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An expanded role for animal privacy and relational ethics in wildlife digital technology research

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There is a growing body of research exploring the effects of digital technology (DT) on wildlife. In this perspective, we map a line of inquiry that links a growing body of work describing the effects of DT on wildlife, recent work on animal privacy, and contemporary work in animal normative moral theory (specifically relational ethics). We have three aims. Our first is to articulate conceptual and moral issues concerning animal privacy and relationality, issues often neglected or left implicit in existing guidance on using DT to manage wildlife information sharing. Our second is to identify areas needing further research. Our third is to urge researchers and practitioners involved in wildlife DT to explicitly address these issues so as to better advance our understanding of human ethical obligations to animals, species, ecosystems, and other humans in the context of DT.

KEYWORDS

privacy, information ethics, animal ethics, relational ethics, digital technology, wildlife, human-wildlife interaction

1 Introduction

Elephants are charismatic, highly intelligent, social, and culturally and spiritually revered by some. Elephant-tracking programs provide real-time location information to select audiences while withholding information from the general public. For example, Save the Elephants releases live location data to officials to help combat potential poaching, but delays public release for several months.¹ Emerging AI applications analyze image and audio feeds to detect elephants and share detections immediately with select audiences to facilitate protective interventions (Premarathna et al., 2020; Brickson et al., 2023). One proposed computer vision application (Gupta et al., 2022) will alert nearby trains and make a noise to warn elephants who approach the tracks too closely. These strike us as good policies and it's certainly plausible that we have obligations to protect elephants—both by collecting such information but also by being selective about its release—due to their

intelligence, sociality, longevity, and human cultural and spiritual value (van de Water et al., 2022).

That said, explaining the source and precise contours of those obligations is not straightforward.

While there is a growing literature on nonhuman animals (henceforth animals) and digital technology (DT), there is comparatively little research on specifically moral questions about the source and scope of our moral obligations to wildlife in digital contexts. Even once we understand the ways DT affects animals, species, and ecosystems, further questions remain as to why those effects are good or bad, whether the deployment of DT in that context is ethically justifiable or not, and what moral obligations the relevant parties have. Moreover, there is a perennial question of what wildlife-related scientific research ethically merits or requires our scarce attention and resources. Such open ethical questions are a fruitful line of scholarly inquiry.

In this perspective, we map a line of inquiry that links a growing body of work describing the effects of DT on wildlife, recent work on animal privacy, and contemporary work in animal normative moral theory (specifically relational ethics). We have three aims. Our first is to articulate conceptual and moral issues concerning animal privacy and relationality, issues often neglected or left implicit in existing guidance on using DT to manage wildlife information sharing. Our second is to identify areas needing further research. Our third is to urge researchers and practitioners involved in wildlife DT to explicitly address these issues so as to better advance our understanding of human ethical obligations to animals, species, ecosystems, and other humans in the context of DT.

2 Digital technology and animals

There is a growing assortment of DT that affects wildlife, ranging from widely available digital cameras (Hanisch et al., 2019) to digital platforms for communicating sightings (Chandler et al., 2017; Feng et al., 2022), wildlife live cams, camera traps, autonomous recording units, and sophisticated tracking and AI technologies (Cooke et al., 2017; Lennox et al., 2020; Coghlan and Parker, 2023; Ryan and Bossert, 2024). Effects of these technologies include an increase in the volume and variety of biodiversity data accessible to researchers and the public, growing ease of locating species, and increased opportunities for communities, scientists, and the public to develop meaningful relationships with animals, both at the level of the population and the individual. These effects bring benefits (such as fostering public interest in wildlife observation and conservation), potential harms (such as increasing ease of poaching), and new moral obligations.

Consider two examples, one illustrating animal privacy concerns and the other illustrating the special obligations of particular management groups. First, the use of DT to rapidly and widely share owl roost or nest sites often promotes public interest in wildlife but also results in disturbance. Listserv reports describe photographers shaking or hitting Northern Saw-whet Owl and Eastern Screech-Owl roost trees to photograph the owls with their eyes open (Minnesota and Manitoba). Other reports describe

photographers disturbing a nesting Barred Owl pair through repeated vocalization playback, resulting in the pair abandoning their nest (Alberta).¹ More generally, location sharing can lead many observers to closely observe wildlife, which alone can induce stress, disrupt rest, or lead to collisions (Price, 2008; Rubel et al., 2025a).

Returning to the example of elephant tracking, elephant populations often occur in regions that are experiencing increased human development, habitat loss, and human-elephant conflict (Wall et al., 2021). Governments and private entities have established protected areas to preserve elephant habitat and protect remaining populations, but elephants frequently roam outside of unfenced protected areas. To better fulfill their obligations to these populations, wildlife researchers or managers such as Sri Lankan Department of Wildlife Conservation have employed tracking technologies to assess elephants' use of protected areas and adjacent lands to inform conservation decision-making (Wall et al., 2021; Fernando et al., 2015; Douglas-Hamilton et al., 2005).

3 Privacy

One way to understand the effects described in the owl example is simply as harms to animals' basic interests in avoiding pain, stress, injury, and death. These basic interests may underwrite claims or obligations that we avoid causing such harms. (These may conflict with other values; all-things considered conclusions about what to do would require working through such conflicts.) However, animals may also have derivative interests that give rise to obligations. Derivative interests are grounded in basic interests, but (as in the case of human interests) may create quite general obligations, i.e., obligations that don't turn on whether those basic interests are implicated in a particular case.

Consider privacy. Although the definition of privacy is contested, conceptions often center on individual control over information or on others' ability to access information.² On our view, privacy is best understood as involving a three-part relation between a privacy bearer, a domain of information, and some other entity. The privacy bearer has privacy in a domain of information with respect to another entity to the extent that the other entity's ability to access information in that domain about the privacy bearer is limited. Such privacy can be of instrumental value (e.g., in protecting well-being) or constitutive of other values (e.g., autonomy and agency), though not always (and in some cases can undermine other goods, such as transparency).³

¹ References available on file with the authors.

² For general discussion, see Roessler and DeCew (2023) and Rubel et al., 2025a.

³ Notice that the privacy bearer's privacy regarding the information with respect to the other entity is fully compatible with other entities having access to information about the privacy bearer; thus, there is no reason to think that privacy entails information secrecy (though secrecy of information about the privacy bearer within the domain of information would entail privacy with respect to many potential entities).

Humans have obligations to respect privacy based on privacy's role in supporting well-being, autonomy, political rights (including expression, association, and voting), and other paramount interests. However, specific privacy obligations need not be reducible to any particular obligations regarding well-being, autonomy, political rights, and so on, and one need not justify particular cases of privacy protection by referring to how the cases advance those basic interests. Rather, the fact that privacy overall tends to protect other interests or be a constitutive part of a deeper value (e.g., autonomy) supports a general obligation to respect privacy.

There is an important research thread arguing that animals have privacy interests. In a recent review of animal behavioral science, [Paci et al. \(2022\)](#) identify an array of information control and physical separation mechanisms—"privacy behaviours" (p. 5)—that animals employ to avoid observation. These include seeking seclusion, sending directional communications, and covert food caching. Several philosophers have argued (1) that such behaviors indicate the existence of derivative privacy interests in seclusion or avoiding observation, based on either welfare interests (e.g., avoiding stress) or an interest in controlling self-presentation, and (2) that these privacy interests ground general claims to privacy ([Westin, 1967](#); [Moore, 2003](#); [Pepper, 2020](#); [Rubel et al., 2025a](#); [Coghlan and Cardilini, 2025](#)).

Despite these philosophical and animal behavior literatures, disagreement continues about the scope and content of animal privacy. Some argue that animals' interests in avoiding information access, where that interest is instrumental to avoiding pain or injury, fall short of being bona fide privacy interests. Such theorists propose to reserve "privacy" for cases where animals avoid access not to avoid pain or injury, but "simply to avoid such access" ([Coghlan and Cardilini, 2025](#), p. 4). Others argue that because such interests resemble some human privacy interests, animals are genuine privacy bearers, with genuine privacy interests ([Rubel et al., 2025b](#)). Regardless of whether animals' interests in avoiding information access and observation are genuine privacy interests or merely privacy-like interests, there is agreement that DT has an increasing impact on these interests and that humans should account for them in DT design ([Paci et al., 2022](#); [Rubel et al., 2025a](#); [Coghlan and Cardilini, 2025](#)).

Even with some agreement about animal interests and effects of DT, there remains a great deal of room for further work on animals and privacy. One area involves the degree to which animal privacy interests create obligations for humans. Further work could clarify the scope and potential bases of obligations. Likewise, there will be a question of weighing privacy interests against other competing interests and values.

Another open question has to do with the degree of overlap in human and animal privacy interests. Humans have an explicit conception of privacy, beliefs about its value, and a robust understanding of the range of information flows and implications of those flows that animals lack. This means that human interests may be affected by their beliefs and understandings of how information about them may be stored, analyzed, and deployed in ways that animal interests cannot. Arguably, this affects the scope and strength of animal privacy claims.

There are questions about which animals have privacy interests and whether privacy claims differ by species. Consider ongoing efforts to record dolphin and whale communications and use machine learning techniques to understand their "languages" ([Ryan and Bossert, 2024](#)). Dolphins and whales are highly intelligent, long-lived, and social creatures who may actively control access to communications (e.g., by communicating directionally) ([Paci et al., 2022](#), p. 7). It's plausible that such capacities give rise to greater claims to privacy than, say, the recording of bird song. But precisely why, and why that matters for human obligations, are open, philosophically difficult questions.⁴ There are also important questions of how to protect animal privacy.

4 Relational ethics

Some of our ethical obligations are impartial, and are owed to individuals because of their intrinsic properties. They are thus independent of any particular relationship we might have with that individual. Additionally, though, we often have special relationships with particular people (e.g., our children, spouses, friends, students, etc.). These special relationships are morally significant relationships that give rise to special obligations, over and above any impartial obligations we may have ([Pettit and Goodin, 1986](#)). Such relationality is important in the context of animal ethics as well.

To explain, consider two views of animal ethics. On standard utilitarian views, our fundamental obligation is to maximize welfare and our fundamental obligations to animals are grounded in animals' ability to experience positive and aversive mental states ([Singer, 2011](#)). On standard deontological views, our fundamental obligation is to respect rights, and the rights of animals are grounded in the respect owed to them as "subjects-of-a-life" or as "ends in themselves" ([Regan, 1983](#); [Korsgaard, 2018](#)).

Such impartial views struggle to clarify why people have special obligations towards particular animals ([Palmer, 2011](#)). Consider the care a person is obligated to provide for their pet. One has obligations to provide one's pet with food and water, shelter, veterinary care, and an environment that promotes their flourishing. Such special obligations go far beyond what one owes

⁴ A full accounting of how differences in individuals, populations, and species affect the scope of privacy obligations is beyond what we can do here. However, we can point to some plausibly morally relevant questions. These include, first, whether the entity is genuinely a "privacy bearer," which is to say it can genuinely have or lack privacy. Second is whether the entity is sensitive to information- or observation-mediated disturbance; that is, would information sharing itself give rise to harm or undermine the well-being of the individual, population, or species. Yet another is what the moral status is of the individual, population, or species. Some theorists have argued that an entity's degree of moral status turns on their capacities, with certain capacities (e.g., cognitive, emotive, social) underwriting stronger moral claims ([VanDeVeer, 1979](#); [Kagan, 2019](#), pp. 112-145).

to wild animals, even in situations where the wild animals would benefit equally from such care and where the wild animals have the same intrinsic properties as the pet in question.

According to theories of *relational ethics*, the explanation of these moral differences is that the pet owner has a special relationship with their pet that they don't have with wild animals. This morally significant relationship exists because the pet owner has, in adopting the animal, accepted moral responsibility for caring for the animal, and has caused the pet to become dependent upon them. (By taking the animal home, they prevent others from caring for the animal).

Thinking about wildlife and DT ethics from a relational ethics perspective makes vivid several questions that may not seem important from impartialist perspectives. What individuals and groups have special relationships with animals? Possibilities include researchers, wildlife or preserve managers, those who manage and deploy wildlife DT, organizations that promote wildlife observation and conservation, and recreational affinity groups. How broad is the range of entities with which it is possible for people to have special relationships? Such relationships certainly seem possible with elephants, but what about an individual plant, a geographical region, or a natural phenomenon such as the biannual monarch butterfly migration? Might a researcher studying wildlife that has a spiritual, cultural, or economic relationship with a particular human community come to have a special relationship with those people? If so, this raises the possibility that, if the researcher fails to adequately safeguard the wildlife in question, the researcher also wrongs the people in question.

Where such special relationships exist, what special obligations do they give rise to? The scientific literature on wildlife tracking technologies acknowledges both the ethical obligation of researchers, managers, or platforms to avoid disclosing data that could harm populations and the obligation to collect and facilitate the use of information for populations' benefit (Lindenmayer and Scheele, 2017; Tulloch et al., 2018; Chapman, 2020; Lennox et al., 2020). What it rarely addresses explicitly, however, is relationality—how accepting responsibility for studying or managing a population can be the source of these obligations.

In the next section, we begin addressing some of these questions.

5 Responsibilities of people and organizations

In light of the on-the-ground effects of DT, wildlife researchers, managers, observers, and DT organizations have special, privacy-related obligations to wildlife.

First, these groups share *causal responsibilities* for the effects on animals of their information collection and sharing. Wildlife DT organizations that develop and administer digital platforms arguably bear greater causal responsibility than individual wildlife observers for the effects of information sharing, because platforms amplify the reach of reports and strongly shape information sharing

norms. DT organizations may make the wildlife in question vulnerable if they subsequently fail to sufficiently safeguard animal privacy. This causal responsibility thus grounds special relationships, with resultant special obligations owed to these particular animals by these particular organizations (Palmer, 2011, esp. pp. 85–86, 92–94).

Some people and organizations also have *role responsibilities* to protect wildlife. Role responsibilities are special obligations stemming from having assumed a certain role (Hardimon, 1994). A wildlife DT organization may have a role responsibility to protect animal privacy by virtue of having articulated principles for ethical data management, committed itself to values such as protecting animals, species, and ecosystems, and cultivated an audience of users who share those values and expect the platform to promote them. Organizations may need to restrict information sharing to honor their roles as conservation actors and information stewards. For example, HerpMapper, which administers a reptile and amphibian reporting platform, notes that “Because HerpMapper’s primary goal is to collect and disseminate data to help conserve herpetofauna, we have chosen to restrict the public’s view to county-level for all species.”⁵ The British Trust for Ornithology, which administers the BirdTrack reporting platform, similarly states that it will “ensure that adequate confidentiality of [sensitive species] data is maintained, and that they are not released in ways that could jeopardize individual birds or sites.”⁶

6 Competing interests and values

We have suggested that some humans and organizations have morally relevant relationships with animals, and that those relationships can ground obligations related to animal privacy. But the existence of a moral obligation doesn't settle what people ought to do, all things considered. Such obligations must first be weighed against competing considerations.

There are myriad other relational values at work in wildlife observation, information sharing, and research. Scientists who have dedicated themselves to research have role responsibilities with respect to scientific inquiry (for example, to perform sound research to advance human understanding) as well as more specific special obligations to their particular students (for example, they have an obligation to provide adequate mentoring to their students). And many important human relationships are supported by shared interest in wildlife observation and information sharing.

The relational values at work in any particular case may pull in different directions. People may have special relationships with individual animals, but those may conflict with special relationships with other animals, species, or ecosystems; one's relationship with an indoor/outdoor cat may conflict with one's relationship with the birds using one's backyard feeder. An example of a non-relational consideration is that wildlife observation creates

⁵ <https://herpmapper.org/faq>.

⁶ <https://www.bto.org/data/availability/sensitive-species>.

economic activity associated with conservation, tourism, publishing, art, and more.

Ethical frameworks for adjudicating competing interests and values are deeply contested. Some views give absolute priority to specific goods (e.g., sanctity of life views). Utilitarian approaches justify harms, no matter how severe, whenever necessary for maximizing overall net benefit. These extreme approaches strike many people (including us) as mistaken. A more plausible, if more difficult to apply, approach is to make moral judgments on a case-by-case basis by appealing to what seems like unobjectionable moral common-sense (e.g., it is wrong to cause severe harm to animals for trivial reasons), by appealing to other cases that seem morally similar, and by reasoned consideration of the values and interests at stake in various decisions.

In our context, such considerations include many that are routinely addressed, such as the number of animals affected, the magnitude and likelihood of possible harms and benefits, the scope of environmental impact, the vulnerability of a population or the fragility of an ecosystem, and the availability of alternatives. Researchers and practitioners should also consider animal privacy interests when relevant. Special relationships can also affect the kinds of considerations that are appropriately treated as relevant. For example, a group dedicated to the protection of an ecologically sensitive biotic community from development should not treat economic benefits that would accrue to an interested developer as a reason for sacrificing the interests of the community. But such economic benefits might be relevant to the decision-making process of a city planner, who has a broader responsibility.

7 Discussion

The elephant example we introduce in Sections 1 and 2 can serve to illustrate our framework. Consider the following case of an organization implementing a policy grounded in relationality, special obligations, and privacy:

A conservation agency dedicates itself to elephant conservation in a particular geographical region on the grounds that elephants are sophisticated animals with vulnerable populations and this particular community of elephants has significant social and cultural value by virtue of their relationships with the local human population. Being concerned about elephant poaching and human-elephant conflict outside of protected areas, the agency fits elephants with GPS collars that transmit real-time locations to monitor movements and enable protective interventions. While these location data can support anti-poaching, conflict mitigation, and conservation planning efforts, they also create risks if accessed by poachers. To address these risks, the agency only releases locations to authorized personnel and partners. The agency justifies the implementation of a tracking program with limited data access on the basis of its role responsibilities. As a steward of the land and its wildlife, it has a special relationship and hence special obligation to collect data and facilitate the use of data for protective purposes, and to withhold data in cases of potential

harm. Given the organization's commitment to elephant conservation, its causal role in collecting real-time location information, and the high risk of harm to elephants from real-time public location disclosure, the agency concludes that elephants' privacy interests (in avoiding information access that heightens their risk of harm) and species protection interests weigh more heavily than competing interests such as ecotourism benefits from public access to elephant locations.

In this perspective, we have explained how moral questions related to privacy, relationality, and responsibility are key to ethically evaluating the effects of DT on animals. More broadly, we are arguing that there are substantial moral questions in understanding the relationship between DT and animals. Descriptive accounts of how animals are affected, how DT functions, and the like are crucial but cannot, on their own, guide actions and policies surrounding DT and wildlife information sharing and observation.

For example, DT facilitates nature-based recreation. Empirical research has identified negative impacts of nature-based recreation on birds, including behavioral and physiological stress responses, decreased breeding success, and decreased abundance (Steven et al., 2011). Any reasonable ethical framework will acknowledge that such impacts are ethically concerning. But, as noted above, there are often competing interests at stake: such recreation can motivate conservation, recruit the public into citizen science projects, and benefit humans. In light of these competing interests, it is clear that the empirical findings alone do not dictate what people ought, all things considered, do with respect to nature-based recreation promoted by DT. Rather, these cases require ethical scholarship articulating the range of values at stake and explicit discussion of how to weigh those values against each other.

In short, we need ethical accounts of why DT effects and policies matter. What kinds of animal, environmental, or human interests are at stake in a particular case? What ethical obligations do the various parties have with respect to those interests? How well do proposed actions and policies cohere with those obligations? More generally, what is the source, nature, and scope of human obligations regarding DT and animals?

While there are, of course, other human obligations at play, we have suggested two underappreciated elements of the picture are (1) animal privacy interests and correlative human obligations and (2) special relationships between humans and the wildlife they observe and document. We encourage researchers to take up the specifically ethical questions about DT and animals to help provide the ethical scaffolding necessary to address them.

We also encourage researchers and practitioners to explicitly articulate and discuss moral questions rather than making them implicit assumptions. For example, the robust literature on the management of sensitive wildlife data aims to guide researchers and organizations implementing DT data access restrictions (Tulloch et al., 2018; Chapman, 2020; Lennox et al., 2020). While there is agreement that restrictions are necessary to mitigate certain wrongs (e.g., extirpation from poaching), this literature often stops short of articulating sources of human obligations or addressing the full range of animal, environmental, and human interests at stake.

Summing up, the intersection of animals and DT is complex. There are of course empirical questions about how DT affects animals and the environment. But even once we understand those effects, there remain moral questions about why those matter and how they relate to people's obligations. These will be fruitful areas of research as DT has an ever-growing impact on animals, species, and ecosystems.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material. Further inquiries can be directed to the corresponding author.

Author contributions

MK: Writing – original draft, Writing – review & editing, Conceptualization, Investigation. AR: Writing – review & editing, Writing – original draft, Conceptualization, Investigation. RS: Investigation, Writing – original draft, Conceptualization, Writing – review & editing.

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References

- Brickson, L., Zhang, L., Vollrath, F., Douglas-Hamilton, I., and Titus, A. J. (2023). Elephants and algorithms: a review of the current and future role of AI in elephant monitoring. *J. R. Soc. Interface* 20, 20230367. doi: 10.1098/rsif.2023.0367
- Chandler, M., See, L., Copas, K., Bonde, A. M. Z., López, B. C., Danielsen, F., et al. (2017). Contribution of citizen science towards international biodiversity monitoring. *Biol. Conserv.* 213, 280–294. doi: 10.1016/j.biocon.2016.09.004
- Chapman, A. D. (2020). Current best practices for generalizing sensitive species occurrence data. (Copenhagen: GBIF Secretariat). Available online at: <https://docs.gbif.org/sensitive-species-best-practices/master/en/> (Accessed July 30, 2025).
- Coghlan, S., and Cardilini, A. (2025). Animal privacy and information technology. *Philos. Technol.* 38, 1–8. doi: 10.1007/s13347-025-00900-w
- Coghlan, S., and Parker, C. (2023). Harm to nonhuman animals from AI: a systematic account and framework. *Philos. Technol.* 36, 1–34. doi: 10.1007/s13347-023-00627-6
- Cooke, S. J., Nguyen, V. M., Kessel, S. T., Hussey, N. E., Young, N., and Ford, A. T. (2017). Troubling issues at the frontier of animal tracking for conservation and management. *Conserv. Biol.* 31, 1205–1207. doi: 10.1111/cobi.12895
- Douglas-Hamilton, I., Krink, T., and Vollrath, F. (2005). Movements and corridors of African elephants in relation to protected areas. *Naturwissenschaften* 92, 158–163. doi: 10.1007/s00114-0040606-9
- Feng, X., Enquist, B. J., Park, D. S., Boyle, B., Breshears, D. D., Gallagher, R. V., et al. (2022). A review of the heterogeneous landscape of biodiversity databases: Opportunities and challenges for a synthesized biodiversity knowledge base. *Global Ecol. Biogeography* 31, 1242–1260. doi: 10.1111/geb.13497
- Fernando, P., Prasad, T., Janaka, H. K., Ekanayaka, S. K. K., Nishantha, H. G., and Pastorini, J. (2015). The use of radio-tracking data to guide development and manage elephants. *Wildlanka* 3, 12–19.
- Gupta, S., Mohan, N., Nayak, P., Nagaraju, K. C., and Karanam, M. (2022). Deep vision-based surveillance system to prevent train–elephant collisions. *Soft Comput.* 26, 4005–4018. doi: 10.1007/s00500-021-06493-8
- Hanisch, E., Johnston, R., and Longnecker, N. (2019). Cameras for conservation: wildlife photography and emotional engagement with biodiversity and nature. *Hum. Dimensions Wildlife* 24, 267–284. doi: 10.1080/10871209.2019.1600206
- Hardimon, M. O. (1994). Role obligations. *J. Philosophy* 91, 333–363. doi: 10.2307/2940934
- Kagan, S. (2019). *How to count animals, more or less*. (Oxford: Oxford University Press).
- Korsgaard, C. M. (2018). *Fellow creatures: Our obligations to the other animals*. (Oxford: Oxford University Press).
- Lennox, R. J., Harcourt, R., Bennett, J. R., Davies, A., Ford, A. T., Frey, R. M., et al. (2020). A novel framework to protect animal data in a world of ecosurveillance. *BioScience* 70, 468–476. doi: 10.1093/biosci/biaa035
- Lindenmayer, D., and Scheele, B. (2017). Do not publish. *Science* 356, 800–801. doi: 10.1126/science.aan1362
- Moore, A. D. (2003). Privacy: Its meaning and value. *Am. Philos. Q.* 40, 215–227.
- Paci, P., Mancini, C., and Nuseibeh, B. (2022). The case for animal privacy in the design of technologically supported environments. *Front. Vet. Sci.* 8. doi: 10.3389/fvets.2021.784794
- Palmer, C. (2011). *Animal ethics in context*. (New York: Columbia University Press).
- Pepper, A. (2020). Glass panels and peepholes: Nonhuman animals and the right to privacy. *Pacific Philos. Q.* 101, 628–650. doi: 10.1111/papq.12329
- Pettit, P., and Goodin, R. (1986). The possibility of special duties. *Can. J. Philosophy* 16, 651–676. doi: 10.1080/00455091.1986.10717141

- Premarathna, K. S. P., Rathnayaka, R. M. K. T., and Charles, J. (2020). "An elephant detection system to prevent human-elephant conflict and tracking of elephant using deep learning," in *2020 5th International Conference on Information Technology Research (ICITR)*. (Moratuwa: University of Moratuwa), 1–6. doi: 10.1109/ICITR51448.2020.9310798
- Price, M. (2008). "The impact of human disturbance on birds: A selective review," in *Too close for comfort: Contentious issues in human-wildlife encounters*. Eds. D. Lunney, A. Munn and W. Meikle (Mosman: Royal Zoological Society of New South Wales), 163–196. doi: 10.7882/9780980327229
- Regan, T. (1983). *The case for animal rights*. (Berkeley: University of California Press).
- Roessler, B., and DeCew, J. (2023). "Privacy," in *The Stanford encyclopedia of philosophy*. Eds. E. N. Zalta and U. Nodelman (Stanford: Stanford University). Available online at: <https://plato.stanford.edu/archives/win2023/entries/privacy/> (Accessed July 30, 2025).
- Rubel, A., Kaehrle, M., and Streiffer, R. (2025a). Animals and the scope of "privacy." *Philos. Technol.* 38, 1–3. doi: 10.1007/s13347-025-00914-4
- Rubel, A., Kaehrle, M., and Streiffer, R. (2025b). Digital platforms, privacy, and the ethics of wildlife information sharing. *Philos. Technol.* 38, 1–29. doi: 10.1007/s13347-025-00841-4
- Ryan, M., and Bossert, L. N. (2024). Dr. Doolittle uses AI: Ethical challenges of trying to speak whale. *Biol. Conserv.* 295, 110648. doi: 10.1016/j.biocon.2024.110648
- Singer, P. (2011). *Practical ethics*. 3rd ed. (New York: Cambridge University Press).
- Steven, R., Pickering, C., and Castley, J. G. (2011). A review of the impacts of nature based recreation on birds. *J. Environ. Manage.* 92, 2287–2294. doi: 10.1016/j.jenvman.2011.05.005
- Tulloch, A. I. T., Auerbach, N., Avery-Gomm, S., Bayraktarov, E., Butt, N., Dickman, C. R., et al. (2018). A decision tree for assessing the risks and benefits of publishing biodiversity data. *Nat. Ecol. Evol.* 2, 1209–1217. doi: 10.1038/s41559-018-0608-1
- VanDeVeer, D. (1979). Interspecific justice. *Inquiry* 22, 55–79. doi: 10.1080/00201747908601866
- van de Water, A., Henley, M., Bates, L., and Slotow, R. (2022). The value of elephants: A pluralist approach. *Ecosyst. Serv.* 58, 101488. doi: 10.1016/j.ecoser.2022.101488
- Wall, J., Wittemyer, G., Klinkenberg, B., LeMay, V., Blake, S., Strindberg, S., et al. (2021). Human footprint and protected areas shape elephant range across Africa. *Curr. Biol.* 31, 2437–2445.e4. doi: 10.1016/j.cub.2021.03.042
- Westin, A. (1967). *Privacy and freedom*. (New York: Atheneum).