can, on some occasions, be complicated. For additional insight on the ethics of hunting in general, see Kowalsky (2011). The focus of our analysis is to understand whether trophy hunting is acceptable if it is accompanied by other potential benefits, such as conservation – given claims by some that trophy hunting is inappropriate, *in principle*. For a broad and accessible review of nature's intrinsic value, see Vucetich et al. (2015).

### 3.4. Premise P6: lion conservation is sufficient reason to kill lions

If all of the empirical premises of the argument are – after taking account of uncertainty – taken to be true for a particular locale, then it would be necessary to consider the appropriateness of Premise P6 (Table 1). For context, this premise is a particular case of a more general premise, i.e., conservation is a good reason to kill individual organisms.

This general premise lies at the root of many particular cases in conservation including interests to kill wolves to save endangered populations of caribou (Proulx et al., 2017), kill barred owls to conserve spotted owls (Cornwall, 2014), kill brown-headed cow birds to conserve warblers (Rothstein, 2004), kill harbor seals to conserve salmon (Yurk and Trites, 2000), kill ravens to conserve greater sage grouse (Zuckerman, 2014) and Mojave Desert Tortoises (Kristan III and Boarman, 2003). Invasive and non-native species are a general threat to conservation and killing individuals of those species is a frequent response to that threat (Simberloff, 2013). Attending these concerns in their general form is beyond the scope of this paper. Nevertheless, our attending to this idea for the particular case of lion conservation is liable to produce relevant considerations for the general concern.

The shared motivations between conservation and animal welfare are many and perhaps insufficiently appreciated (Bruskotter et al., 2017). At the same time, important conflicts remain and careful consideration of these conflicts is relatively new in the history of scholarly thought. As such, it is unreasonable to expect an immediately definitive evaluation of P6 – for the same reason that it is unreasonable to expect an immediately definitive evaluation of any incompletely-studied scientific phenomena. What we will do here is provide a rough sense, first, of what may be a route to demonstrating the appropriateness of premise P6, followed by a rough sense of what may be a route to demonstrating the inappropriateness of premise P6.

#### 3.4.1. Thoughts on the appropriateness of P6

If P6 is demonstrably *appropriate*, then the demonstration may be inspired by an argument whose orientation would be something like:

Pd. Our ethical obligation is to minimize *harm* among wild lions.

Pe. Allowing trophy hunting would result in less *harm* to lions than would the prohibition of trophy hunting.

C2. Therefore P6 is appropriate.

In language that is plainer (though at risk of being too imprecise) the nub of this argument is: Yes, trophy hunting will result in some

harm to lions; but without trophy hunting more harm to lions would be realized. Evaluation of such an argument is complicated, in part, by the difficulty (if not impossibility) of accurately accounting for harms to both individual lions and lion populations under two scenarios (with and without trophy hunting). That joint concern requires accounting, for example, for harms to individuals killed directly through hunting, poaching and other sources of anthropogenic mortality; indirectly through habitat loss (if a cessation to trophy hunting resulted in habitat loss); harm to the population (aside from harms to the individuals); and harm to the species (aside from harms to distinct populations of which the species is comprised).

The argument is also implicitly, but quintessentially, utilitarian in nature. The most general form of every utilitarian argument involves maximizing utility (expressed variously, such as pleasure over pain, benefit over cost, or usefulness). A perennial challenge of utilitarianism is specifying precisely what is meant by utility. In the two-premise argument above, we intentionally used a vague phrase (minimize harm) as a way of representing that utilitarian ideal of maximizing utility. For the conclusion (C2) to be robust one would likely have to specify the meaning of “harm” and justify that specification. Harm could be, to name a few examples, physiological suffering, psychological stress, deaths, premature deaths, or culpable deaths – i.e., deaths for which humans are culpable.

For the sake of illustration, consider replacing “harm” in the argument above with “deaths.” What if realizing the fewest deaths of lions (and their prey) required driving the lion population to extinction? While such a case has been made (e.g., McMahan, 2010), the replacement of “harm” with “death” in premise Pd seems to reveal a *reductio ad absurdum*. In the spirit of continued exploration, replace “harm” with “culpable deaths of lions.” The word “culpable” transforms the argument into something that is not purely utilitarian, inasmuch as utilitarianism is generally focused on consequences of actions and generally unconcerned with motivation for acting or culpability. Referring to “culpable deaths” also requires being able to:

- i) identify, of all the possible causes of lion death (e.g., starvation, disease, killed by another lion, speared in self-defense, shot by a hunter), which causes represent *culpable* deaths.
- ii) estimate with adequate accuracy the number of culpable deaths likely to occur under each of the two scenarios – with and without trophy hunting.

The ability to satisfy point (ii) is complicated by the difficulty of knowing, for example, how many other culpable deaths might arise from trophy hunting an individual lion. For example, disrupted social relationships and infanticide following the hunting-death of a lion often results in additional deaths (Whitman et al., 2004).

Satisfying some elements of point (i) may be relatively easy. For example, you would generally not be culpable for shooting a lion about to kill you. Similarly, an impoverished pastoralist would not generally be culpable for killing a lion to prevent livestock deaths – if there are no reasonable alternatives for preventing or mitigating such livestock losses. Nevertheless, even those simple circumstances raise complexities, for example, about whether some agent is culpable for working in favor of socio-economic systems that favor scenarios where impoverished pastoralists have to kill lions to satisfy their basic human needs. For broader considerations about the responsibilities of the impoverished people toward conservation (see also Vucetich et al., 2018).

The ability to satisfy point (i) is further complicated, in part, by the need to make judgments about how culpable one is for indirect causes of death, especially when the indirectly-caused death was not intended or anticipated. For example, are humans responsible for a lion that dies of distemper – knowing that the incidence of distemper can be influenced by humans via stray dogs (Munson et al., 2010). Inasmuch as culpability is a sociological phenomenon, distinct from a moral phenomenon, culpability tends to be importantly limited by the degree to

which an adverse effect (at least against other humans) is an indirect and unintended consequence (e.g., [Lagnado and Channon, 2008](#)).

Those difficulties (knowing precisely what to maximize or minimize and accurately accounting for the maximization or minimization) are perennial challenges to utilitarian frameworks of ethical decision-making. In cases where those unmitigated difficulties loom large, there may be peril in relying too much on utilitarian frameworks. Those difficulties are not negligible in the case of trophy hunting lions. Advocates of P6 would likely have a burden to mitigate these difficulties before asserting too boldly the appropriateness of P6.

Thus far, we have focused mostly on harm to *individual* lions; the argument (Pd and Pe) also requires taking account of harms (under the two scenarios) to the ecological collectives. This expanded accounting is also subject to the aforementioned features of utilitarianism – i.e., evaluate what would count as a harm and being able to account for those harms under the two scenarios.

Understanding what would count as harm to a lion *population* – as distinct from harms to individual lions – requires additional consideration. It is straightforward that complete loss of a population would count as harm to a population. Other putative harms may be more difficult to judge. For example, how much change in population density or stability would count as harm to a population? Similarly, how much population loss would count as harm to the species? The difficulty of these questions, in general, is indicated by controversies over what counts as a healthy population or ecosystem ([Vucetich and Nelson, 2010](#)) and what counts as an endangered species ([Vucetich and Nelson, 2014, 2018](#)).

Finally, consider a comparison of culpable harms associated with two scenarios: (i) cessation of trophy hunting, which leads to habitat degradation that ends in ultimate (culpable) harms to the lion population (its loss) and individual lions (their deaths), and (ii) continued trophy hunting that would protect the population from culpable harm but result in culpable harm to an indefinite number of individuals (those hunted for as long as the population persists). These scenarios are not easily adjudicated on the basis of differences in the severity of harm to the respective subjects, because the harm is ultimate (i.e., complete loss of existence) to both kinds of subject (individual and population). Perhaps adjudication could be based on comparing whether there is *more* harm in harming one kind of thing *once* (loss of a population) or harming another kind of thing on an *indefinite* number of occasions (loss of hunted individuals). The incommensurability of that comparison may not be tied so much to making a judgment about trophy hunting as a tool for conservation, but more with leaning too hard on utilitarianism as a means of making the judgment. The value of being sensitive to both sides of the incommensurability is further suggested by sentiments expressed elsewhere (e.g., [Paquet and Darimont, 2010](#); [Harrington et al., 2013](#)).

Many conservation professionals confidently understand that the loss of a few individual animals annually to trophy hunting is preferable to losing an entire population. However, conservation professionals are enmeshed in a much broader society including many who understand differently and confidently so. Manifesting conservation goals in the world depends on the understanding of conservation professionals, but it may depend more on the understanding of others. The use of trophy hunting as a conservation tool is controversial (even among conservation professionals). That controversy suggests that enough people do not understand what many conservation professionals understand – enough people, that is, to stymie efforts to promote conservation via trophy hunting. For example, trophy hunting of brown bears, wolves and lynx was also recently banned in Romania ([Dale-Harris, 2016](#)). Recreational hunting was also broadly banned in Costa Rica (2012) and in Columbia (2019) ([Harindranath, 2019](#)). The bans represent a confluence of concern for both conservation and animal welfare. That many conservation professionals might disagree with the preclusion of trophy hunting as a conservation tool may not be as important as it is for conservation professionals to do all that is possible to understand

why others disagree. This is the sense in which we write above, “These scenarios are not easily adjudicated...,” even though the context of that passage is culpability, which is only one element of adjudicating conflict between conservation and animal welfare.

While a fuller account would be valuable for understanding lion hunting and other conflicts between conservation and animal welfare, such an account is beyond the scope of this paper. In any case, an adequate defense for the appropriateness of P6 would at least take account of these unresolved issues.

#### 3.4.2. Thoughts on the inappropriateness of P6

If P6 is demonstrably *inappropriate*, then a demonstration might be inspired by [Sandel's \(2012\)](#) account of hunting of rhinoceros as a means to conserve rhinoceros populations:

Sometimes we find ourselves torn about whether to traffic in morally questionable markets in the hope of achieving worthy ends... From the standpoint of economic reasoning, the market solution seems a clear winner, [but] if you believe it's morally objectionable to kill wildlife for sport, the market in [rhino] hunts is a devil's bargain, a kind of extortion.

In the parlance of American law, extortion is a kind of duress, which is “any unlawful threat or coercion used... to induce another to act [or not act] in a manner [they] otherwise would not [or would]” ([Garner and Black, 1999](#)). With a notion of duress like that in mind, consider this framing of lion trophy hunting:

Scenario [A] – A person is, in principle, opposed to trophy hunting of lions. But this person feels compelled to tolerate trophy hunting because other people created a situation whereby supporting that behavior (i.e., trophy hunting) may be the only way to secure a good outcome of a different kind (i.e., conservation of lions).

One could evaluate that scenario according to which outcome – trophy hunting or extirpation – is ‘the lesser of the two evils.’ (Doing so requires taking for granted: [i] that cessation of trophy hunting is likely to result in the loss of some lion habitat, and [ii] that extirpation is the greater evil.)

However, the forced tolerance of scenario [A] also creates circumstances analogous to duress ([Appendix 4](#)). The duress victim – i.e., a conservationist struggling to know whether trophy hunting of lions should be tolerated – may respond by acceding to the duress or by rejecting it. Neither response is blameworthy. The victim's difficulty in knowing how to respond is reflected, for example, in various responses that governments take in negotiating with hostage takers. This impossible situation is the very reason the norms of civility preclude actions that foster duress-like situations.

While a conservationist opposed to trophy hunting in principle is not culpable (as an individual) for creating the duress-like circumstance, this does not mean any response to the duress-like situation is immune from culpability – as an individual ([Appendix 5](#)).

Concerns associated with duress are amplified when the case is understood as: humanity being compelled (under duress) to behave badly toward individual lions (i.e., by trophy hunting them) in response to humanity's prior mistreatment of lion populations (i.e., pushing lions to brink of extinction). That is, duress is born not only of the duress victim's concern for *future conditions* (lion conservation), but also of *prior mistreatment* of lion populations (e.g., poaching and destruction of their habitat).

A useful lens through which to consider these framings is rule utilitarianism – a particular kind of utilitarianism. Rule utilitarianism aims to maximize utility, not on a case by case basis (because doing so is fraught with errors in the calculus of utility as manifest variously in each case). Rather rule utilitarianism aims to develop more general norms that would lead to a maximization of utility across cases. General appreciation for this line of reasoning is reflected in, for example, the aphorism, two wrongs do not make a right.

Here, the *particular* case is using the trophy hunting of individual lions to mitigate *society's* prior harms to lion populations. The *general* case is harming individuals to mitigate *society's* prior harms to conservation. A rule utilitarian would be concerned that normalizing the widespread use of harming individuals anytime it might mitigate a prior harm to conservation would further foster a *society* that did not work too hard at preventing conservation problems in the first place.

There are quick criticisms to this line of reasoning and quick rejoinders to those criticisms. The salient point is that the possible inappropriateness of P6 likely requires a much closer look at this line of reasoning – closer than is possible in this paper. Prior treatment of these concepts in other complicated cases provide some indication of the rigor required (e.g., see Nath, 2011 and references therein, which apply these concepts to terrorism).

These lines of thinking pique another basic concept in ethics. The concept is typically associated with deontology and places less concern on the consequences of an action and more concern on understanding what behaviors might make a person culpable for any adverse outcome. Deontological accounts may be better suited than consequentialist accounts for navigating issues where the consequences of an action are steeped in uncertainty – about what will actually happen *and* about how to judge which harm of several is more harmful (Robbins, 2010).

Our purpose here has not been to render definitive judgment on P6, but rather, to explore how one might adjudicate its appropriateness. If premise P6 is inappropriate, these lines of reasoning may point to why that may be so.

#### 4. Discussion

Some prior analyses have explained some important ways that trophy hunting can be better regulated to more effectively serve certain interests of conservation (e.g., Di Minin et al., 2016). These regulatory mechanisms have an element of geographic variation inasmuch as they are (or may be) more effectively implemented in some areas and less so in other areas. Our analysis demonstrates an insight about the geography of trophy hunting that is distinct from prior analysis. That is, concluding that trophy hunting of lions should be tolerated as a tool for lion conservation requires that three empirical premises hold (P2, P3, P4). For portions of lion range where one or more of the empirical premises is false, then the conclusion is not supported by the argument for that portion. In some instances an empirical premise could be met with improved regulation of trophy hunting, in other instances not. It is unclear, even roughly, what portion of lion range meets these empirical premises. That circumstance is further complicated by a recent analysis indicating that lions in protected areas may be less protected than had been previously assumed (Lindsey et al., 2018).

The result is significant, in part, because many controversies in conservation ethics are presumed to depend on underlying, intractable ethical premises. Our analysis illustrates an important circumstance that likely occurs more often than is appreciated: ethical conclusions can fail to be supported because empirical premises do not hold. In these cases, the conclusion does not depend on evaluating any thorny ethical premises (such as P6 in Table 1).

Our analysis also reveals the importance of recognizing two contrasting responses to situations where these empirical premises fail. One response is to oppose trophy hunting until those conditions are met. Another response is to tolerate trophy hunting and work to promote the meeting of those conditions, where doing so is plausible (see Section 3.2, *Journey or Jump?*). Adjudicating those alternatives requires understanding whether the first alternative is inappropriately optimistic about the prospects for meeting unmet conditions and whether the second alternative undermines motivation to develop means of lion conservation that do not depend on trophy hunting lions. Furthermore, it may be objectionable to advocate for the 'journey' approach without also working to develop means of lion conservation that do not depend on trophy hunting lions. Additionally, it seems that suggesting the

journey while doing nothing to promote the journey would be inappropriate. While readers may vary in their intuitions about that future prospect, the prospect is certainly open to thorough evaluation – though such an analysis is beyond the scope of this paper.

Another substantive result of this analysis is to have provided the most precise assessment of the central ethical premise of this argument, *Maintaining current conservation status of lion populations is a good reason to kill lions* (premise P6 in Table 1). The analysis indicates, for example, that tolerating trophy hunting of lions as a result of duress is not morally equivalent to tolerating trophy hunting because there is no reason to be opposed to a well-regulated trophy hunt of lions. While the analysis of P6 is also far from complete, we provided enough insight (in Section 3.4) to suggest that P6 is not intractable and better resolution would follow from pursuing specific lines of inquiry – line of inquiry pertaining to, for example, notions of duress, 'culpable' harm and the very notion of conservation's purpose and underlying values. This contribution is important, in part, because lion conservation is one of many similar cases, where the value of conservation and animal welfare intersect, seemingly intractably.

Two significant ethical developments of the 20th century was growth in acknowledgement of ethical concern for conservation (Kawall, 2017) and animal welfare (Beers, 2006). Unfortunately, humans have created a situation where, increasingly, one concern is pitted against the other (see Section 3.4 for examples and explanation). We believe it would be a shame if a significant ethical development of the 21st century was determination that whenever the two came into conflict one concern should simply trump the other.

We did not explicitly address complexities that may arise from the interaction of geography, economic structure of trophy hunting, and governance. For example and hypothetically, suppose lion habitat in the Central Kalahari of Botswana is not imminently threatened. If so, P2a would be false and the argument in Table 1 would seem to fail for the Central Kalahari. However, suppose that elsewhere in Botswana P2a holds (along with the other empirical premises), and that the Botswana government generates funds from hunting around the Central Kalahari Game Reserve that are necessary to protect habitat elsewhere in Botswana. Also for example, what if trophy hunting across Zimbabwe generates necessary funds to support protected areas across Zimbabwe? If so, then it might be said that hunting lions outside Hwange (of Zimbabwe) is necessary to protect lions within Hwange. From an argument analysis perspective, the considerations are essentially complications to the evaluation of premises P2 and P3. While these considerations are important, the detailed analysis required to address this topic is beyond the scope of this paper. At the same time, not addressing those issues here does not obviate the basic insights offered by this analysis.

##### 4.1. Intercultural differences in values and attitudes

The conservation of lions (and other aspects of African biodiversity) is sometimes characterized as wealthy, western nations telling developing African nations how to live. That characterization is worsened by the history of colonialism (see also Ikuenobe, 2014). The circumstance also raises concern about cultural relativism (but see Kelbessa, 2005; Widdows, 2007; Ojomo, 2011), which suggests that moral judgements are relative to their time and place to a degree that precludes objective evaluation (Lukes, 2008). Our analysis explicitly allows for a critic to identify a particular premise that may be missing or false owing to intercultural differences in expressed values. Such differences can be usefully evaluated without incurring the tragedies of colonialism.

The past century witnessed dramatic changes in many of the world's societies, including increases in urbanization, income, education, and mechanization of agriculture – to name just a few. Sociological evidence indicates how changes of that nature are associated with changes in values, including increased expression of values associated with increased care for the environment and wildlife (Inglehart, 1995;

Manfredo et al., 2009; Inglehart and Welzel, 2005). While these changes are not uniform across nation-states, they certainly transcend nation-states. These shifts are associated with greater public support for restricting human behaviors that adversely impact wildlife and biodiversity (Dietsch et al., 2016; Manfredo et al., 2016). This is pertinent, in general, for suggesting that conflicts between conservation and animal welfare are liable to grow in importance with increases in societal modernization (Manfredo et al., 2016) and, in particular, for anticipating an increasing number of people taking a negative view of trophy hunting – without implying intercultural homogeneity.

At the same time, attitudes about lions vary considerably among Africans. That variation tends to be associated with various sociological factors, such as ethnicity, religion, and socioeconomic status (e.g., Hemson et al., 2009; Dickman et al., 2014; Hazzah et al., 2017; Angula et al., 2018). Also, psychological research suggests that variation within a culture may be more important than variation between cultures for understanding moral judgments (Graham et al., 2016).

These sociological patterns interact in complicated ways with governance, manifesting itself, for example, as concern for whether centralized governments adequately represent local citizens and the degree to which local (rural) citizens should determine conservation policy, given that urban citizens are also stakeholders. While sociological evidence of this nature can influence the evaluation of an ethical argument, it does not determine the outcome of an ethical analysis.

#### 4.2. Burden of proof

As stated previously, the robustness of a conclusion depends on the truth and appropriateness of the premises. Uncertainty about the truth of a premise (e.g., P3b) raises the question: *Should a premise be considered true until demonstrated otherwise, or considered false until demonstrated otherwise?* In some contexts, widely appreciated social norms determine the burden of proof. For example, statistical inference has traditionally focused on Type I rather than Type II errors (e.g., Dayton, 1998; Hoenig and Heisey, 2001). Judicial systems tend to prefer innocent until proven guilty, opposed to the converse. Neither norm is arbitrary. For example, the latter norm indicates that we value liberty of the innocent and we value punitive justice, but we prefer liberty a bit more.

A conservation professional may cite the precautionary principle – referring roughly to the notion of refraining from actions that carry a risk of irreparable harm – as evidence that the burden of proof is determined by the value of and risk to lion populations. However, asserting that the precautionary principle sets the burden of proof on those raising concern for animal welfare is tantamount to asserting (rather than demonstrating) that concern for the wellbeing of populations outweighs concerns for the wellbeing of individuals. Other challenges associated with invoking the precautionary principle in a case such as this are highlighted in Foster et al. (2000).

One might be tempted to believe that the structure of the argument we analyzed here presumes more than it should about burden of proof. In particular, what if we had built and analyzed an argument whose conclusion has been: C. Trophy hunting of lions should *not* be tolerated. We believe the insight to have come from analyzing that argument would not be substantively different than the insights presented here (Appendix 6 for further discussion.)

#### 4.3. Deontology and utilitarianism

While we portrayed Sections 3.4.1 and 3.4.2 as a contrast between utilitarianism and deontology, there is a risk of drawing too bright a line between those ethical frameworks. Recall, for example, that points (i) and (ii) in Section 3.4.1 – where we write about minimizing “culpable harm” is an important blurring of the distinction between those ethical frameworks.

Also, Section 3.4.2 – where we focus on duress – is not particularly

aligned with act utilitarianism. However, it may be more closely aligned with rule utilitarianism. Act utilitarianism is especially concerned with the effect of individual actions (such as trophy hunting lions). By contrast, rule utilitarianism is especially concerned with effects of entire categories of actions (such as being permissive about duress) (Nathanson, 2018).

The relevance of these blurry boundaries is tied to an apparent, complicated relationship between the role of intuition and reflected upon reasoning in making moral judgment (Lombrozo, 2009; Paxton et al., 2012). This relationship is a likely reason for the difficulty we sometimes find in changing our minds about a moral judgment. More precisely, we highlight the risk (to we, the authors, and readers) of settling on a conclusion about trophy hunting and subsequently attributing that conclusion to a preference for utilitarianism over deontology or vice versa. The distinctions are not that clear.

Also, deontology and utilitarianism are two of three major frameworks in Western ethics. The third framework is virtue ethics (Cafaro, 2001; Van Houtan, 2006; Sandler, 2009; Hursthouse and Pettigrove, 2016). An analysis of trophy hunting through the lens of virtue ethics is beyond the scope of this analysis, and would likely prove interesting.

### 5. Conclusion

In the *Introduction*, we acknowledged that conservation professionals may advocate or at least tolerate killing lions for a variety of reasons – e.g., maintaining tolerance for lions by people who live near lions, protecting people's lives and livelihoods, and to raise funds for conservation. Other conservation professionals advocate in opposition – also for various reasons not covered this analysis, including, but not limited to, histories of colonization and concerns about distributive justice. While these reasons are inevitably interrelated and their evaluation would likely be fruitful, doing so is beyond the scope of this analysis. Moreover, we are doubtful that analyzing the arguments associated with those reasons would negate the insights emphasized here – which are intended to stem more directly to the role that trophy hunting might play in protecting the habitat of wild lions.

Conserving and coexisting with lions is complicated and we have excised one element of that complex situation. Trophy hunting is not the greatest threat to lion conservation and many more lions are killed for other reasons. As such, the attention given to trophy hunting as a means of promoting lion conservation by professionals and the lay public seems to represent: (i) keen concern to carefully adjudicate conflicts between conservation and animal welfare and (ii) a critical acknowledgment that the means for realizing conservation goals are important in addition to the goals themselves. Furthermore, discord about trophy hunting as a conservation tool is a symptom of a deeper concern – that the goals, purpose and underlying values of conservation are not sufficiently specified and agreed upon by the community of conservation professionals (e.g., Soulé, 1985; Kareiva and Marvier, 2007; Doak et al., 2013; Ramp and Bekoff, 2015; Sandbrook, 2015). That lack of agreement carries over to unresolved concerns about how the goals, values and purpose of conservation relate to other societal values such as social justice (e.g., Kaimowitz and Sheil, 2007; Vucetich et al., 2018). The most fundamental questions, such as “what is conservation?,” are too often taken for granted or eschewed as erudite. This analysis indicates how failing to resolve such issues can be an obstacle for the development of real-world conservation strategies.

One might be inclined to dismiss the value of this analysis because it does not promise to resolve the issue – by itself, once and for all. That would be a poor standard by which to judge any ethical analysis. Ethical resolution emerges slowly over long periods of time and through the cumulative insights of many contributors. In this way ethics and science are alike. The scientific community does not, for example, judge the value of a paper on the ecological effects of predation against its potential to completely resolve uncertainties about that topic.

One might also wonder about the possible influence of



inappropriate “personal views” on analysis of the kind presented here. Insulation against that concern is twofold. First, in this particular case, the co-authors are not in complete agreement about matters pertaining to trophy hunting; but we agree that the dissection of issues presented here is a critical step toward resolution. Second, and more important, an undue effect of personal views on analyses of this kind is revealed by showing how an insight drawn from the analysis is an artifact of either neglecting a relevant premise or mishandling the evaluation of a premise. For two and a half millennia, these have been the accepted criteria for critiquing an argument (Copi et al., 2013). For more about the influence of personal views on argument analysis, see Coals et al. (2019). The most important contribution of our analysis may be in demonstrating the precision and clarity that argument analysis can provide for complicated conservation decisions. That precision and clarity is vitally important for providing a critic with the opportunity to express points of disagreement with similar precision and clarity. As such, we hope any shortcomings will be raised in open discourse.

Finally, for emphasis, this paper is not an attempt to justify of any final judgment about the appropriateness of trophy hunting. Rather the paper is an assessment of the kinds of prior beliefs that would support one judgment or another. The premises in Table 1 are beliefs that would seem to lead to the conclusion that trophy hunting lions (to protect lion habitat) is tolerable, and rejection of one or more beliefs as represented in Table 1 that would seem to lead one to conclude that trophy hunting lions (to protect lion habitat) should not be tolerated.

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### Appendix 1. Economic constraints and premise P3b

A possible concern about P3b is that it ignores important economic constraints. In particular, P3b – which states, *Trophy hunting is currently the only means to protect habitat necessary for lion conservation* – should perhaps be revised by replacing “only means” with “most economically viable means.”

Careful reflection indicates that P3b (expressed in terms of “only means”) takes proper account of economic constraints and without giving economic considerations undue emphasis. In particular, if some means of protecting habitat were so economically unfeasible as to be essentially impossible, then it would not be a means of protecting habitat. In that sense, economic constraints are implicitly taken into account.

Moreover, using the phrase “most economically viable means” would result in questions about the phrase's meaning. Such questions would lead to more precise expressions, such as “means of protecting habitat which maximizes profit for some group of people.” That expression raises the concern that such economic maximization *per se* is generally not a good reason to forego some other more basic value (Stiglitz et al., 2010). Expressions of this nature would cause the argument to fail to support the conclusion (tolerate trophy hunting). In this sense, arguments that lean too heavily on parochial economic interests tend to fail.

### Appendix 2. Epistemic uncertainty

If P3a were expressed, for example, as “Trophy hunting lions might facilitate the protection of suitable lion habitat.” Then it would be appropriate to revise the argument's conclusion, “It might be appropriate to tolerate the trophy hunting of lions.” If one were interested in a more sophisticated exploration of the impact of epistemic uncertainty in empirical premises on ethical conclusions, then one would likely employ techniques other than traditional deductive logic. The insights developed here that do not require employing such techniques; and,

employing such techniques would be beyond the scope of this paper.

### Appendix 3. Intrinsic value

That individual vertebrate organisms (including lions) possess intrinsic value is widely accepted. One of the more important lines of reasoning begins with the supposition that humans possess intrinsic value because we have interests (e.g., to avoid pain and to flourish). Given that supposition, it follows that any entity with such interests would also possess intrinsic value. Because all vertebrate organisms possess those interests, they also possess intrinsic value. The force and universality of that reasoning is indicated by the principle of ethical consistency, i.e., treat others as you would consent to be treated in the same position (for a general review see Gensler, 2013; for applications to nonhumans see, e.g., Povilitis, 1980; Midgley, 1983; Callicott, 1999, p. 12; see Nussbaum (2006) for a similar application of a traditionally anthropocentric ethic to nonhumans). Most human cultures are undergirded by some variant of this principle (e.g., Golden Rule). The intrinsic value of at least some non-human portions of nature is also widely appreciated – as reflected by sociological evidence (Bruskotter et al., 2017) and many governments (Vucetich et al., 2015).

Because all living things have an interest to flourish, a case has been made that all living things possess intrinsic value – a position known as biocentrism (Taylor, 1986; Naess, 1990). The argument presented here does not require acknowledging biocentrism; it only requires accepting a narrower and uncontroversial belief, sentientism, which acknowledges that sentience imbues a thing with intrinsic value. Lions and other mammals of the Order Carnivora (which, for example, contains dogs and cats) are sentient and thus – according to sentientism – possess intrinsic value.

While those considerations support the appropriateness of P5, the basis for Premise P1 is rooted to one of two lines of reasoning. One line of reasoning would be that the objects of conservation concern, i.e., ecological collectives – populations, species, and ecosystems – also possess intrinsic value. One basis for the intrinsic value of ecological collectives is that ecological collectives are normally homeostatic, resilient, and interconnected and that those properties imbue them with intrinsic value (Leopold, 1949). Some, but not all, ecologists believe that ecological collectives are *not* characterized by those properties (e.g., Davis and Slobodkin, 2004; cf., Winterhalder et al., 2004). Nevertheless, whether an ecological collective possesses those traits is not entirely a scientific question, but is in an important sense a metaphysical question (To illustrate: *Describing* the interconnectedness of a system is usefully considered a purely scientific endeavor [but see Putnam, 2004]; but *judging* whether those interconnections are sufficiently intimate for the system to qualify, for example, as an organism involves significant metaphysical considerations [e.g., Eliot, 2007; Ruse, 2013]). As such, it is at least partially relevant that many (if not most) people believe that “nature possesses a delicate balance that is easily upset by humans.” (Pierce et al., 1987).

A second line of thinking (also developed by [Leopold, 1949]) also supports the intrinsic value of ecological collectives. That line of thinking begins with the supposition that we humans, along with ecological collectives, are members of the same biotic community. In sharing community membership, and by extending the moral principles that apply to human communities, we ought to treat ecological collectives with respect.

### Appendix 4. Duress as an analogy

*Who is the perpetrator?*

Typical cases of duress involve just two primary agents – a clearly identifiable perpetrator and a victim. By contrast, lion conservation involves many agents (e.g., trophy hunters – many of whom are wealthy, wealthy pastoralists, poor pastoralists, government officials,

conservation professionals and advocates). To understand how tolerating trophy hunting of lions can be like duress, one can ask: who is the perpetrator in this case? First, suppose the victim is a person (or group of people) who do not tolerate trophy hunting of lions as a means of conserving lions. Their intolerance is attributable to their acknowledging that it is wrong, *in principle*, to trophy hunt lions (see last paragraph of *Intrinsic value* in main text). Now consider each of several agents in turn:

Some *trophy hunters* might think, these “victims” should tolerate their trophy hunting because it promotes conservation. Some *wealthy pastoralists* might think, I care more about further building my wealth than I care for the case against trophy hunting or the victims' concern about that case, and anyone who objects should tolerate my implicit support of trophy hunting lions because intolerance will contribute to the further demise of lions. In this way, these agents contribute to the victim's duress (to tolerate what they would otherwise not be prepared to tolerate). As such, those agents bear, at least, some small part of the culpability.

A critic might object, by saying that these trophy hunters are not perpetrators because trophy hunting of lions is still legal and its legality precludes any case for duress. This objection holds only to the extent that laws and morality are aligned. Otherwise, there is the possibility of what one would call moral duress.

Another objection might be that we cannot know that any trophy hunter or wealthy pastoralist holds those thoughts – consciously and actively. These trophy hunters might be unaware of the victim's concern for the case against trophy hunting in principle. As such, these trophy hunters and pastoralists did not intend to cause duress and for that reason are not culpable. This objection would hold only to the extent that those agents can claim plausible deniability about the case against trophy hunting. Three points, on this matter. First, it seems reasonable that spending so much recreational effort taking the life of sentient creature creates a responsibility for at least being aware of the ethical concerns of doing so. Second, the victim dissolves plausible deniability when they claim they are a victim of (moral) duress. Third, what matters is the plausibility that such agents exist, not an ability to figure out which hunters and which pastoralists feel this way.

The role of *poor pastoralists* is different. A poor pastoralist may work in support of trophy hunting lions because doing so provides the financial means for meeting their basic human rights (i.e., acquiring resources necessary for realizing a healthy, meaningful life). For a poor pastoralist, the only alternative means of meeting those human rights may be to convert their land from suitable lion habitat into land for raising livestock. In such a case, the pastoralist faces a genuine moral dilemma – i.e., either choices involves a significant moral cost. It may also be the case, however, that some neglectful or otherwise incapable government officials bear some responsibility for not fostering a community where basic human rights can be met without incurring serious moral hazards. Those government officials would also bear some responsibility as perpetrators to the duress.

Some *conservation professionals* may also play a role as perpetrators of duress. Suppose the victim is a conservation professional whose professional wellbeing depends on being well accepted by the conservation community. Further suppose that the victim does not tolerate trophy hunting of lions for reasons outlined in the last paragraph of *Intrinsic value*. In response to that stance on trophy hunting, the victim's colleagues insist that her intolerance of trophy hunting indicates that she is not as committed to conservation as she ought to be. In this way, those conservation professionals perpetrate duress against the victim. Relationships of that nature may also affect the distribution of research funds. That such relationships exist in the conservation community is suggested by the rhetoric that is sometime associated with conflicts between conservation and animal welfare. For example, *Gutiérrez et al. (2007)* writes:

Even among biologists working with spotted owls there is

trepidation or resistance about the prospect of either engaging in removal experiments or, ultimately, [lethal] control efforts. Although we feel these reactions are emotionally understandable, we think they are misplaced, and do not serve a scientific leadership function for the public.

Several other conservation scholars have expressed concern that such attitudes are too prevalent (e.g., *Gobster, 2005; Turner and Patterson, 2006; Clergeau and Nunez, 2006; Perry and Perry, 2008*).

*Ultimately, does the analogy work?*

The purpose of analogies and metaphors is to enlist a well-understood phenomenon to assist in explaining some less-understood phenomenon. (As illustrated by the metaphor, love is like a red red rose.) The challenge of every analogy and metaphor is that the two sides of the comparison are never a perfect, literal fit. If they were, there would be no need for the analogy. The standard for judging the success of an analogy – whether the two sides of the analogy are sufficiently similar is (*Fox, 2002*): does the known side of the analogy (duress) help the reader see something in the unknown side of the analogy (trophy hunting lions) that was hard to see before?

Moreover, in this case, if the analogy is only weakly successful it may help explain *why* a person would be intolerant of trophy hunting and also care about lion conservation. If the analogy is sufficiently robust, it would also demonstrate that such people are justified in holding those beliefs. But, the analogy's success does not necessarily compel those who care about lion conservation to also be intolerant of trophy hunting – recall, that is the wicked nature of duress (see main text).

Finally, and for emphasis, we are not declaring that this case of lion conservation is a definitive case of moral duress – and certainly not a case of legal duress. On the contrary, our account is laden with equivocation. Most importantly, we concluded, “*If premise P6 is inappropriate, this series of abstractions and analogies may point to the rationale that would demonstrate why.*”

## Appendix 5. Who risks culpability for what?

Culpability is of fundamental importance because the topic is both genuinely complicated and plays a critical role in deontological thinking. Appreciating the flow of ideas in this appendix is aided by knowing its conclusion in advance: *the risk of culpability germinates in what otherwise might seem to be the nuance of one's circumstance and one's expressions*. Genuine complexities of culpability also require taking account of culpability in the context of different kinds of people.

(1) First consider a citizen with little influence on decision-making processes pertaining to trophy hunting. That person may express intolerance by voicing opinion to acquaintances when the topic is raised or by political engagement that is – as an isolated, individual action – of limited consequence (e.g., donating money to organizations that oppose trophy hunting of lions, engaging social media, etc.).

Often these citizens are not fully informed about technical details of the issue. Public life is comprised of myriad complex issues on wide ranging topics including foreign policy, economic policy, and social policy. No citizen can be fully informed about all the issues in which they have a genuine and substantive stake. Disturbing as that prospect may be, it is a basic condition of all societies that are both technocratic and democratic (see *Kaye, 2015* and references therein).

Technical knowledge about the consequences of a policy is invaluable. Yet technical knowledge has limits and is fallible – often beyond the awareness of technocrats (*Taleb, 2007*). For this reason, the expression of *values* by unavoidably under-informed citizens plays a valuable role in public discourse (*Piketty, 2014:3*). For those citizens,

culpability rises or dissipates from the values they choose to express and how they are expressed.

- (2) Consider the risks of incurring culpability by technocrats – those with significant technical knowledge and more substantive influence over discourse pertaining to trophy hunting of lions. More specifically, consider a technocrat who (i) explicitly expresses disdain for trophy hunting, but also (ii) expresses concern for adverse consequences that might arise from banning trophy hunting of lions at this time, and (iii) explicitly *focuses* on better understanding how to mitigate collateral wrongs that might arise from the attendant policy shifts (sensu, *Journey or Jump?*). This technocrat has three concerns (i through iii) and focuses on the third. Categorizing that response as ‘tolerant’ or ‘intolerant’ may require debating the meaning of those words beyond a point which is useful. In any case, we believe it would be difficult to make a robust case for how this technocrat is especially culpable (i.e., responsible for wrongdoing).
- (3) Consider another technocrat who expresses joint concern for the wellbeing of individual lions and the conservation of lion populations, and concludes that we should trophy hunt lions unless (and until) we can find another means to conserve lions. While the tone of this expression is only subtly different than the other technocrat, it may be substantively different for placing too little emphasis on how we might go about the “journey” (or at least the need for a journey) and thereby risk culpability. In any case – and even if we are wrong in the preceding – tending to nuance is justified to the extent that a technocrat wields disproportioned influence on public discourse.
- (4) Yet another technocrat might oppose trophy hunting of lions out of concern that prospects for realizing the “journey” are bleak. That pessimism would stem from believing (i) social forces associated with status quo will neutralize motivation to find alternative means of protecting habitat so long as habitat is protected by trophy hunting, or (ii) other threats to lions will remain unmitigated (i.e., the sufficiency phrase of premise P2b in Table 1 will not be met). While not all technocrats would subscribe to those beliefs, they are nevertheless reasonable beliefs for a technocrat to hold. In any case, the risk of culpability rises or falls with the appropriateness of those pessimistic beliefs.

The preceding is not intended to be an exhaustive taxonomy of possible expressions by technocrats; rather, it is *only intended to highlight how the risk of culpability germinates in what otherwise might seem to be the nuance of one’s circumstance and one’s expressions*. For emphasis, the purpose of evaluating culpability is not to pass moral judgment on colleagues. Rather, evaluating what kinds of actions incur culpability lies at the heart of deontological explanations.

Finally, recall that our analysis more-or-less presumes (rather than fully demonstrates) that trophy hunting is wrong in principle (see last paragraph of *Intrinsic value* of the main text). If a technocrat believes that trophy hunting is acceptable – in principle; then their culpability would rise or dissipate from the appropriateness of that belief. A forthcoming review of existing literature on trophy hunting of lions (led by MPN) demonstrates that each of the stylized expressions described above are well represented in the discourse.

## Appendix 6. Insight from a restructured argument

One might wonder whether the basic insights to arise from the analysis would differ substantively if the structure of the argument’s conclusion had included the adverb “not”: Trophy hunting of lions should *not* be tolerated. That change would precipitate an analogous change to P6:

P6\*. Maintaining current status of lion populations is a *not* good reason to kill lions (in the context of properly regulated trophy

hunting).

If P6\* were judged to be an appropriate claim, then the empirical premises P2 through P4 would become less important for judging the logical validity of the argument. In other words, if P6\* were strictly true, then the soundness of the arguments would depend little on the truth value of the empirical premises (P2–P4). (In the previous sentences, we use the terms “validity” and “soundness” in the formal manner that is associated with the academic discipline of logic.) To emphasize the point, one could consider a more extreme version of P6:

P6\*\* The great value of conserving *Panthera leo* far outweighs the much lesser value of individual lions that might be trophy hunted.

The more extreme one makes P6 the less relevant the empirical premises (P2–P4) become for evaluating the argument’s soundness. Ultimately, restructuring the argument by changing the conclusion and P6 places more emphasis on judging the truth of P6, P6\* or P6\*\*. That judgment would be informed by the ideas presented in the main text of this paper.

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