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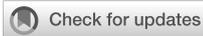


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Ethical arguments that support intentional animal killing

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Killing animals is a ubiquitous human activity consistent with our predatory and competitive ecological roles within the global food web. However, this reality does not automatically justify the moral permissibility of the various ways and reasons why humans kill animals – additional ethical arguments are required. Multiple ethical theories or frameworks provide guidance on this subject, and here we explore the permissibility of intentional animal killing within (1) consequentialism, (2) natural law or deontology, (3) religious ethics or divine command theory, (4) virtue ethics, (5) care ethics, (6) contractarianism or social contract theory, (7) ethical particularism, and (8) environmental ethics. These frameworks are most often used to argue that intentional animal killing is morally impermissible, bad, incorrect, or wrong, yet here we show that these same ethical frameworks can be used to argue that many forms of intentional animal killing are morally permissible, good, correct, or right. Each of these ethical frameworks support constrained positions where intentional animal killing is morally permissible in a variety of common contexts, and we further address and dispel typical ethical objections to this view. Given the demonstrably widespread and consistent ways that intentional animal killing can be ethically supported across multiple frameworks, we show that it is incorrect to label such killing as categorically unethical. We encourage deeper consideration of the many ethical arguments that support intentional animal killing and the contexts in which they apply.

KEYWORDS

animal ethics, animal rights, compassionate conservation, culling, livestock farming, morality

1 Introduction

Killing non-human animals (hereafter ‘animals’) is a ubiquitous human endeavor consistent with our predatory and competitive ecological roles within the global food web. This killing is found in a variety of contexts, such as: (1) wild harvest or food acquisition, (2) human health and safety, (3) agriculture and aquaculture, (4) urbanization and industrialization, (5) invasive, overabundant or nuisance wildlife control, (6) threatened species conservation, (7) recreation, sport or entertainment, (8) mercy or compassion, (9)

cultural and religious practice, and (10) research, education and testing (Allen et al., 2023). It is ecologically impossible for humans to live in a way that does not cause or require animal death in most of these forms, and the myriad of complex interactions between humans and animals means that animals will be killed or die irrespective of human agency (Bobier and Allen, 2022a; Darwin, 1859). Each of these 10 forms of animal killing can be direct or indirect and intentional or unintentional (Fraser and MacRae, 2011; see also Hampton et al., 2021). Although this information is widely understood, an increasing proportion of humans living in

Eurocentric societies have become morally uncomfortable with the idea of animals being killed by any means (Manfredo, 2008), and it is the intentional forms of killing that raise the strongest objections from those individuals and organizations opposed to animal killing (Leroy and Praet, 2017; Hare et al., 2023; Clauss et al., 2025; Regan, 1983). Simply knowing that humans will and must kill animals does not automatically justify the moral permissibility of human participation in all such instances of animal killing, and for this reason, justification of intentional animal killing “requires additional ethical arguments beyond the ecological arguments” (Allen et al., 2023, p. 9).

Opponents of animal killing typically condemn the practice by appealing to a variety of ethical theories or frameworks that have been used to argue against it (Arlinghaus and Schwab, 2011). Early examples include prehistoric cultural taboos against killing certain totemic species or culturally significant entities (Baker et al., 2014; Landim et al., 2023), or cultural or religious prohibitions on intentionally killing certain sacred species or all animals entirely (Benson, 2021; Finnigan, 2017). Besides such cases, killing animals was socially acceptable for much of human history, and the ethical permissibility of intentional animal killing remained largely unchallenged at a societal level until relatively recent times. Challenges arising since the 1970s include consequentialist arguments that harm caused to sentient animals cannot be justified by the benefit or convenience received by humans (i.e. utilitarianism; Singer, 1975), deontological arguments that animals have a right to life and that humans are obliged to minimize animal suffering and respect that right (i.e. animal rights; Regan, 1983), or virtue ethics arguments that killing animals is inconsistent with the virtue of compassion, leading to movements such as ‘compassionate conservation’ (Wallach et al., 2018; Ramp and Bekoff, 2015) or ‘virtuous veganism’ (Alvaro, 2017b, 2017a). Many more ethical arguments against intentional animal killing have also been made (e.g. Arlinghaus and Schwab, 2011; Engster, 2006), and a plurality of ethical frameworks are available to guide decisions about intentional animal killing. Sentience is often used as an important threshold for moral standing in many of these frameworks (Singer, 1975; Bobier, 2022; Birch, 2024; Yeates, 2022).

Hampton et al. (2019) show that recognition of this ethical pluralism is particularly lacking in literature that promotes the adoption of ethical positions that oppose intentional killing and denounce others as ‘unethical’ (Ramp, 2013) or ‘immoral’ (Bekoff and Ramp, 2014). Exchanges between those opposing and defending animal killing are often asymmetrical, and in many cases, little credence is given to the validity of counterarguments by authors with strong ethical commitments to one framework or another. For example, Wallach and colleagues made a series of deontology-based and virtue ethics-based arguments against lethal control of invasive animals from a somewhat sentiocentric perspective (Wallach et al., 2020, 2018, 2015), but such lethal control was defended by consequentialist-based arguments from a more bio- or ecocentric perspective (Hayward et al., 2019; Fleming, 2018; Callen et al., 2020; Griffin et al., 2020; Lynch and Blumstein, 2020). While still denouncing animal killing, others have tried to circumvent such problems altogether by being vague and non-

committal to any ethical framework (e.g. Lynn et al., 2025). These types of exchanges demonstrate the perceived impasse that can arise when people operate from different epistemic or ethical frameworks (Leroy and Praet, 2017). The existence and deployment of multiple ethical frameworks in these ways can often be confusing for the many impartial observers to determine for themselves when or if animal killing can be considered morally permissible, good, correct, or right. The perceived inconsistencies between different ethical frameworks can also appear confusing to many people.

Here we explore a suite of ethical justifications that may be used to defend the moral permissibility of intentional animal killing across a variety of contexts, thereby supplying intellectual resources to those considering the ethics of killing animals. We operate under the assumption that animals indeed have moral standing, summarizing a variety of ethical arguments that support or permit intentional killing of such animals by humans (Table 1). These arguments are drawn from eight different ethical frameworks: (1) consequentialism, (2) natural law or deontology, (3) religious ethics or divine command theory, (4) virtue ethics, (5) care ethics, (6) contractarianism or social contract theory, (7) ethical particularism, and (8) environmental ethics. We further illustrate with examples how and when each of these ethical frameworks can or cannot be used to justify the 10 forms of animal killing listed above (Supplementary Table S1), and identify features of contexts in which arguments supporting animal killing can occur. We do not commit ourselves to any of the arguments or ethical positions we describe. We do not advocate that any of the arguments we present be used to justify animal killing to their fullest possible extent, nor do we seek to imply that animal killing should be unfettered just because it may be ethically justified. Rather, we aim to demonstrate that intentional animal killing is, or can be, morally and ethically justified in multiple ways by a suite of different ethical frameworks, including those most often invoked to condemn such killing. In so doing we show that many ethical frameworks converge to permit intentional animal killing in certain contexts, demonstrating their consistency and providing reassurance and ethical support for killing animals in these contexts. Our intent is that this overview of the ethical landscape reduces unnecessary confusion and misunderstanding between those that oppose intentional animal killing and those that do not.

2 Ethical frameworks that support intentional animal killing

2.1 Consequentialism

Consequentialism focuses on the outcomes or consequences of an action or inaction and is indifferent to any associated rights, duties, virtues, or relationships (described below), or rather, these have no moral significance independently of consequences. When applied to animal killing, those inspired by consequentialism argue that an action is morally permissible, good, correct, or right if it minimizes overall harm to all animals involved (Mill, 2015; Driver, 2011). However, any type of consequence can be prioritized under

TABLE 1 Selected ethical frameworks and formalized arguments to support intentional animal killing.

#	Ethical theory or framework	Position aligned against animal killing	Position aligned for animal killing	Formalized argument to support intentional animal killing
1	Consequentialism	The consequences of animal killing are excessive or produce unacceptable amounts of harm.	Animal killing is justified if it increases animal and/or human welfare.	<ol style="list-style-type: none"> 1. We should adopt actions that minimize suffering while maintaining or increasing the wellbeing of sentient creatures. 2. Killing animals minimizes net suffering and/or promotes the wellbeing of affected sentient creatures in some situations. 3. Therefore, we can kill sentient animals in these situations.
2	Natural law or deontology	Animals have certain rights (e.g. right to life), humans have a duty to respect those rights, and killing animals violates those rights.	The miniride principle permits the killing of some animals to save many others when all animals will be equally harmed.	<ol style="list-style-type: none"> 1. Humans are morally justified in killing some animals when it prevents the death and suffering of many more animals. 2. There are cases where killing some animals will prevent the death of many more animals. 3. Therefore, humans can kill animals in such cases.
3	Religious ethics or divine command theory	Animal killing is not justified if it does not conform with or is not permitted by sincere religious beliefs.	Animal killing is justified if it conforms with or is permitted by sincere religious beliefs.	<ol style="list-style-type: none"> 1. Religion grounds what is morally permissible and impermissible. 2. Religion can affirm the moral permissibility of various uses of animals, including killing. 3. Therefore, it is morally permissible to use and/or kill animals when religion sanctions it.
4	Virtue ethics	Virtuous humans should demonstrate virtuous attributes and behavior (i.e. compassion) towards animals.	Acting virtuously sometimes requires killing animals.	<ol style="list-style-type: none"> 1. The virtuous person cares about animals and other humans and seeks to promote their flourishing or reduce their harm. 2. Expressing compassion for animals and other humans sometimes requires the virtuous person to kill animals. 3. Therefore, the virtuous person is not opposed to all animal killing.
5	Care ethics	Humans are in a care relationship to animals and have a responsibility to care for them.	Humans are in care relationship with some animals (e.g. pets, livestock), but are not obliged to care for all animals (e.g. wildlife).	<ol style="list-style-type: none"> 1. Care ethics requires strong moral obligations to animals that we stand in the care-relation to. 2. No person stands in a care-relation to all animals. 3. Therefore, we do not have a strong moral obligation to all animals. 4. Therefore, it is morally permissible to kill some or even most animals.
6	Contractarianism or social contract theory	Humans would not accept practices that kill animals if all contextual knowledge was unavailable.	Animals are not rational beings, so humans should not grant strong protections to all animals.	<ol style="list-style-type: none"> 1. Contractors are rational, selfish and ignorant of their place in the world, including their position and possible reliance on animals. 2. Contractors will create rules that grant moral standing and strong protections to rational persons. 3. Animals are not rational persons. 4. Therefore, contractors will not pass rules that grant moral standing and strong protections to animals.

(Continued)

TABLE 1 Continued

#	Ethical theory or framework	Position aligned against animal killing	Position aligned for animal killing	Formalized argument to support intentional animal killing
7	Ethical particularism	Animal killing is usually unnecessary, so humans should not kill animals.	There are good reasons to kill animals, so humans can kill animals for these reasons.	<ol style="list-style-type: none"> 1. Killing animals requires good reason. 2. There are good reasons to kill some animals. 3. Therefore, killing animals for these reasons is permissible.
8	Environmental ethics	Killing animals can compromise ecosystem health, so non-lethal approaches should be used to maintain ecosystem health.	Killing animals can improve ecosystem health, so lethal approaches should be used whenever it can enhance ecosystem health.	<ol style="list-style-type: none"> 1. We should act to support or maintain the health of ecosystems. 2. Killing animals can support or be inconsequential to ecosystem health. 3. Therefore, killing animals is morally permissible when it supports or is inconsequential to ecosystem health.

this flexible framework, allowing consequentialist approaches that prioritize biodiversity outcomes (e.g. ecocentrism), economic value, etc. Under a utilitarian calculus, actions that do not minimize harm or maximize pleasure are wrong or are placing greater importance on factors other than animal wellbeing. Consequentialism underpins most of the contemporary regulatory systems governing animal use and care for scientific purposes (e.g. NHMRC, 2013; SABS, 2008; National Research Council, 2011), where harmful action towards sentient animals are in principle forbidden unless they are properly justified by producing more good than harm, including to humans. Consequentialism also underpins legislation governing many other forms of animal use. This includes European legislation specifying an obligation to minimize the animal suffering associated with hunting, such as pain, fear and distress (FAHC, 2007), or catch-and-release practices for recreational fishing in other countries (Arlinghaus et al., 2009, 2012).

Before one decides to act, one should evaluate and compare the anticipated consequences and choose the action most likely to produce the best overall outcomes, or the action that yields the greatest net balance of overall wellbeing or welfare (e.g. Allen and Hampton, 2020; Allen et al., 2019). Intentional, unintentional, direct and indirect consequences for all relevant humans and animals should be considered in the consequentialist calculation. Some forms of consequentialism decry animal killing, but the harm versus wellbeing calculus is often less forthright than opponents of animal killing often assume (Crony and Swanson, 2023; Cohen, 1986; Bobier, 2020). This is especially true when the moral scope is widened or a more expansive set of sentient animals are considered beyond the one or two directly involved in the killing interaction (Hampton et al., 2021; Clauss et al., 2025). Considering or disregarding different animals will change the outcome of the ‘net good’ calculation (Caspers, 2025).

There is also a great deal of subjective judgment in the consequentialism calculus that may lead to almost any outcome. When taken to its extreme, for example, forms of consequentialism that prioritize the minimization of harm suffered by sentient organisms (sometimes called ‘negative utilitarianism’) above all other considerations may lead to bizarre and even genocidal views akin to moral relativism where evolved trophic relationships between animals (e.g. predation) are ‘wrong’ or nature is seen as a ‘failed state’ because eating entails suffering and death (Boomsma 2018). Suggested remedies include no longer permitting predatory animals to eat prey animals (Gordon 2022), widespread genetic engineering to eliminate the ability of animals to feel pain (Shriver 2009), the intentional conversion of carnivores into herbivores or the ‘painless killing’ and removal of carnivores (Bruers et al., 2024; MacAskill and MacAskill, 2015; Bramble, 2021), or the sterilization and even elimination of animal life altogether (Moen 2016). Such extreme views suggest that *no* life can be considered preferable to a life inclusive of any suffering (see www.herbivorizepredators.org for details). Though they might be viewed as the theoretical pinnacle of the consequentialist’s commitment to eliminating harm, these objectives are fundamentally incompatible with biological laws, ecological functionality, and multiple alternative ethical frameworks (Allen

et al., 2023; see also below), but they do highlight one advantage of consequentialism – its malleability.

A generalized version of consequentialism that prioritizes minimization of sentient animal suffering can be formalized as follows (Table 1):

1. We should adopt actions that minimize suffering while maintaining or increasing the wellbeing of sentient creatures.
2. Killing animals minimizes net suffering and/or promotes the wellbeing of affected sentient creatures in some situations.
3. Therefore, we can kill sentient animals in these situations.

Premise 2 is the contentious one, but there are several examples that illustrate how human killing of animals can minimize overall animal suffering (Supplementary Table S1). The determining factor is the nature and scope of the welfare issues afforded consideration (Lynch et al., 2025). For example, consideration of the indirect and unintentional effects of an action (and not just the direct, intentional effects) means that it is often incumbent on the consequentialist to kill animals as part of medical research or cull invasive species (Allen et al., 2023). Context remains important, however, and the quantification of net harm versus net benefit will depend on specific cases and worldviews (IPBES, 2022; Díaz et al., 2018). Different consequences may also be emphasized in different versions of consequentialism. Bentham (1996) states that the relevant consequences of an action are the effects on net suffering or pleasure, providing an inclusive framework that incorporates most experience. This still raises questions about what degree of sentience modulates the experience of suffering, how to weight cognitively complex organisms, and the type of information most actionable (Arlinghaus et al., 2009; Diggles et al., 2023; Arlinghaus et al., 2007). Mill (2015) emphasized that higher pleasures should be weighted more heavily in a utility calculus, such as those pleasures formed from reflection, effort, and a connection to our sense of self. The scope and weighting given to different consequences will affect what forms of killing are considered acceptable (Caspers, 2025; Sharp and Saunders, 2011; Allen and Cabral de Mel, 2024). Similarly, epistemic uncertainty about the actual consequences of one's action, particularly in ecosystems, remains a challenge for applying consequentialism (Engster, 2006). Regardless of these challenges, the reasoning presented above demonstrates that consequentialism can be used to make a defensible argument permitting intentional animal killing whenever it minimizes animal harm or maximizes wellbeing for affected animals.

2.2 Natural law or deontology

Natural law or deontology assesses actions based on whether the action conforms to one's duty (e.g. do not lie; Kant, 1785), which creates categorical imperatives for behavior. Deontology, in its broader sense, considers duties to be grounded in and identified by the rights of persons to be respected (e.g. not lied to). Those inspired by deontology argue that all or at least some (i.e. sentient)

animals have certain rights, which often are or should be the same rights afforded to humans (e.g. Regan, 2013). An action is morally permissible, good, correct, or right if it respects the relevant animal rights and human duties involved; an action is wrong if it does not respect the relevant rights or is inconsistent with one's duty towards those rights. This ethical philosophy underpins what is commonly referred to as the 'animal rights' view (Stucki, 2020; Regan, 1983).

One popular tenet of animal rights philosophy is that animals have a right to life or a right not to be killed, and humans have a corresponding duty not to kill them (Regan, 1983). But there are many situations where animals will be killed by humans irrespective of intentional human action or inaction, where killing may not be motivated by human interests, or where failing to kill an animal may result in greater amounts of animal death or suffering (Allen et al., 2023); what duties do humans have then? Regan (1983) describes two principles to inform the moral permissibility of animal killing in these common situations. The first is the *miniride principle*, which posits that the rights of the many should override the rights of the few when all will be equally harmed. The second is the *worse-off principle*, which posits that a relatively minor amount of harm to many is acceptable if it avoids relatively major amounts of harm to the few. These deontological benefit-cost calculations overlap strongly with consequentialism (see above).

These two principles can be used to form an ethical rationale that supports many contentious cases of intentional killing of wild animals, such as poisoning invasive species, recreational hunting, or mass culling of suffering wildlife (Supplementary Table S1; see also Bobier and Allen, 2022a). Moreover, their application for domestic animals may include vaccinating livestock against disease, or quarantining, isolating or killing diseased animals that pose a health risk to others. The use and death of laboratory animals further exhibit these principles in many human health and biomedical contexts (Cohen, 1986).

This argument can be formalized for the miniride principle as follows (Table 1):

1. Humans are morally justified in killing some animals when it prevents the death and suffering of many more animals.
2. There are cases where killing some animals will prevent the death of many more animals.
3. Therefore, humans can kill animals in such cases.

Despite Regan's well-argued principle supporting Premise 1, it remains the contentious premise (Jamieson, 1990). Using 51 miners trapped underground as a hypothetical example, Regan (1983) explains how intentionally killing one miner to save the others is consistent with the deontological view of human rights and duties. Applying this principle to wild-living animals, Bobier and Allen (2022b) provide several examples where killing some animals can and has prevented the killing and death of many more (e.g. eradication of a small number of invasive rats on islands to save many more ground-nesting seabirds from being killed by the rats). After considering such issues, Abbate (2018) concluded that "the

philosophy of animal rights holds that, under certain conditions, it is justified, and sometimes even obligatory, to cause harm to some animals to prevent greater harm to others.” Though ecological evidence for Premise 1 may be contested on the merits of each case, the argument presented above and the available examples of its application demonstrate that many cases of intentional animal killing can indeed be ethically consistent with animal rights philosophy (Ross, 1930; Supplementary Table S1).

That animals have any rights at all (and humans have any duties towards them) relies on an assumption that animals have moral standing, are moral agents, or are members of the moral community in the first place (Singer, 1993; Kurki, 2021), as opposed to simply meriting moral consideration by humans. Discussed more deeply in Supplementary File 1, an additional, more universal deontological argument to support intentional animal killing can also be made when acknowledging that animals cannot ‘claim’ (Hohfeld, 1913) or possess rights because animals have no moral standing given their lack of rationality. Animals also lack the ability to fulfil duties towards humans and cannot be held morally responsible for damage done to humans. Thus, deontological arguments can be made to permit animal killing in all cases (Supplementary File 1) or in only some cases (described above), dependent on animals’ rationality and moral status.

2.3 Religious ethics or divine command theory

Divine command theory or frameworks of religious ethics derived from command theory focus on acting in ways consistent with commandment, instruction or counsel given by a deity or venerated cultural or religious leader in spoken, written, revealed, or ritual form (Hoffman and Sandelands, 2005; Ouis, 1998). Divine command frameworks are often considered deontological (see above), though ‘rights’ in this case are derived from divine command rather than a natural law. This kind of prescriptive religious ethic differs from religious versions of the virtue ethics described below, which typically ground the common good in the divine nature (good) rather than in some arbitrary divine choice. Those inspired by a religious ethic argue that an action is morally permissible, good, correct, or right if it is commanded, endorsed, aligns with, or is permitted by sincere religious beliefs. This ethical philosophy often underpins the widespread killing of animals for food or for the sacrifice of animals in rituals.

Religion functions as a moral authority for billions of people worldwide, and the teachings of a specific cultural or religious text (e.g. the Bible, Torah, Veda, Tripitaka, or Qur’ān) or person (e.g. shaman, rabbi, prophet, healer, tribal chief, indigenous elder, or bishop) are regarded by adherents as definitive statements of appropriate moral conduct. Though some faiths prohibit killing some animals for some reasons (e.g. unclean, sacred, taboo, or totem animals), it is nevertheless valuable to observe that many cultural or religious teachings explicitly sanction animal killing for food, clothing, ritualistic sacrifice, or other purposes (Barstow, 2019; Allen et al., 2023), and can link animal killing directly to cultural identity (Marker, 2006). Since these teachings are regarded as

supremely authoritative by billions of people, those who oppose animal killing cannot disregard religious arguments that are in favor of it.

This argument can be formalized as follows (Table 1):

1. Religion grounds what is morally permissible and impermissible.
2. Religion can affirm the moral permissibility of various uses of animals, including killing.
3. Therefore, it is morally permissible to use and/or kill animals when religion sanctions it.

Some argue that cultural or religious doctrines are mere matters of personal faith that do not pertain to matters of objective truth, and as such, they should not be considered robust sources of moral authority (Camus, 1942). But ignoring the many arguments that have been made in favor of theism, a substantial number of people nevertheless believe in, and take their moral cues from, deities and/or religious leaders that expressly endorse some forms of animal killing, and these views shape contemporary value systems at a societal level all around the world (Díaz et al., 2018; IPBES, 2022; Lynch et al., 2025). Some even embed spirituality and religious considerations in holistic wellbeing. For instance, the African philosophy of *Ubuntu – I am because we are* – embraces a human, natural and spiritual tripartite (Chibvongodze, 2016). Ecological processes generate the ecosystem services that Ubuntu captures when rationalizing the humane killing of animals, with respect and thankfulness. This and other cultural and religious moral teachings provide ethical discourse of relevance, even for the secular reader. Casual dismissal or disregard of such sincere faith also risks engaging in cultural supremacy or bigotry, thereby falling afoul of other ethical frameworks (e.g. a violation of human rights; a denial of human flourishing; a net negative consequence; or unjust within a social contract). Thus, for many or perhaps most people, the rationale presented above and the many available examples of animal killing for cultural or religious reasons demonstrate that religious ethics can be used to make a defensible argument permitting the killing of animals whenever religion sanctions it.

2.4 Virtue ethics

Virtue ethics focuses on human character traits and whether a person’s actions could be considered virtuous (Annas, 2011; Aristotle, 2009; Hursthouse, 1999) or rightly oriented towards the social and ecological common good (List, 2013). Compassion, justice, mercy, temperance *sensu lato*, etc., are often considered important virtues in our treatment of others. Thus, those inspired by virtue ethics argue that virtuous people should demonstrate such virtues toward animals, including the idea that justice and compassion for animals demand a general refrain from killing them. An action is morally permissible, good, correct, or right if it is the action that a virtuous agent would perform in that circumstance, and an action is wrong if it is not the

action that a virtuous agent would perform in that circumstance (Hursthouse, 1999).

Virtue ethics has been used to argue that some forms of animal killing by humans are wrong or immoral. For example, some argue that because the virtuous person should be caring and compassionate towards animals, they should not be indifferent to their treatment, should refrain from killing them, and should respect their interests and promote their wellbeing (Hursthouse, 2011; Shafer-Landau, 1994; Nussbaum, 2007). Accordingly, it has been argued that the virtuous agent should be vegan (Nobis, 2002; Hursthouse, 2006; Alvaro, 2017b, 2017a), reject most animal use or research (Hursthouse, 2011), and question the intentional killing of wildlife (Vucetich and Nelson, 2013). This latter view is championed by the ‘predator-friendly farming’ and ‘compassionate conservation’ movements. For example, the compassionate conservation movement maintains that many wildlife conservation initiatives are immoral because they directly cause stress to some animals, inhibit their free movement, or kill some in the name of conservation (UTS, 2019; Wallach et al., 2018; Ben-Ami, 2017; Ramp and Bekoff, 2015; Bekoff and Ramp, 2014). The counter argument is that such approaches “could be more harmful for native biodiversity than any other conservation action implemented thus far, while also causing more net harm to individuals than it aims to stop” (Griffin et al., 2020).

Although virtue ethics has been used to argue that killing animals is wrong (Ben-Ami, 2017), virtue ethics philosophy does not prohibit all forms of animal killing; the framework is compatible with arguments that some forms of animal killing are morally right, such as killing animals for food, killing predators to protect livestock or other prey, or euthanizing a mortally wounded animal. Shephard et al. (2024) even posit that a hunting (including killing) relationship with animals is key to developing an emotional connection to them, ultimately fostering virtuous stewardship towards nature. And importantly, what is considered virtuous is not a natural law; it is strongly socially constructed, culturally defined, and therefore flexible in accordance with what is considered to contribute to the common good. For example, it may be virtuous to kill for food if this is the leading and socially agreed-common good. Bobier and Allen (2022b, p. 4) explain that “virtuous people are motivated by compassion to minimize harm ... because they would appear callous or cruel if they adopted a prohibition on intentional animal harm knowing or reasonably believing that doing so would create significantly more animal harm”, and “when virtuous managers adopt a conservation policy or practice that intentionally harms or kills animals, they do so because they want to prevent a greater tragedy from occurring”. This position helps to highlight the discord between killing and harm, which are not the same thing. Death is not the endpoint of a linear progression of harm, and killing can be achieved without causing pain, suffering, stress or harm (e.g. an unexpected gunshot to the head; Allen and Cabral de Mel, 2024; Caspers, 2025; Sharp and Saunders, 2011). Often, the virtue of compassion is realized only when harm is prevented or minimized, which is not necessarily analogous to a prohibition on killing.

This argument can be formalized as follows (Table 1):

1. The virtuous person cares about animals and other humans and seeks to promote their flourishing or reduce their harm.
2. Expressing compassion for animals and other humans sometimes requires the virtuous person to kill animals.
3. Therefore, the virtuous person is not opposed to all animal killing.

Premise 2 is the contentious one. In support of this premise, however, it is important to emphasize two points. First, many believe that virtue ethics is socially or religiously constructed and context-dependent (MacIntyre, 2013; Zagzebski, 1998), and as such, there can be no mandatory refrain from killing animals. There may be occasions where the virtuous person will justly kill animals to save other animals’ lives (Bobier and Allen, 2022b). Second, virtue ethics is an inherently *human* theory of excellence (i.e. being virtuous), providing guidance on human motives, intentions, and perspectives. The virtuous person could therefore act wisely with intent to justly promote animal flourishing in accordance with their understanding of the good, which is often strongly culture-dependent and defined by prevailing social norms and taboos. Thus, the argument presented above and the many available examples of the need for animal killing, demonstrate that virtue ethics can provide a defensible argument permitting intentional animal killing in some situations.

2.5 Care ethics

Care ethics assesses actions by how they promote and maintain a reciprocal or mutual caring relationship between a care-giver and care-receiver, and is considered somewhat similar to virtue ethics (see above). Those inspired by care ethics argue that humans are or may be care-givers to animals and, as such, have a moral responsibility to care for them. An action is morally permissible, good, correct, or right if it meets the needs of animals, as well as our own selves. An action is wrong if the needs of animals are not met. This ethical philosophy can be useful for understanding our relationship with pets, livestock, or captive animals in a reciprocal or mutual care relationship with humans, but it is less useful for understanding our relationship with wild-living animals or those where care only flows in one direction.

According to care ethics, moral standing is grounded in the kinds of relationships others can have with us (Engster, 2006). Being in a moral relationship with another involves honest attempts to appreciate and respond to another’s situation, including their needs, pains, and desires (Gruen, 2015). This involves cultivating ‘empathetic imagination’ or empathizing with another’s situation and imagining oneself in it so that we can foster and deepen our relationships with each other (Gruen, 2015; Aaltola, 2013). Humans clearly have close relationships with some animals, many of which are not only proximate and subject to care but are also capable of reciprocating care (e.g. pet dogs, cats and birds). Thus, care ethics has been used to show that we have strong moral obligations to

animals because we care about them (Adams and Donovan, 1997; Kheel, 2008). While care ethics recommends against harming or killing any cared-for animal without good justification, we may still be obliged or permitted to kill them in some cases (Engster, 2006). For example, as a duty of care, we may be obligated to kill an ill or suffering pet (Cooney and Kipperman, 2023). Equally, one can be obligated through a care relationship to provide a good life for a farm animal, while still permitted to painlessly kill it. A reciprocal relationship of care requires the provision of a good life, not the prevention of killing or death.

One important limitation of care ethics is that the theory does not apply to *all* animals because people are unable to know with certainty what an animal needs or wants (Mameli and Bortolotti, 2006), nor are they in a care relationship with all animals (Clement, 2011). While a person may be in a care relationship with their pet, for example, they are typically not in a care relationship with others' pets or wild animals – at least not at broad scales. Thus, according to care ethics, the person has a moral obligation to their pet, but not to other domestic or wild animals.

The argument can be formalized as follows (Table 1):

1. Care ethics requires strong moral obligations to animals that we stand in the care-relation to.
2. No person stands in a care-relation to *all* animals.
3. Therefore, we do not have a strong moral obligation to *all* animals.
4. Therefore, it is morally permissible to kill *some* or even most animals.

Some might respond that we should cultivate our empathetic imagination to care about *all* animals, appreciating the interconnectedness of the world, or that a caring person cares about animals they know are suffering (Donovan, 2006). In an extended sense, then, a person may care about all animals or claim to be in a care relationship with all animals. For example, 'care at a distance' extends the care relation beyond the embodied to even involve an affective relationship through television screens or through financial donations made to animal conservation initiatives (Cuomo and Gruen, 1998; Von Essen, 2023). However, the problem with this view is that this becomes an ethical framework no longer grounded in mutual relationships because only the person (and not all animals) is acting in a caring way, which transforms a care ethics argument into just another form of virtue ethics (see above). Lastly, several scholars have considered the compatibility of caring with killing and resolved that alleviating suffering via euthanasia, sacrificing some individuals to benefit populations, or providing a good quality of life for an animal before its killing, may each be consistent with care ethics (von Essen and Allen, 2021; Law, 2010). This may also include killing animals for wild harvest, invasive species control, threatened species conservation, or recreational hunting and fishing. Care ethics does not sanction all animal killing, but it does permit killing animals that we are not in a mutual or reciprocal care relationship with,

otherwise it becomes equivalent to virtue ethics which likewise permits some animal killing (see above).

2.6 Contractarianism or social contract theory

Contractarianism or social contract theory assesses actions based on the mutual benefit that people or contractors would produce under a hypothetical agreement or social contract (Rawls, 1971). Those inspired by contractarianism argue that an action is morally permissible, good, correct, or right if it is fair and just (but not necessarily equal) to all rational beings involved. Unfair or unjust actions are wrong.

Deciding whether an action is fair or just is achieved by determining whether it conforms to rules that citizens would choose under certain idealized circumstances to govern their behavior. A test for identifying these rules is to first imagine a veil of ignorance over a group of individuals (Rawls, 1971). Individuals behind the veil do not know any details about themselves (e.g. religion, age, race, gender, nationality, view of animals, food availability, social status, etc.), but they do know of and possess basic human desires, motivations, and needs (like the need to eat food or be safe; Smith, 2012). Everyone's goal is to identify social rules that will benefit them. Because they do not know personal details about themselves, they will avoid creating rules that protect only some types of people and instead create rules that protect all people because it does not make sense for someone to create a rule that favors only one group of people when that person does not know if they are a member of said group or not. The agreed set of rules developed by rational individuals behind the veil of ignorance constitutes moral rules.

This framework might work well for some applications, but contractarianism is known to have difficulty affording protection to animals (Carruthers, 1992, 2011), for a few reasons. Contractors will pass moral rules that protect themselves behind a veil of ignorance. They know they are human, so they are going to pass rules governing human interaction and behavior. Animals lack the rationality of humans (see Supplementary File 1), such as the ability to engage and deliberate over proposed normative rules and their consequences (Lewis et al., 2017). This means that contractors can deliberately pass rules exclusively governing individuals with particular rational capacities, such as those required to engage in a hypothetical social contract. Animals fall outside of the moral community and thereby lack moral protection and status under this framework. Additionally, contractors do not know if, for instance, they will be in a position that could support a no-killing lifestyle, and they do not know their previously held beliefs about the moral status of animals or what kind of resources they have access to. A rational, self-interested person who is ignorant of their own status in the world and antecedent beliefs about animals will not unconditionally prohibit human use of animals because, for example, they do not know if they have access to alternative food sources or not.

The argument can be formalized as follows (Table 1):

1. Contractors are rational, selfish and ignorant of their place in the world, including their position and possible reliance on animals.
2. Contractors will create rules that grant moral standing and strong protections to rational persons.
3. Animals are not rational persons.
4. Therefore, contractors will not pass rules that grant moral standing and strong protections to animals.

Some argue that contractors behind the veil of ignorance would agree to apply rules of justice to animals, in addition to humans (Cohen, 2007, 2009). However, this assumes that (1) people behind the veil of ignorance have some antecedent beliefs about their position in the world (e.g. that they do not rely on animals for food or work) and that (2) they also have altruistic intentions, which is an assumption rejected by many contractarians. If we assume that contractors would apply rules of justice to animals, then not only does the moral standing of animals depend on the preferences of contractors (Tanner, 2013), but it is also clear that contractarianism “is likely to express some partiality to humans in a way that discounts the welfare of some or all animals” (Cohen, 2009). Others have suggested that contractors would assign a person to represent the interests of animals (Regan, 1983). However, the problem with this view is that the only reason the contractors would do this is if they again possess some antecedent beliefs about the moral status of animals, which is implausible behind the veil of ignorance (Carruthers, 2011). Thus, ignorant and self-interested contractors are unlikely to develop rules that would restrict their ability to use or kill animals and would presumably support forms of animal killing that benefit humans.

2.7 Ethical particularism

Ethical particularism posits that the distinction between right and wrong is independent of moral principles and is instead assessed by the morally relevant details of the particular case being considered. Thus, those inspired by ethical particularism argue that the ethical treatment of animals is context-specific, and what is morally permissible, good, correct, or right depends on the specific details associated with each instance of animal killing. In other words, ethical particularism considers whether it is right or wrong to kill animals on a case-by-case basis, and what is wrong in one case may be right in another, or vice versa. This ethical philosophy respects individual human freedom of conscience to determine for themselves what is morally right or wrong and is reflected in common sayings such as ‘each to their own’ or in cultural pluralism ‘when in Rome, do as the Romans do’.

Ethical particularists avoid the more rigid ethical frameworks (e.g. deontology, consequentialism) and instead focus on offering specific arguments that deploy moral principles that anyone can agree to independently in particular sociocultural contexts, which can obviously change over time. One example is Rachels (2011)

principle: causing pain requires good reason. Many people would agree with this principle (see Arlinghaus et al., 2012), thereby permitting forms of animal killing that are supported by good reasons (Supplementary Table S1).

This argument can be formalized as follows:

1. Killing animals requires good reason.
2. There are good reasons to kill some animals.
3. Therefore, killing animals for these reasons is permissible.

Premise 2 is the contentious one, although Allen et al. (2023) described many ‘needs’ or good reasons for humans to kill animals, such as for agriculture or food security, human health and safety, or to alleviate animal suffering. Details are important, however, and for compliance with ethical particularism the case needs to be made that each instance of animal killing is done for a ‘good enough’ reason, where ‘good enough’ is defined by contemporary local cultures, customs and laws. Regarding human dietary choices, DeGrazia (2009), p. 143 argued for adopting a vegan lifestyle “from a very broad basis”, namely, an argument from two moral premises that most people agree with and an empirical observation about the non-necessity of eating factory-farmed animals. Most people agree that causing massive amounts of unnecessary harm to sentient creatures is wrong; and since factory farming causes massive amounts of harm to sentient creatures and such harm is unnecessary because people can adopt a vegan diet, factory farming is morally indefensible (DeGrazia, 2009; but see also www.aleph2020.org; Hunt, 2019; Smolkin, 2021). In contrast, Cronley and Swanson (2023) explain that “to deprioritize human rights to food today (especially considering the urgency of meeting global protein needs) in favor of animal rights and current and future environmental protection is neither defensible nor necessary”. For example, the live export of cattle meets the particular religious, cultural and economic needs of developing countries while still maintaining high levels of animal welfare while animals are alive, consistent with other ethical philosophies (e.g. care ethics). Hence, ethical particularism might be used to argue that some forms of animal killing are unethical (e.g. in factory farming), but this reasoning does not extend to complete cessation of other forms of animal killing (e.g. wild harvest). Ethical particularism might therefore be used to successfully argue that killing animals is permissible whenever there is good reason to do so, and these good reasons should and must be locally defined by prevailing cultures and societies to avoid conflict with other ethical requirements (e.g. human rights). In this way, ethical particularism exhibits consequentialist logic that considers the effects of interventions in specific contexts.

2.8 Environmental ethics

The seven previous ethical theories and frameworks (see above) were first described to govern moral conduct between humans, and were then only later applied to other animals, typically with a focus on individual and usually domestic animals. Moreover, many of the

root objectives supporting animal conservation (e.g. preventing harm, preventing extinction, restoration) are often justified by appeals to anthropocentric values (e.g. virtue, ecosystem services generated by wild animals), which will ultimately be subsumed in other ethical frameworks (e.g. consequentialism). Consideration of additional ethical frameworks designed specifically to address morality in the wider biotic or non-human community addresses many of these limitations and provides unique perspectives on intentional animal killing, particularly in ecological contexts (Minteer and Collins, 2008). Where the seven previous ethical theories focus on the life of the animal(s), environmental ethics focuses on the wellbeing of whole ecosystems including but not limited to their constituent individual animals.

These additional, environmental ethical frameworks include: deep ecology (Naess, 1973), where the intrinsic value of natural entities is emphasized; biocentrism, where all living things have moral status (Varner, 1998); or ecocentrism, which considers all of nature, including whole ecosystems – such as rivers, lakes or forests – as distinct entities that can have rights and/or experience injury (Baard, 2022; O'Donnell and Talbot-Jones, 2018). One of the most prominent nature-directed ethical frameworks is 'the land ethic', captured by the moral maxim: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (Leopold, 1949, pp. 224–225). 'Land', here, represents a variety of ecosystem types, including terrestrial, marine, aquatic, and subterranean ecosystems, which we collectively refer to hereafter as 'ecosystem' or 'the ecosystem ethic'. This ecosystem ethic affirms that the biotic world humans live in has deep interdependencies which enable the renewal of biotic lineages and the stability of energetic and nutrient cycles (Millstein, 2024). The great biodiversity observed on Earth creates and maintains these cycles or ecosystem health. Like all other animals, humans have long been and remain a key part of ecosystems (Darwin, 1859; Arlinghaus et al., 2007; Ben-Dor et al., 2021) and act ethically whenever we undertake actions that support ecosystem health; hence, we are morally obliged or permitted to kill animals when doing so is 'for the good of the ecosystem'. For example, hunting and fishing (for food, recreation or religious practice, etc.) is permitted as long as we do not diminish extant biodiversity or pollute the environment (e.g. with lead-based ammunition; Thomas, 1997). The lethal control or removal of invasive species is also permitted when they compete with, prey upon, or exclude native species, alter biodiversity or affect soil fertility.

This ecosystem ethic argument could be formalized as follows:

1. We should act to support or maintain the health of ecosystems.
2. Killing animals can support or be inconsequential to ecosystem health.
3. Therefore, killing animals is morally permissible when it supports or is inconsequential to ecosystem health.

This ethical framework may not blindly support intensive animal or plant agriculture, urbanization or several other forms of animal

killing by humans, but it is highly relevant to our ethical obligations towards wild animals (Minteer and Collins, 2008). Despite this, the interconnected set of obligations implicit in the ecosystem ethic has been a point of major opposition to it, with some arguing that it would imply an 'ecological fascism' where the good of the whole subsumes that of the individual – a view that would even justify the killing of humans when they cause environmental disruption (e.g. Regan, 1983). These issues raise important questions about humans' status in the ethical milieu, and questions about the way we might weight environmental ethics against other moral obligations (e.g. human rights), so environmental ethics may not be considered to supersede all other ethical frameworks (Millstein, 2018). However, environmental ethics accurately contextualizes humans within (not outside) ecosystems. And for present purposes, environmental ethics also permits intentional animal killing whenever it aids or is inconsequential to the conservation and recovery of ecosystem health.

3 Discussion

The morality and ethical permissibility of animal killing has become the subject of much debate in recent decades. The boundaries between philosophy, ideology, politics, law, religion and science are becoming increasingly unclear in this debate (e.g. Lubbe et al., 2023), and intentional animal killing is now considered morally impermissible, bad, incorrect, or wrong by a growing number of people (Fonseca and Sanchez-Sabate, 2022; Nayeri et al., 2025). But despite a large body of ethical argumentation arising against animal killing, at least eight commonly used ethical frameworks permit some forms of intentional animal killing by humans (see above), and one of these permit wholesale animal killing at any time (Supplementary File 1). Thus, multiple ethical frameworks often invoked to condemn animal killing might also be used to support it, either in whole or in part, and the arguments and examples presented in Table 1 and Supplementary Table S1 can be used to articulate an ethical defense of such animal killing when needed.

Recognition of this demonstrably widespread ethical support for animal killing is not evident in 'no killing' ethical positions that inaccurately denounce others as categorically unethical or immoral (e.g. Ramp, 2013; Bekoff and Ramp, 2014). Neither is intentional animal killing evidently binary (i.e. ethical or unethical). Clinging to such views, however, some parts of modern society in post-industrial nations have become so uncomfortable with intentional animal killing and its implicit harms that they have advocated banning wild-sourced meat (Ingram et al., 2021), banning farmed leather, feather, and fur production (Lamarche-Beauchesne, 2025), banning intensive livestock production (Brightling, 2024), banning trophy hunting (Ghasemi, 2021), banning animals in medical research (Anon, 2025), and banning or attempting to ban most other animal uses (e.g. recreational fishing, catch-and-release angling, octopus farming; Jacquet et al., 2024; Ferter et al., 2020; Arlinghaus et al., 2012). Over the past two decades, many public-facing businesses and organizations have also sought to avoid chastisement, reputational damage, or 'being cancelled' by

opponents of animal killing by publicly abolishing or denouncing it. Indeed, a ‘no-kill’ label has been used to signal institutional virtue by universities (PETA, 2024), animal shelters (Brown et al., 2013), aquaculture or mariculture organizations (Rakaj et al., 2024), zoos (Anon, 2016), fashion designers and retailers (Lamarche-Beauchesne, 2025), and even animal management agencies (Hennig et al., 2023). Such actions are ethically unnecessary.

In contrast, we have shown that there are different ethical approaches to intentional animal killing that not only provide clear support for it, but demonstrate why it can be unethical *not* to kill animals (Abbate, 2018; Warburton and Norton, 2009). We respect that many animal-related policies may be selected on the premise that animal killing should be avoided; we also value animals highly, and we personally support many of these types of policies. However, our main concern is that such choices are being made in a way that does not automatically exclude intentional killing as being unethical or immoral when a variety of soundly justified ethical arguments *for* animal killing do exist within the same frameworks typically used to condemn it (Table 1). This is especially important in cases where animal killing provides a conservation benefit, it is culturally important for one reason or another, it contributes to animal or human health and wellbeing, or where ostensibly ‘non-

lethal’ actions may result in indirect killing and harm to a far greater number of animals (e.g. Allen et al., 2019; Allen and Hampton, 2020; Wilson and Edwards, 2019; Abbate, 2018; Clauss et al., 2025).

Our synthesis also demonstrates a convergence of multiple different ethical frameworks around the central permissibility of intentional animal killing, at least in some circumstances (Figure 1). For example, consequentialism dispassionately prioritizes minimization of harm to justify killing, whereas religious ethics appeals to divine decree. Alternatively, environmental ethics justifies killing by considering and weighting collective consequences over individual consequences, whereas care ethics denies moral obligations to animals outside reciprocal relationships of care. Deontology can permit overriding the right to life of some animals in some settings, whereas contractarianism grants nonrational animals no or limited moral standing at all. Hence, while they may arise from different intellectual and philosophical foundations or may conclude that intentional animal killing is ethically permissible using different rationale (Table 1), such a union of frameworks (Figure 1) should provide opponents, defenders and impartial observers with reassurance that intentional animal killing can be ethically justifiable in a wide variety of contexts (Supplementary Table S1). This conceptualization might also be compared to Norton’s (1991)

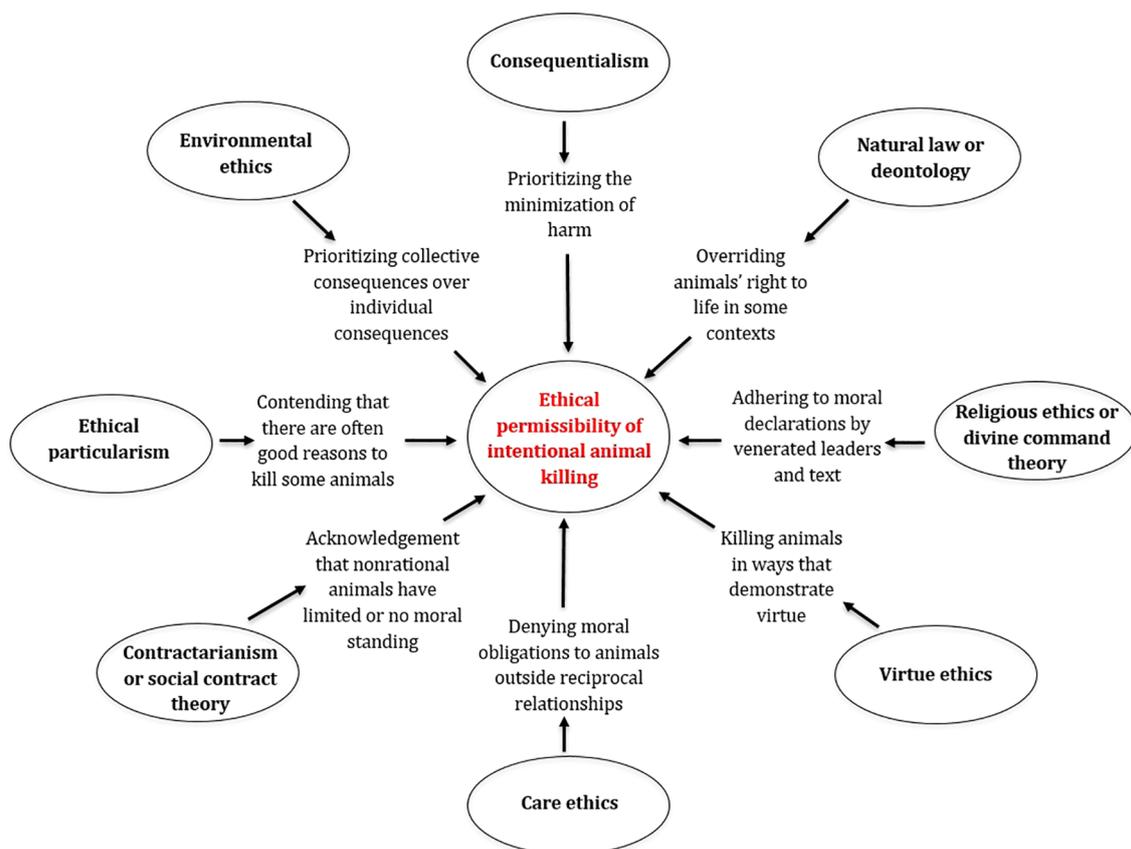


FIGURE 1

Conceptual diagram illustrating the convergence of different ethical frameworks on the ethical permissibility of intentional animal killing via different pathways of rationale (see Table 1 for further details).

convergence hypothesis, which likewise observes that diverse ethical positions often converge on the same environmental action, just with different reasoning (see also [Bobier and Allen, 2022a](#)). While this may be pragmatic for policy development and conflict mitigation (see also [Arlinghaus et al., 2009](#)), it does pose a challenge in truly intractable debates where the application of different ethical frameworks might arrive at the same position and/or application of the same ethical framework might arrive at different positions ([Supplementary Table S1](#)), largely because of a varying ethical scope and worldviews or access to different information ([Lynch et al., 2025](#)).

4 Conclusions

Despite some people becoming increasingly uncomfortable with the human killing of animals in recent times, and the various ethical arguments that have been advanced to oppose animal killing, we conclude that these same ethical frameworks can also be used to justify multiple forms of intentional animal killing across a wide variety of contexts. It is incorrect to label intentional animal killing as categorically unethical given the consistent and widespread ethical support for, and ongoing disagreement about, many forms of intentional animal killing. We encourage deeper consideration of the many ethical arguments that support intentional animal killing and the contexts in which they apply, and suggest that humans have a responsibility to kill animals in such ethically supported ways.

Author contributions

BA: Conceptualization, Writing – original draft, Writing – review & editing. AA: Writing – review & editing. RA: Writing – review & editing. JB: Writing – review & editing. DB: Writing – review & editing. CB: Writing – review & editing. MB: Writing – review & editing. MC: Writing – review & editing. SJD: Writing – review & editing. SWGD: Writing – review & editing. SF: Writing – review & editing. PF: Writing – review & editing. TF: Writing – review & editing. VG: Writing – review & editing. CG: Writing – review & editing. AG: Writing – review & editing. JH: Writing – review & editing. PH: Writing – review & editing. GK: Writing – review & editing. CL: Writing – review & editing. FL: Writing – review & editing. JL: Writing – review & editing. KL: Writing – review & editing. CM: Writing – review & editing. HM: Writing – review & editing. LM: Writing – review & editing. YM: Writing – review & editing. DN: Writing – review & editing. MO'R: Writing – review & editing. DP: Writing – review & editing. SP-P: Writing – review & editing. GP: Writing – review & editing. FR: Writing – review & editing. AS: Writing – review & editing. S-AS: Writing – review & editing. SS: Writing – review & editing. MS: Writing – review & editing. TW: Writing – review & editing. KV: Writing – review & editing. EE: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fevo.2025.1684894/full#supplementary-material>

References

- Aaltola, E. (2013). Empathy, intersubjectivity, and animal philosophy. *Environ. Philosophy* 10, 75–96. doi: 10.5840/envirophil201310215
- Abbate, C. E. (2018). Harming some to benefit others: animal rights and the moral imperative of Trap-Neuter-Release programs. *Between Species* 21 (1), 4. Available online at: <https://digitalcommons.calpoly.edu/bts/vol21/iss1/4>
- Adams, C., and Donovan, J. (1997). *Beyond animal rights: A feminist caring ethic for the treatment of animals* (New York: Continuum International Publishing Group Ltd).
- Allen, B. L., Allen, L. R., Ballard, G., Drouilly, M., Fleming, P. J. S., Hampton, J. O., et al. (2019). Animal welfare considerations for using large carnivores and guardian dogs as vertebrate biocontrol tools against other animals. *Biol. Conserv.* 232, 258–270. doi: 10.1016/j.biocon.2019.02.019
- Allen, B. L., Bobier, C., Dawson, S., Fleming, P. J. S., Hampton, J., Jachowski, D., et al. (2023). Why humans kill animals and why we cannot avoid it. *Sci. Total Environ.* 896, 165283. doi: 10.1016/j.scitotenv.2023.165283
- Allen, B. L., and Cabral de Mel, S. J. (2024). *An animal ethics and welfare assessment of emergency animal disease (EAD) response measures for poultry and pigs: Final report to the Queensland Department of Agriculture and Fisheries (QDAF)* (Toowoomba: University of Southern Queensland).
- Allen, B. L., and Hampton, J. O. (2020). Minimizing animal welfare harms associated with predation management in agro-ecosystems. *Biol. Rev.* 95, 1097–1108. doi: 10.1111/brv.12601
- Alvaro, C. (2017a). Ethical veganism, virtue, and greatness of the soul. *J. Agric. Environ. Ethics* 30, 765–781. doi: 10.1007/s10806-017-9698-z
- Alvaro, C. (2017b). Veganism as a virtue: how compassion and fairness show us what is virtuous about veganism. *Future Food: J. Food Agric. Soc.* 5, 16–26.
- Annas, J. (2011). *Intelligent virtue* (Oxford: Oxford University Press).
- Anon (2016). Following constructive dialogue with GAIA, the Antwerp Zoo and Planckendael opt for the ethical management of “surplus” animals (GAIA). Available online at: <https://press.gaia.be/two-zoos-ethical-turnaround-surplus-animals-will-no-longer-be-killed>.
- Anon (2025). Save the animals: stop animal testing. Available online at: <https://www.lonestar.edu/stopanimaltesting.htm> (Accessed 22 February 2025).
- Aristotle (2009). *The nicomachean ethics, translated by david ross and lesley brown* (Oxford/New York: Oxford University Press).
- Arlinghaus, R., Cooke, S. J., Schwab, A., and Cowx, I. G. (2007). Fish welfare: a challenge to the feelings-based approach, with implications for recreational fishing. *Fish Fisheries* 8, 57–71. doi: 10.1111/j.1467-2979.2007.00233.x
- Arlinghaus, R., and Schwab, A. (2011). Five ethical challenges to recreational fishing: what they are and what they mean. *Am. Fisheries Soc. Symposium* 75, 219–234.
- Arlinghaus, R., Schwab, A., Cooke, S. J., and Cowx, I. G. (2009). Contrasting pragmatic and suffering-centred approaches to fish welfare in recreational angling. *J. Fish Biol.* 75, 2448–2463. doi: 10.1111/j.1095-8649.2009.02466.x
- Arlinghaus, R., Schwab, A., Riepe, C., and Teel, T. (2012). A primer on anti-angling philosophy and its relevance for recreational fisheries in urbanized societies. *Fisheries* 37, 153–164. doi: 10.1080/03632415.2012.666472
- Baard, P. (2022). *Ethics in biodiversity conservation* (New York: Routledge).
- Baker, L. R., Olubode, O. S., Tanimola, A. A., and Garshelis, D. L. (2014). Role of local culture, religion, and human attitudes in the conservation of sacred populations of a threatened ‘pest’ species. *Biodiversity Conserv.* 23, 1895–1909. doi: 10.1007/s10531-014-0694-6
- Barstow, G. (2019). Monastic meat: the question of meat eating and vegetarianism in Tibetan buddhist monastic guidelines (bca’ yig). *Religions* 10, 240. doi: 10.3390/rel10040240
- Bekoff, M., and Ramp, D. (2014). Cruel to be kind? *New Scientist* 222, 26–27. doi: 10.1016/S0262-4079(14)61210-0
- Ben-Ami, D. (2017). Compassionate conservation, where to from here? *Israel J. Ecol. Evol.* 63, 1–4.
- Ben-Dor, M., Sirtoli, R., and Barkai, R. (2021). The evolution of the human trophic level during the Pleistocene. *Am. J. Phys. Anthropology* 175, 27–56. doi: 10.1002/ajpa.24247
- Benson, G. H. (2021). African traditional religion and natural resource management: the role of totems and deity worship in Ghana. *Am. J. Environ. Stud.* 4, 13–37. doi: 10.47672/ajes.652
- Bentham, J. (1996). *An introduction to the principles of morals and legislation* (Oxford: Clarendon Press).
- Birch, J. (2024). *The edge of sentience: Risk and precaution in humans, other animals, and AI* (Oxford: Oxford University Press).
- Bobier, C. (2020). Should moral vegetarians avoid eating vegetables? *Food Ethics* 5, 1. doi: 10.1007/s41055-019-00062-4
- Bobier, C. A. (2022). Extending the impairment argument to sentient non-human animals. *Between Species* 25, 1–24.
- Bobier, C., and Allen, B. L. (2022a). Compassionate Conservation is indistinguishable from traditional forms of conservation in practice. *Front. Psychol.* 13, 750313. doi: 10.3389/fpsyg.2022.750313
- Bobier, C., and Allen, B. L. (2022b). The virtue of compassion in compassionate conservation. *Conserv. Biol.* 36, e13776. doi: 10.1111/cobi.13776
- Bramble, B. (2021). Painlessly killing predators. *J. Appl. Philos.* 38, 217–225. doi: 10.1111/japp.12461
- Brightling, T. (2024). Opinion: What does the future hold for Australia’s live sheep trade? Beef Central Thursday 24 November 2024. Available online at: <https://www.beefcentral.com/news/opinion-what-does-the-future-hold-for-Australias-live-sheep-trade/> (Accessed November 11, 2024).
- Brown, W. P., Davidson, J. P., and Zuefle, M. E. (2013). Effects of phenotypic characteristics on the length of stay of dogs at two no kill animal shelters. *J. Appl. Anim. Welfare Sci.* 16, 2–18. doi: 10.1080/10888705.2013.740967
- Bruers, S., Davis, A. J., Hojjat, S., Koskensilta, A., Lepeltier, T., and Pearce, D. (2024). Nature without suffering: Herbivorousness of predator species for the compassionate stewardship of earth’s ecosystems. *JAAE* 6 (2), 175–204.
- Callen, A., Hayward, M. W., Klop-Toker, K., Allen, B. L., Ballard, G., Beranek, C. T., et al. (2020). Envisioning the future with ‘Compassionate Conservation’: an ominous projection for biodiversity conservation. *Biol. Conserv.* 241, 108365. doi: 10.1016/j.biocon.2019.108365
- Camus, A. (1942). *The myth of sisyphus. Translated by J. O’Brian in 1979.* Penguin books (United Kingdom).
- Carruthers, P. (1992). *The animals issue: moral theory in practice* (Cambridge: Cambridge University Press).
- Carruthers, P. (2011). “Animal mentality: Its character, extent, and moral significance,” in *The oxford handbook of animal ethics*. Eds. T. L. Beauchamp and R. G. Frey (Oxford University Press, New York), 373–406.
- Caspers, C. (2025). *Conflict and coexistence: An assessment of welfare outcomes for the methods used to manage chacma baboon (Papio ursinus) on the Cape Peninsula* (South Africa: University of Cape Town).
- Chibvongodze, D. T. (2016). Ubuntu is not only about the human! An analysis of the role of African philosophy and ethics in environment management. *J. Hum. Ecol.* 53, 157–166. doi: 10.1080/09709274.2016.11906968
- Clauss, M., Roller, M., Bertelsen, M. F., Rudolf von Rohr, C., Müller, D. W. H., Schiffmann, C., et al. (2025). Zoos must embrace animal death for education and conservation. *Proc. Natl. Acad. Sci.* 122, e2414565121. doi: 10.1073/pnas.2414565121
- Clement, G. (2011). The ethic of care and the problem of wild animals. *Between the species* 13(3), 2.
- Cohen, C. (1986). The case for the use of animals in biomedical research. *New Engl. J. Med.* 315, 865–870. doi: 10.1056/NEJM198610023151405
- Cohen, A. I. (2007). Contractarianism, other-regarding attitudes, and the moral standing of nonhuman animals. *J. Appl. Philosophy* 24, 188–201. doi: 10.1111/j.1468-5930.2007.00362.x
- Cohen, A. I. (2009). Contractarianism and interspecies welfare conflicts. *Soc. Philosophy Policy* 26, 227–257. doi: 10.1017/S0265052509090104
- Cooney, K., and Kipperman, B. (2023). Ethical and practical considerations associated with companion animal euthanasia. *Animals* 13, 430. doi: 10.3390/ani13030430
- Croney, C., and Swanson, J. (2023). Is meat eating morally defensible? *Contemp. ethical considerations. Anim. Front.* 13, 61–67. doi: 10.1093/af/vfac097
- Cuomo, C. J., and Gruen, L. (1998). “On puppies and pussies: Animals, intimacy, and moral distance,” in *Daring to be good: Essays in feminist ethico-politics*. Ed. A. Ferguson (Routledge, London), 129–142.
- Darwin, C. (1859). *On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life. 6th Edition* (London: John Murray).
- DeGrazia, D. (2009). Moral vegetarianism from a very broad basis. *J. Moral Philosophy* 6, 143–165. doi: 10.1163/174552409X402313
- Díaz, S., Pascual, U., Stenseke, M., Martín-López, B., Watson, R. T., Molnár, Z., et al. (2018). Assessing nature’s contributions to people. *Science* 359, 270–272.
- Diggles, B. K., Arlinghaus, R., Browman, H. I., Cooke, S. J., Cooper, R. L., Cowx, I. G., et al. (2023). Reasons to be skeptical about sentience and pain in fishes and aquatic invertebrates. *Rev. Fisheries Sci. Aquaculture* 32, 127–150. doi: 10.1080/23308249.2023.2257802
- Donovan, J. (2006). Feminism and the treatment of animals: from care to dialogue. *Signs: J. Women Culture Soc.* 31, 305–329. doi: 10.1086/491750
- Driver, J. (2011). *Consequentialism* (London: Routledge).
- Engster, D. (2006). Care ethics and animal welfare. *J. Soc. Philosophy* 37, 521–536. doi: 10.1111/j.1467-9833.2006.00355.x

- FAHC (2007). *European charter on hunting and biodiversity* (Strasbourg: Federation of Associations for Hunting and Conservation of the EU Strasbourg).
- Ferter, K., Cooke, S. J., Humborstad, O., Nilsson, J., and Arlinghaus, R. (2020). "Fish welfare in recreational fishing," in *The welfare of fish*. Eds. T. S. Kristiansen, A. Fernö, M. A. Pavlidis and H. van de Vis (Springer International Publishing, Switzerland), 463–485.
- Finnigan, B. (2017). Buddhism and animal ethics. *Philosophy Compass* 12, e12424. doi: 10.1111/phc3.12424
- Fleming, P. J. S. (2018). *Compassionate conservation or misplaced compassion* (Feral Herald). Available online at: <https://invasives.org.au/blog/compassionate-conservation/> (Accessed May 23, 2018).
- Fonseca, R. P., and Sanchez-Sabate, R. (2022). Consumers' attitudes towards animal suffering: A systematic review on awareness, willingness and dietary change. *Int. J. Environ. Res. Public Health* 19, 16372. doi: 10.3390/ijerph192316372
- Fraser, D., and MacRae, A. M. (2011). Four types of activities that affect animals: implications for animal welfare science and animal ethics philosophy. *Anim. Welfare* 20, 581–590. doi: 10.1017/S0962728600003213
- Ghasemi, B. (2021). Trophy hunting and conservation: Do the major ethical theories converge in opposition to trophy hunting? *People Nat.* 3, 77–87. doi: 10.1002/pan3.10160
- Griffin, A. S., Callen, A., Klop-Toker, K., Scanlon, R. J., and Hayward, M. W. (2020). Compassionate Conservation clashes with Conservation Biology: should empathy, compassion, and deontological moral principles drive conservation practice? *Front. Psychol.* 11. doi: 10.3389/fpsyg.2020.01139
- Gruen, L. (2015). *Entangled empathy: An alternative ethic for our relationships with animals* (Brooklyn: Lantern Books).
- Hampton, J., Hyndman, T. H., Allen, B. L., and Fischer, B. (2021). Animal harms and food production: informing ethical choices. *Animals* 11, 1225. doi: 10.3390/ani11051225
- Hampton, J. O., Warburton, B., and Sandøe, P. (2019). Compassionate versus consequentialist conservation. *Conserv. Biol.* 33, 751–759. doi: 10.1111/cobi.13249
- Hare, D., Ambarli, H., Dickman, A. J., Dröge, E., Farhidinia, M. S., Johnson, P. J., et al. (2023). Trophy hunting is not one big thing. *Biodiversity Conserv.* 32, 2149–2153. doi: 10.1007/s10531-023-02597-9
- Hayward, M. W., Callen, A., Allen, B. L., Ballard, G., Broekhuis, F., Bugir, C., et al. (2019). Deconstructing compassionate conservation. *Conserv. Biol.* 33, 760–768. doi: 10.1111/cobi.13366
- Hennig, J. D., Duchardt, C. J., Esmaeili, S., Fuhldorf, S. D., Beck, J. L., Francisco, T. I., et al. (2023). A crossroads in the rearview mirror: the state of United States feral equid management in 2023. *Bioscience* 73, 404–407. doi: 10.1093/biosci/biad033
- Hoffman, A. J., and Sandelands, L. E. (2005). Getting right with nature: Anthropocentrism, ecocentrism, and theocentrism. *Organ. Environ.* 18, 141–162. doi: 10.1177/1086026605276197
- Hohfeld, W. N. (1913). Some fundamental legal conceptions as applied in legal reasoning. *Yale Law J.* 23, 16–59. doi: 10.2307/785533
- Hunt, M. W. (2019). Veganism and children: Physical and social well-being. *J. Agric. Environ. Ethics* 32, 269–291. doi: 10.1007/s10806-019-09773-4
- Hursthouse, R. (1999). *On virtue ethics* (Oxford: Oxford University Press).
- Hursthouse, R. (2006). "Applying virtue ethics to our treatment of other animals," in *The practice of virtue: Classic and contemporary readings in virtue ethics*. Ed. J. Welchman (Hackett Publishing, Indianapolis), 136–154.
- Hursthouse, R. (2011). "Virtue ethics and the treatment of animals," in *The Oxford handbook of animal ethics*. Eds. T. Beauchamp and R. Frey (Oxford University Press, Oxford), 119–143.
- Ingram, D. J., Coad, L., Milner-Gulland, E. J., Parry, L., Wilkie, D., Bakarr, M. I., et al. (2021). Wild meat is still on the menu: Progress in wild meat research, policy, and practice from 2002 to 2020. *Annu. Rev. Environ. Resour.* 46, 221–254. doi: 10.1146/annurev-environ-041020-063132
- IPBES (2022). *Methodological assessment report on the diverse values and valuation of nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (Bonn, Germany: IPBES secretariat).
- Jacquet, J., Franks, B., Godfrey-Smith, P., Sanchez-Suarez, W., Abrams, P., Ainley, D., et al. (2024). Support US OCTOPUS Act to keep octopuses wild. *Science* 385, 721–722. doi: 10.1126/science.adr3813
- Jamieson, D. (1990). Rights, justice, and duties to provide assistance: A critique of Regan's theory of rights. *Ethics* 100, 349–362. doi: 10.1086/293181
- Kant, I. (1785). *Groundwork for the metaphysics of morals* (Oxford: Oxford University Press).
- Kheel, M. (2008). *Nature ethics* (New York: Rowman & Littlefield).
- Kurki, V. (2021). Legal personhood and animal rights. *J. Anim. Ethics* 11, 47–62. doi: 10.5406/janimaethics.11.1.0047
- Lamarche-Beauchesne, R. (2025). Even as the tide turned for fur, crocodile leather kept selling in high-end fashion. But for how much longer? The Conversation 30 January 2025. Available online at: https://theconversation.com/even-as-the-tide-turned-for-fur-crocodile-leather-kept-selling-in-high-end-fashion-but-for-how-much-longer-245471?utm_source=clipboard&utm_medium=bylinecopy_url_button (Accessed January 30, 2025).
- Landim, A. S., de Menezes Souza, J., dos Santos, L. B., de Freitas Lins-Neto, E. M., da Silva, D. T., and Ferreira, F. S. (2023). Food taboos and animal conservation: a systematic review on how cultural expressions influence interaction with wildlife species. *J. Ethnobiology Ethnomedicine* 19, 31–44. doi: 10.1186/s13002-023-00600-9
- Law, J. (2010). "Care and killing tensions in veterinary practice," in *Care in practice: On tinkering in clinics, homes and farms*. Eds. A. Mol, I. Moser and J. Pols (Verlag, Germany), 57–72.
- Leopold, A. (1949). *A Sand County almanac: with other essays on conservation from Round River* (New York: Oxford University Press).
- Leroy, F., and Praet, I. (2017). Animal killing and postdomestic meat production. *J. Agric. Environ. Ethics* 30, 67–86. doi: 10.1007/s10806-017-9654-y
- Lewis, P.-M., Burns, G. L., and Jones, D. (2017). Response and responsibility: humans as apex predators and ethical actors in a changing societal environment. *Food Webs* 12, 49–55. doi: 10.1016/j.fooweb.2016.09.001
- List, C. J. (2013). *Hunting, fishing, and environmental virtue: Reconnecting sportsmanship and conservation* (Corvallis, USA: Oregon State University Press).
- Lubbe, W. D., Alberts, R. C., Robinson, J. A., Rushworth, I., Selier, S. A. J., Tanneback, L., et al. (2023). "Could culling of elephants be considered inhumane and illegal in South African law?: A response and further thoughts. *J. Int. Wildlife Law Policy* 26, 1–21. doi: 10.1080/13880292.2023.2217616
- Lynch, K. E., Allen, B. L., Berger-Tal, O., Fidler, F., Garrard, G. E., Hampton, J. O., et al. (2025). Explicit value trade-offs in conservation: integrating animal welfare. *Trends Ecol. Evol.* 40, 593–600. doi: 10.1016/j.tree.2025.03.013
- Lynch, K. E., and Blumstein, D. T. (2020). Hidden ethical costs of conservation. *Science* 370, 179–180. doi: 10.1126/science.abe2505
- Lynn, W. S., Baker, L., Borrie, W. T., Cardilini, A. P. A., Alexander, S. M., Coghlan, S., et al. (2025). Compassionate conservation in practice: A values-driven, interdisciplinary, pluralistic, and deliberative community. *Biol. Conserv.* 303, 111002. doi: 10.1016/j.biocon.2025.111002
- MacAskill, W., and MacAskill, A. (2015). To truly end animal suffering, the most ethical choice is to kill wild predators (especially Cecil the lion). *Quartz*. Available online at: <https://qz.com/497675/to-truly-end-animal-suffering-the-most-ethical-choice-is-to-kill-all-predators-especially-cecil-the-lion>.
- MacIntyre, A. (2013). *After virtue* (London: A&C Black).
- Mameli, M., and Bortolotti, L. (2006). Animal rights, animal minds, and human mindreading. *J. Med. Ethics* 32, 84. doi: 10.1136/jme.2005.013086
- Manfredo, M. J. (2008). "Integrating concepts: Demonstration of a multilevel model for exploring the rise of mutualism value orientations in post-industrial society," in *Who cares about wildlife? Social science concepts for exploring human-wildlife relationships and conservation issues* (Springer, New York), 191–217.
- Marker, M. (2006). After the Makah whale hunt: Indigenous knowledge and limits to multicultural discourse. *Urban Educ.* 41, 482–505. doi: 10.1177/0042085906291923
- Mill, J. S. (2015). *On liberty, utilitarianism, and other essays* (London: Oxford University Press).
- Millstein, R. L. (2018). Debunking myths about Aldo Leopold's land ethic. *Biol. Conserv.* 217, 391–396. doi: 10.1016/j.biocon.2017.11.027
- Millstein, R. L. (2024). *The land is our community: Aldo Leopold's environmental ethic for the new millennium* (Chicago: The University of Chicago Press).
- Minteer, B. A., and Collins, J. P. (2008). From environmental to ecological ethics: Toward a practical ethics for ecologists and conservationists. *Sci. Eng. Ethics* 14, 483–501. doi: 10.1007/s11948-008-9087-0
- Naess, A. (1973). The shallow and the deep, long-range ecology movement. *A summary. Inq.* 16, 95–100.
- National Research Council (2011). *Guide for the care and use of laboratory animals. Eighth edition* (Washington D.C.: The National Academies Press).
- Nayeri, D., Rastgoo, R., Mohammadi, A., Farhadinia, M. S., Bruskotter, J. T., and Vucetich, J. A. (2025). The influence of culpability, harm to animals, and professional education on attitudes about killing animals in the name of conservation. *Biol. Conserv.* 307, 111204. doi: 10.1016/j.biocon.2025.111204
- NHMRC (2013). *Australian code for the care and use of animals for scientific purposes. 8th edition* (Canberra: National Health and Medical Research Council, Australian Government).
- Nobis, N. (2002). Vegetarianism and virtue: Does consequentialism demand too little? *Soc. Theory Pract.* 28, 135–156. doi: 10.5840/soctheorpract20022816
- Norton, B. G. (1991). *Toward unity among environmentalists* (New York: Oxford University Press).
- Nussbaum, M. (2007). *Frontiers of justice* (Massachusetts: Harvard University Press).
- O'Donnell, E. L., and Talbot-Jones, J. (2018). Creating legal rights for rivers: lessons from Australia, New Zealand, and India. *Ecol. Soc.* 23, 7. doi: 10.5751/ES-09854-230107
- Ouis, S. P. (1998). Islamic ecotheology based on the Qur'an. *Islamic Stud.* 37, 151–181.
- PETA (2024). Animal rights issues, factsheet: Humane veterinary education - overview. Available online at: www.peta.org (Accessed 13 November 2024).

- Rachels, S. (2011). "Vegetarianism," in *The oxford handbook of animal ethics*. Eds. T. Beauchamp and R. Frey (Oxford university Press, Oxford), 877–905.
- Rakaj, A., Grosso, L., Fianchini, A., and Cataudella, S. (2024). A sustainable no-kill sea urchin aquaculture method to obtain caviar. *Nat. Sustainability* 7, 1038–1047. doi: 10.1038/s41893-024-01372-0
- Ramp, D. (2013). Bringing compassion to the ethical dilemma in killing kangaroos for conservation. *J. Bioethical Inq.* 10, 267–272. doi: 10.1007/s11673-013-9442-y
- Ramp, D., and Bekoff, M. (2015). Compassion as a practical and evolved ethic for conservation. *Bioscience* 65, 323–327. doi: 10.1093/biosci/biu223
- Rawls, J. (1971). *A theory of justice* (Cambridge: Harvard University Press).
- Regan, T. (1983). *The case for animal rights* (Berkeley: University of California Press).
- Regan, T. (2013). "Animal rights and environmental ethics," in *The structural links between ecology, evolution and ethics: The virtuous epistemic circle*. Ed. D. Bergandi (Springer, Netherlands), 117–126.
- Ross, D. (1930). *The right and the good* (London: Oxford University Press).
- SABS (2008). *South African National Standard: The care and use of animals for scientific purposes*. SANS 10383:2008 (Pretoria: SABS Standards Division).
- Shafer-Landau, R. (1994). *Vegetarianism, causation and ethical theory* (Public Affairs Quarterly), Vol. 8, no. 1, pp. 85–100.
- Sharp, T., and Saunders, G. (2011). *A model for assessing the relative humaneness of pest animal control methods*. 2nd ed. (Canberra, ACT: Australian Government Department of Agriculture, Fisheries and Forestry).
- Shephard, S., von Essen, E., Gieser, T., List, C. J., and Arlinghaus, R. (2024). Recreational killing of wild animals can foster environmental stewardship. *Nat. Sustainability* 7, 956–963. doi: 10.1038/s41893-024-01379-7
- Singer, P. (1975). *Animal liberation: a new ethics for our treatment of animals* (United States: HarperCollins).
- Singer, P. (1993). *Practical ethics* (Cambridge, England: Cambridge University Press).
- Smith, K. K. (2012). *Governing animals: Animal welfare and the liberal state* (London: Oxford University Press).
- Smolkin, D. (2021). Is humane farming morally permissible? *J. Appl. Philosophy* 38, 244–257. doi: 10.1111/japp.12503
- Stucki, S. (2020). Towards a theory of legal animal rights: simple and fundamental rights. *Oxford J. Legal Stud.* 40, 533–560. doi: 10.1093/ojls/gqaa007
- Tanner, J. (2013). Contractarianism and secondary direct moral standing for marginal humans and animals. *Res. Publica* 19, 141–156. doi: 10.1007/s11158-012-9212-4
- Thomas, V. G. (1997). The environmental and ethical implications of lead shot contamination of rural lands in North America. *J. Agric. Environ. Ethics* 10, 41–54. doi: 10.1023/A:1007757607468
- UTS (2019). *What is compassionate conservation* (Sydney: University of Technology Sydney).
- Varner, G. E. (1998). *In nature's interests: Interests, animal rights, and environmental ethics* (New York: Oxford University Press).
- Von Essen, E. (2023). "The virtual animal in the digital anthropocene: Empowered or subjugated?," in *The routledge international handbook of more-than-human studies*. Ed. A. Franklin (Routledge, London), 245–256.
- von Essen, E., and Allen, M. (2021). Killing with kindness: when hunters want to let you know they care. *Hum. Dimensions Wildlife* 26, 179–195. doi: 10.1080/10871209.2020.1800145
- Vucetich, J. A., and Nelson, M. P. (2013). "The infirm ethical foundations of conservation," in *Ignoring nature no more: The case for compassionate conservation*. Ed. M. Beckoff (University of Chicago Press, Chicago, IL, USA), 9–25.
- Wallach, A. D., Batavia, C., Bekoff, M., Alexander, S., Baker, L., Ben-Ami, D., et al. (2020). Recognizing animal personhood in compassionate conservation. *Conserv. Biol.* 34, 1097–1106. doi: 10.1111/cobi.13494
- Wallach, A. D., Bekoff, M., Batavia, C., Nelson, M. P., and Ramp, D. (2018). Summoning compassion to address the challenges of conservation. *Conserv. Biol.* 32, 1255–1265. doi: 10.1111/cobi.13126
- Wallach, A. D., Bekoff, M., Nelson, M. P., and Ramp, D. (2015). Promoting predators and compassionate conservation. *Conserv. Biol.* 29, 1481–1484. doi: 10.1111/cobi.12525
- Warburton, B., and Norton, B. G. (2009). Towards a knowledge-based ethic for lethal control of nuisance wildlife. *J. Wildlife Manage.* 73, 158–164. doi: 10.2193/2007-313
- Wilson, G. R., and Edwards, M. (2019). Professional kangaroo population control leads to better animal welfare, conservation outcomes and avoids waste. *Aust. Zoologist* 40, 181–202. doi: 10.7882/AZ.2018.043
- Yeates, J. W. (2022). Ascribing sentience: Evidential and ethical considerations in policymaking. *Animals* 12, 1893. doi: 10.3390/ani12151893
- Zagzebski, L. (1998). The virtues of God and the foundations of ethics. *Faith Philosophy* 15, 538–553. doi: 10.5840/faithphil199815446