



## Just preservation

A. Treves<sup>a,\*</sup>, F.J. Santiago-Ávila<sup>a,1</sup>, W.S. Lynn<sup>b,1</sup>

<sup>a</sup> Nelson Institute for Environmental Studies, University of Wisconsin-Madison, USA

<sup>b</sup> George Perkins Marsh Institute, Clark University, Worcester, MA 01610-1477, USA



### ABSTRACT

We are failing to protect the biosphere. Novel views of conservation, preservation, and sustainability are surfacing in the wake of consensus about our failures to prevent extinction or slow climate change. We argue that the interests and well-being of non-humans, youth, and future generations of both human and non-human beings (futures) have too long been ignored in consensus-based, anthropocentric conservation. Consensus-based stakeholder-driven processes disadvantage those absent or without a voice and allow current adult humans and narrow, exploitative interests to dominate decisions about the use of nature over its preservation for futures of all life. We propose that authentically non-anthropocentric worldviews that incorporate multispecies justice are needed for a legitimate, deliberative, and truly democratic process of adjudication between competing interests in balancing the preservation and use of nature. Legitimate arenas for such adjudication would be courts that can defend intergenerational equity, which is envisioned by many nations' constitutions, and can consider current and future generations of non-human life. We urge practitioners and scholars to disavow implicit anthropocentric value judgments in their work – or make these transparent and explicit – and embrace a more comprehensive worldview that grants future life on earth fair representation in humanity's decisions and actions today.

### 1. Introduction

Global climate change and the ongoing human-induced mass extinction now imperil all life on Earth (Ceballos and Ehrlich, 2018; Ceballos et al., 2015; Ripple et al., 2017), including current human health and future human well-being (Blumm and Wood, 2017; Patz and Hatch, 2014). It is time to consider whether the 30-year-old practice and scholarship of biodiversity conservation has failed.

We propose a hypothesis that current biodiversity conservation failed by compromising on anthropocentric exploitation of nature and by aligning with narrow interest groups rather than the broadest group of future generations. The current trends in loss of non-human life go well beyond our current sixth mass-extinction event (Barnosky et al., 2011; Ceballos et al., 2015), to include massive declines in wilderness areas (Watson et al., 2016) and population losses in what has been appropriately described as the “biological annihilation” of the non-human world (Ceballos et al., 2017). To reverse this environmental and moral catastrophe, we propose a fundamental re-imagining of what nature protection ought to mean and with it we reintroduce the term preservation.

Since its beginnings, the field of conservation biology has been in a muddle over the place of individual non-human animals and future generations. Founders of conservation biology like Michael Soulé presupposed the intrinsic value – value for itself – of biological diversity based on the evolutionary-ecological inheritance that today's

biodiversity represents (Soulé, 1985). In addition to focusing on ecological wholes (e.g., populations, species), the postulates of conservation biology generally subordinate individual animals to human instrumental and ecological values (Callicott, 1997; Groom et al., 2007; Hutchins, 2008; Meffe and Carroll, 1997; Soulé, 1985). This is not from a lack of compassion for individual animals, but an embrace of (or resistance to) an ecocentric (ecosystems focused) interpretation of intrinsic value as a settled axiom of conservation with less ethical attention given to individual animals in conservation (Bekoff, 2013; Bruskotter et al., 2017; Orr, 2006; Santiago-Ávila et al., 2018; Soulé, 2014; Vucetich et al., 2015). The consequence we see today is that conservation biology and its ethics remain confused about whether we have responsibilities to individual organisms, how we should meet those responsibilities, and what an inheritance of evolutionary outcomes implies. Nor does conservation biology adequately emphasize the importance of preserving nature (as opposed to conserving natural resources) for future generations of humans and non-humans. As a result, we conclude the field matured with an inadequate, muddled ethic in these respects. That disjointed ethic allows for compromises that place such a high value on most current (and increasingly trivial) human interests derived from destructive activities that the needs and interests of non-human nature are effectively dismissed (Doak et al., 2014; Mathews, 2016; Godet and DeVictor, 2018). Here we try to disentangle the muddle and fill the gaps.

Although we appreciate recent efforts to integrate social justice into

\* Corresponding author at: 30A Science Hall, 550 North Park Street, Madison, WI 53706, USA.

E-mail address: [atreves@wisc.edu](mailto:atreves@wisc.edu) (A. Treves).

<sup>1</sup> Equal co-authors.

conservation or clarify how non-anthropocentric ecological justice is more fair than anthropocentric environmental justice, we believe they do not go far enough in fixing the middle summarized above. We offer a stronger, clearer interpretation of non-anthropocentrism than Vucetich et al. (2018), and a stronger clearer rationale for ethical consideration of individual organisms than Washington et al. (2018), while avoiding the unjustified localism and narrow interest group affinities of their critics (Pooley and Redpath, 2018; Redpath et al., 2017). While we agree that non-anthropocentric interests have been marginalized in practice and scholarship about protecting nature, we find recent interpretations of a non-anthropocentric principle continue to side-line the well-being of the non-human world and contain a vexing speciesism (creating a hierarchy of value with humans at the top and justifying human use of individual non-humans as long as populations, habitats, or ecological assemblages remain apparently unharmed). We also agree that decisions about the use of nature should emerge within a deliberative democratic framework, such as an adjudication between advocates. Yet, we argue that both the principles and process envisioned would remain flawed if the substantive interests of non-humans, youth, and futurity continue to be subordinated to current adult human generations. We also emphasize that decisions about the use of nature should emerge from a more deliberative and representative process than is common today (López-Bao et al., 2017), a process that should give full voice to the range of interests that have a stake in the environment. This requires that youth and futurity (future generations of both human and non-human beings) have direct representation in the deliberative adjudication process (Attfield, 1998; Cooper and Palmer, 1995; Underwood, 1994). Claims made about protecting the future by maximizing wealth today seem thin and unpersuasive rebuttals of our argument for proper representations of the interests of youth and futurity, given the ecosystem collapses impending worldwide overseen by current adults, and the evident discounting of debts we now incur that futurity must inevitably pay.

Among the beneficiaries of nature, many currently disenfranchised human generations have a legal right to an unimpaired healthy environment preserved for the future, overseen by prudent, accountable trustees in a majority of nations and we argue planet-wide (Treves et al., 2018). Human rights to a healthy environment may be substantive (i.e., citizens have a right to a healthy environment) in many countries' constitutions (Boyd, 2013), or procedural (e.g., the rights to information, to participate in decision-making, to access the judicial system “to challenge government decisions, unconstitutional laws or alleged violations of individual rights” (p. 16, following Boyd (2013))). A large proportion of countries also have government duties to protect a healthy environment (Boyd, 2011, 2013), which for our present context implies a procedural right to challenge the government if it fails in that duty. Other beneficiaries of the planetary environment and the evolutionary outcomes bequeathed on all life, include current and future non-human organisms. The current human blindness to the intrinsic value of non-human life evident in law, policy, thought, and behavior do not make it just. Difficulties we face in imagining such a justice system do not make it impossible. Because the decisions we make to use nature and the actions that follow such decisions affect all life on Earth, our legal and political systems routinely grapple with the ethics and justice of destruction. So should they grapple with the ethics and justice of preserving nature. Here we present a path to just preservation.

We propose that at a minimum, current adults have an ethical duty to equitably consider the interests of those voiceless in the political process, youth, non-humans, and futurity of all life. Articulation of specific legal rights of the voiceless is beyond our scope at present because the ethical duty – to fully consider the interests of the voiceless youth, non-humans, and futurity – is strong enough to justify the arguments here. But we do wish to make clear that even the three authors here find themselves occupying slightly different positions along a spectrum describing the rights of youth, non-humans, and futurity. Namely, we three do not occupy extreme positions asserting axiomatic

rights for non-humans that are equal to those rights attributed to all humans (which are themselves subject to controversy, of course), nor at the other extreme of denying any rights to non-humans. One of us would argue that the ethical duty is a powerful, moral imperative to consider fully the interests of non-humans in light of their capabilities and needs with flexibility derived from thorough, just deliberation on all interests relative to each situation. One of us would argue for a procedural right for non-humans to be fairly represented and have automatic legal standing in judicial decisions about the balance of preserving and using nature. One of us would argue for substantive rights of non-humans that might be considered equitably alongside the rights enjoyed by humans contingent on context. Fuller treatment is beyond our scope and unnecessary for our present purpose, which is to argue for the premise that current adults have a duty to consider the interests of youth and non-humans more thoroughly and fairly, with a clearer non-anthropocentric ethic for preserving nature and a just, legitimate process for that ethic to be heard.

The unifying theme behind our worldview is that future life on Earth depends on humanity rejecting first the self-serving arguments of current user groups, and second all forms of anthropocentrism, and instead embracing a focus on preserving the planet for future life.

#### Box

Glossary essential to integrating ethics in conservation practice and scholarship.

Five terms demand clarification. First, we see ‘conservation’ as rooted in wise use philosophies, which we argue have been less wise and more use – and are indelibly associated with anthropocentric instrumental views of non-human nature. Therefore, we use ‘preservation’ to mean ‘save for the future’ and reject a caricature of preservation as meaning ‘to store untouched or in a permanent state’. One virtue of the term preservation is that it is both clearer in meaning and more resistant to co-opting by users who care little for the protection of people, animals, and their environments.

Second, by ‘animal’ we focus on wildlife though not to the exclusion of other living beings that we include as ‘nature’, and we mean animals and nature considered as individuals and as groups (such as populations and species in ecological or social communities). Our understanding of animals is rapidly changing in response to better knowledge from animal ethics and science.

Third, by ‘futurity’ we mean future generations of the entire community of life – individuals and communities, human and non-human, socially and ecologically related. Here we are expanding the usual meaning of the term as it is frequently complicit with speciesist restrictions on our concerns for none but future human beings. What comes along with this a vision of thorough-going sustainability that seeks to preserve the entire community of life into perpetuity.

Fourth, we use the phrase ‘just preservation’ not only to represent a critique of the conservation focus on current adult humans generally, but to note the strong resonance between recent proposals and alternative, anthropocentric-heavy paradigms of conservation like ‘new conservation,’ (Kareiva, 2014; Marvier and Kareiva, 2014), ‘social nature,’ (Castree and Braun, 2001), and the ‘Anthropocene’ (Crutzen, 2006). These remain shallow ecological worldviews with technocentric overtones, their affinities with human exceptionalism too strong to be ignored, and their potential to help solve the plight of the planet too weak to endorse (Eckersley, 1992; Naess, 1973, 1989; O’Riordan, 1989).

Fifth, we use speciesism for any ethical, legal, or political reasoning that provides cover for human exceptionalism of

any sort, such as dominionism (the earth was created for human use), anthropocentrism (intrinsic value is a property of human beings alone), and varieties of ecocentrism that privilege the interests of human beings while inconsistently reducing other sentient, sapient, and social animals to biological machines, functional units of ecosystems, and resources for our use and abuse.

## 2. Integrating justice and preservation for the future

Recent proposals for new paradigms in conservation have not shied away from advocating for some form of non-anthropocentrism. For example, Vucetich et al.'s (2018) concept of 'just conservation' seems to seek to combine social justice and conservation with an eye towards fair and sustainable development. For example, they define social justice as "the fair treatment of others, where fairness is judged according to well-reasoned application of three principles: equality, need, and desert (noun form of deserve)." (p. 23–24, Vucetich et al., 2018). A central ethical principle is "the principle of non-anthropocentrism" (NA). Designed to enshrine the intrinsic value of at least some components of nature, it states that, "No human should infringe on the well-being of others any more than is necessary for a healthy, meaningful life." (p. 28, Vucetich et al., 2018). Their NA principle above is combined with a "safeguard principle", seemingly aimed at ensuring social justice is not sacrificed in the interest of conservation. That safeguard principle states:

"If a significant and genuine conservation interest calls for restricting a human interest, that restriction should occur except when doing so would result in injustice. When the restriction would be unjust every effort should be made by all involved parties to mitigate the restriction to the point of no longer being unjust."

(p. 30, Vucetich et al., 2018)

Whatever one's position on the existence and meaning of intrinsic value, or the requirements for authentic justice, their principles of NA and safeguard initially might appear unproblematic to some, and to others as a good marriage between conservation and development. The well-being of humans and some other beings is acknowledged and not immediately reduced to property or resources. Social justice is also a well-understood value of society, despite differences in the political philosophies and individual versus collective interests that define what social justice is and how best to bring it about. So if people and at least some other beings have intrinsic value, and conservationists keep their eye on both, then hypothetically these principles might well help bring them into balance.

## 3. Speciesism and misanthropy

Were such proposals a straightforward recognition and balancing of the intrinsic value and well-being of people, animals, and nature, we would have little objection. Indeed, it would be entirely preferable to both "new conservation" and "social nature" with their self-privileging of humans alone in the name of conservation and political ecology, respectively (Crist, 2004; Johns, 2014; Soulé, 1995, 2014). Yet this is usually not the case. For example, Vucetich et al.'s (2018) claim of non-anthropocentrism (NA) is directly belied by a qualification that effectively turns over the table on their principle. It reads: "While the NA principle is unequivocally non-anthropocentric, it prioritizes human well-being" (p. 28, Vucetich et al., 2018). The logic behind this qualification is commonplace and used often when discussing the well-being of animal lives. As noted by Mary Midgley (1998), there are two ways of dismissing animals in moral and political discourse. One is an outright rejection of the intrinsic value of non-human beings, what she calls "absolute dismissal" and is associated with "hard"

anthropocentrism, as in a hardened prejudice against non-human creatures. But there is another form of dismissal, what she terms "relative dismissal" where the intrinsic value of at least some animal lives is partially acknowledged but their interests are placed firmly behind those of human beings (Midgley, 1998). This is still a prejudice based on species even if it is more amiable. Vucetich et al. (2018) have thus reconstituted, perhaps unintentionally, a "soft" anthropocentrism. Yet because they do embrace the intrinsic value of animals and nature, we hasten to point out that their current position is quite different from "weak anthropocentrism." This is a form of hard anthropocentrism/speciesism that dismisses the intrinsic value of animals and nature altogether. As such it serves to blinker our moral vision so that only those ecological processes and services of instrumental value to human beings are considered as necessary in conservation ethics (Norton, 1984).

This is further underscored by the claim that those who do not accept the absolute priority of human well-being and social justice, as embodied in the safeguard principle – are misanthropists. Labeling such a response as misanthropic is a *non-sequiter*. As Vucetich and colleagues themselves point out in another article:

"Caring for non-humans, for their own sake, does not preclude caring for humans. Humans are more than capable of caring for many more than one kind of thing. Reasoning to the contrary might also be used to support the belief that honoring one's ethnicity is fundamentally incompatible with racial equality. These considerations indicate that nothing is inherently misanthropic about being non-anthropocentric."

(Vucetich et al., 2015)

Ethical impartiality requires the well-being of all – people, animals, and nature – be equitably considered simultaneously, and the well-being of both humans and non-humans can certainly be considered and implemented alongside one another. It cannot be considered an affront to humans to acknowledge the entitlements of animals, just as it cannot be considered an affront to the wealthy to protect the entitlements of low-income communities. In human affairs this is true even if this translates into measures to reallocate resources or prioritize policies that focus on increasing the well-being of the least well-off and restricting the interests of the wealthy. So too doing right by other animals and futurity may mean reallocating resources and prioritizing policies that at times optimizes the well-being of non-human others.

Speciesism also undermines a claim for authentic justice when liberating on the preservation and use of nature. An interpretation of non-anthropocentrism that assumes an a priori hierarchy of one species over another, rather than in a contextual analysis of the morally-relevant capabilities and claims of the individuals (human and non-human) involved (Nussbaum, 2004) seems speciesist to us. Vucetich et al. (2018) do not present their reasoning for how or why human well-being should always take priority. They seem to treat preference for humans as an unvoiced and axiomatic presupposition to their argument. That unvoiced axiom is assisted by loose use of the term 'misanthropy' which they did not define. Therefore, we read their use of misanthropy as any disagreement with human priority. Terms like misanthropy carry implications for how we conceptualize and act on justice towards other species (Singer, 2000). We are concerned that a discriminatory preference for one's own over another's species in all matters cannot be regarded as justice (Singer, 2000). Impartiality should preclude the establishment of a human-non-human hierarchical dichotomy that unquestionably places human above non-human well-being without first considering the particulars of each ethical situation and the claims involved. It seems difficult to argue that anything less than this equitable treatment could be considered impartial or just.

## 4. Multispecies justice for animals and futurity

An ethic of justice establishes baseline duties we have towards other community members given their capabilities, needs and relationships,

meaning that justice is often understood as an ethical duty we owe towards other *selves* as centers of experience. There is thus a tension that arises between those advancing justice for individual beings, and those embracing justice for ecological aggregates or the geosphere. As individual authors, we are still in dialogue with each other and our epistemic communities over where the emphasis should lie (Lynn, 1998a; Midgley, 2001; Plumwood, 2000; Regan, 2004; Washington et al., 2018). Nonetheless, we insist that any conceptualization of multispecies justice must incorporate justice towards individual non-humans. Whatever else it might be, justice is about being in right relationship with *others*, individually and collectively, rather than concepts or things. We consider justice for these collectives precisely because they contain *selves*.

We consider that justice should be extended to non-human moral subjects according to their capabilities and relationships rather than merely their species. The capabilities approach sees animal well-being as a matter of justice as well as compassion, and such justice is founded on the species-specific capacities of animals to flourish according to their kind (Nussbaum, 2011). Depending on the species, this involves matters of physical and/or psychological integrity, emotional and cognitive functions, social affiliations with others, and ecological interrelationships. Fulfilling minimal thresholds of these capacities is necessary for any being to live a dignified life and to be treated justly (Nussbaum, 2011, 2016). Moreover, justice as usually defined (and adequately in our view) prioritizes no criteria of group or species membership to adjudicate fair treatment. That is not to say we do not believe these criteria to be relevant in ethical considerations, but they are so because they inform the types of capabilities, interests, and thus claims that a being may have on others (Midgley, 1998; Nussbaum, 2011).

Prioritizing human well-being simply substitutes what is usually seen as a near-absolute dismissal of non-human animal claims for what could be considered a less blatant, ‘relative’ dismissal still subordinated to humans (Midgley, 1998). We are merely highlighting how *certain non-anthropocentric views* could be construed as soft anthropocentrism and speciesism because humans are still placed on top or at the center. A consequence of embracing these views is a risk that we slip towards preferring human interests, no matter how trivial, whenever humans and non-humans interests conflict. For example, there is a trend in the literature on poaching arguing that poaching a few animals helps the surviving animals’ population (reviewed and criticized by Chapron and Treves (2017), Epstein (2017), Epstein and Chapron (2018)), or that poaching is a release valve that would otherwise blow off steam by eradication of the poached species (Kaltenborn and Brainerd, 2016). Killing a non-human so a human feels better or does not start a killing spree appears to us as examples of trivial and amoral human desires far from vital or well-being needs.

Speciesism in favor of humans subordinates all life to human whims. Subordination of claims based on group membership is certainly not the case in situations concerning other vulnerable moral subjects, such as differently-abled humans or children. The vulnerability of such groups places additional duties on the majority or powerful. For example, the ethical principles of autonomy, beneficence, non-maleficence, and justice are commonly recognized in the case of protected classes or vulnerable humans and communities in health-care and medical ethics (Beauchamp and Childress, 2013; Jonsen et al., 1997). Attention to vulnerability and capability is a central element of many well-grounded theories of justice (Nussbaum, 2011; Rawls, 2009). For example, there could very well be a focus on the situation of the least well-off, which would allow for inequalities in outcomes that would benefit, or at least not harm, those individuals (Nussbaum, 2011; Rawls, 2009). Clearly, non-humans would often fall in this protected class or vulnerable category when faced with human exploitation.

We acknowledge that there may at times be a human preference for human well-being based on shared experiences, mutual interests, or emotional bonds (Midgley, 1998). These special ethical considerations

can be seen as similar to the moral preference we give to those closest to us, based on social bonds or acquired duties (Midgley, 1998; Regan, 2004). Yet, neither of these special considerations limits us to the species boundary. This bonding is not exclusive; it should not dismiss non-human others from consideration and the extension of moral duties. The key to resolving ethical arguments is in evaluating the merits of the conflicting claims involved, and considering the capabilities and relationships of individuals is critical in these situations (Midgley, 1998). Claims of the communities we belong to may be strong, but (1) they are not the only strong ones (they are neither sole nor supreme (Midgley, 1998)), and (2) the understanding of a purely ‘human community’ rather than a ‘mixed-community’ of species is a fiction not shared globally (David, 2009; Midgley, 1998; Plumwood, 2000).

Our conceptualization of an adequately horizontal rather than hierarchical approach would position human well-being *alongside*, not in front or before, non-human well-being. Hence, it would argue for extending justice to non-human (in addition to human) claims if preservation is to be truly non-anthropocentric. While we completely agree with most conservationists that extreme inequality in the distribution of wealth is of paramount concern, we would like to highlight that, if actually considering the well-being of non-humans, they should be considered as well within this injustice, and their entitlements should be equitably considered and safeguarded (through, for example, the extension of Vucetich et al.’s (2018) ‘safeguard principle’).

Axiomatic approaches to conservation ethics treat principles like absolute truth and apply it to problems in a top down manner. Yet questions of conservation (and public policy more generally) are too complex and nuanced to admit such brittle analysis. Conservation ethics require a more interpretive approach that sees principles as rules of thumb that deliver moral insights useful to thought and action (Lynn, 2006; Midgley, 1998; Orr, 2006; Toulmin and Jonsen, 1998). This means more than one or two principles may be relevant to any particular situation and a pluralistic approach matching moral insights to particular cases would be required (Bernard, 2016; Plumwood, 2000; Stone, 1988). The following ethical principles are examples of this pluralism and speak to our own presuppositions about just preservation. *Geocentrism* (Lynn, 1998b) recognizes the intrinsic value of people, animals, and nature as individuals and social-ecological communities. *Equitable consideration* (Singer, 2000) wherein we ought to take into account the interests and well-being of humans, animals, and their environments, and weigh these equally in ethical reasoning. *Intergenerational equity* (Cooper and Palmer, 1995; Weiss, 1984) seeks fairness between generations, and in our interpretation includes future people, animals, and nature alike. *Bioproportionality* (Mathews, 2016) that would equitably partition planetary resources among species (not only wealth among humans).

In sum, anything less than fairly balancing the well-being of humans and non-humans, now and into the future, would be anthropocentric and unjust. During the final stages of revision of this article, an important analysis by Washington and colleagues (Washington et al., 2018) was published in this journal. It promoted ecological justice distinct from both social justice and its “offshoot” (p. 369) of environmental justice, because these two schools of thought and practice express anthropocentric worldviews that do and will irrevocably discount the interests of non-human nature. We agree with much of what Washington et al. (2018) have written exposing social justice and environmental justice, as commonly understood, as inadequate to the task of protecting non-human nature and their efforts to expose anthropocentrism masquerading as non-anthropocentrism. Indeed, they cite us for not being sufficiently attuned to the interests of non-humans in work we view as preparatory and setting the stage for the current article (Treves et al., 2018), given our interpretivist approach. Nevertheless, we still have reservations about their cursory treatment of what individual non-humans deserve from humans. When we read the crux of their recommendations for reforming biodiversity conservation thought and practice, they stated,

“In particular, this assumes that populations, species and ecosystems have an interest in existing, persisting, maintaining, and regenerating their vital cycles, structures, functions and processes in evolution. It implies that conservation is no longer a process between people and about nature, but between nature and people, and justice has to be achieved between both.”

(p. 372, Washington et al., 2018)

This recommendation again seems to forget individual non-humans, which outweighs the scattered references to individuals throughout their text. We might view the above quotation as an oversight, but for its position in their final recommendations and too many signals throughout the paper suggesting they view collectives (populations, species, habitats, ecosystems) as more important than individuals, despite the latter being the actual selves (not objects) with claims: one reason why we consider those collectives deserving of such a duty as justice in the first place. Moreover, the consequences of failing to grant equitable consideration to individual non-humans, as we do in the current manuscript, is that their ecological justice will fall short once again when individual non-human interests are subsumed in some notion of the collective. This happens often (all the time?) in conservation, because conflicts between individual humans and individual non-humans commonly face the rebuttal that ‘the collective is not jeopardized by action x, so we can sacrifice the individual non-human for the benefits of action x’. In that sense, our proposal argues instead for an expansion of the concept of social justice, within which environmental justice resides, to what is actually a multispecies society or, in Midgley’s (1998) words, a mixed-moral community, including the equitable distribution of resources among that community.

Our main concern is with multispecies justice, not simply its ecological or environmental variants. These variants may just as likely reinforce a false human-nature dichotomy by appearing in competition, yet we would argue that they are intimately related. If we acknowledge a mixed-moral community, social justice should have never excluded the non-human world. As opposed to Washington et al., we would argue the real risk comes from limiting the word ‘social’ to ‘human’, instead of from disingenuously characterizing the rest of the non-human universe as a human construct. Moreover, the use of terms like ‘ecological’ to represent our obligations to the non-human world may seem limited and inadequate when accounting for the habitual moral dismissal of individual non-humans within the field of ecology as well as in popular flavors of ecocentric axiologies pervasive in traditional conservation. Concepts of ecojustice that peripheralize individual animals (human or non-human) are not adequate, even if they are trying to establish right relations (e.g.: bioproportionality) to the community of life. Our mixed-moral community contains *social* and *ecological* relations, and we should strive to do justice to both.

Similar dismissals of individual non-human animals may arise from a focus on preserving evolutionary potential, a.k.a. “evocentrism” (Sarrazin and Lecomte, 2016; Thomas, 2017). We note that evolutionary considerations should certainly inform conservation, given the deep interdependence between evolutionary processes and the well-being of individuals and aggregate non-human nature. Yet we oppose making the optimization of evolutionary potential, rather than the well-being of community members, a primary criterion for determining our ethical relationship to other selves because it can dismiss the well-being of individual non-humans as long as a certain anthropogenic benchmark, such as genetic diversity, is maintained (e.g.: authorizing the recreational killing of individuals in healthy populations). Rather, the potential to adapt to future change is essential given its contribution to non-human well-being. This reasoning applies to human individuals and communities as well. Were evocentrism to be the master principle of justice, it would be pernicious to those who are marginalized and vulnerable.

Despite our concerns with these ecological and evolutionary arguments, we favor complementary approaches to spheres of human and

non-human justice that seek to reinforce each other (Plumwood, 2000). Thus, we argue our suggested ethical principles of geocentrism, equitable consideration, intergenerational equity and bioproportionality strive to reinforce the moral, social, ecological, and evolutionary bonds between humans and non-humans in perpetuity. We now proceed to present preparatory proposals for a process for legal standing and authentic representation for futurity (human and non-human).

## 5. Just preservation requires a just process

Proposals for the resolution of conservation conflicts often involve multi-stakeholder consensus (López-Bao et al., 2017; Peterson et al., 2005). Unless explicitly constituted to give equal voice to youth and futurity, or other voiceless minorities, such processes are vulnerable to capture by powerful, excessively narrow interests (Sax, 1970; Wood, 2014a,b) and unjust. Recent proposals suggest arbitration between two opposed advocates representing interests in conservation and social justice (Treves et al., 2017; Vucetich et al., 2018). We recommend the equitable inclusion of currently unrepresented interests, because adjudication between parties representing only current human interests would continue to disenfranchise non-humans, youth and future generations of all life (e.g., Young et al., 2016). Ours would be the most grass-roots, pluralistic, and fair, contrary to claims otherwise (Pooley and Redpath, 2018; Redpath et al., 2017) and their counter-proposals that instead seem to argue for localism and might makes right preferences for current landowners. We also reject the possible rebuttal that our reliance on judicial resolution of disputes is anti-democratic. Rather, we embrace the long-held view that branches of democratic governments must protect the constitutions of their democracies even against majority will and thereby sometimes uphold counter-majoritarian interests (Sax, 1980–1981), especially when the majority would infringe the constitutional rights of minorities (Blumm and Wood, 2017).

Futurity always enjoys numerical majority over current adults. But futurity is also a marginalized minority in electoral processes and may sometimes be a special protected class in constitutions (Treves et al., 2018), as arbitrated by the supreme courts of many nations (Blumm and Wood, 2017). Our ideas about adjudication are but one of several strategies for deliberative, representative processes (Dryzek, 2005; Lynn, 2018). Whatever formula is chosen for decisions about the preservation and use of nature, a just process must address authentic and ethical representation, legal standing to advocate for the interests of youth and futurity, and a legitimate authority to decide.

Authentic advocates for futurity who can speak in fair processes of adjudication are a phenomenon not yet seen in modern jurisprudence, to our knowledge. Although we grant, non-western courts have a head start. We recommend that an advocate for human youth, human future generations, and non-human life of all sorts be trained as a trustee for charitable assets and held to the fiduciary standard of such trustees (Treves et al., 2017). It may seem counter-intuitive to advocate against instrumental uses of nature but advocate for trustees trained in charitable trusts which are instruments of commodification and translating priceless legacies into other currencies. It is precisely for that reason, we advocate for trustees and their other attributes. Trustees are trained in the transparent, sophisticated accounting envisioned by Sax so long ago for environmental trusts (Sax, 1970), as they are trained to convert priceless heirlooms and priced legacies for their liquidation by some beneficiaries (current users) and their preservation unchanged for other beneficiaries (futurity). Also, fiduciary trustees are held to legal standards of selfless, incorruptible arbitration between beneficiaries with multiple conflicting interests (Horner, 2000). However, the additional attributes of nature’s trustees for futurity will involve their ability to understand ecology, ethics, and the manifold, complex, dynamic interactions of humans and non-humans. Such trustees have never before spoken in court on behalf of futurity of all life, as we envision.

Without such representation, we fear current human interests and

the frail political systems of our day may forever cave to immediate desires of insatiable human users without thinking seven generations ahead as so many indigenous groups have done for so long. Without granting futurity the same legal standing and authentic representation as current interests, we predict we will see extinctions and atmospheric contamination continue. Current adult human deliberations are easily swayed by politicians and interest groups made wealthy and powerful by exploiting nature (Blumm and Wood, 2017; Chapron et al., 2017; Plater, 2004; Treves et al., 2017). Legitimate representatives of non-humans and youth would be less credulous and more resistant to the arguments of current adults, we predict. Also, we predict authentic advocates for human youth, non-humans, and futurity would be more preservationist as they eye what will be left to them by current human adults, and scrutinize the validity and legitimacy of those claims more than do current political processes. Legal standing for these advocates can be expected to vary by jurisdiction and vary over time as societies evolve multispecies ethics and codify laws at different rates.

The majority of national constitutions protect either rights to a healthy environment or obligate governments to protect a healthy environment explicitly (Boyd, 2011; Treves et al., 2018). Implicit protections for rights to a healthy environment are also sometimes codified in public trust doctrines that protect the environment as a permanent trust, even if express national constitutional provisions do not do so; public trust doctrines have been upheld by courts in many jurisdictions that have declared these obligations on trustees (Blumm and Guthrie, 2012; Blumm and Paulsen, 2013; Blumm and Wood, 2017; Sand, 2004, 2014; Wood, 2014a,b). Furthermore, constitutions protect sovereign rights of future citizens because they establish sovereign power itself; we are not aware of any constitution that limits sovereignty to current generations of citizens. Indeed, the U.S. provides an example of where environmental protections are at best implicit in the Constitution, yet public trust duties protect future generations. For example, the U.S. Supreme Court in *Illinois Central* (1892) declared the perfect equality of current and future legislatures. No legislature can reduce the powers of a future one, lest the U.S. Constitution's protections for future citizens be stolen by the present. The sovereign powers of the public were entrusted to the government and could not be abdicated or delegated. With that duty to the broad public interest, the Supreme Court imposed on all U.S. governments a public trust duty to preserve all components of nature (Martin, 1842) from substantial impairment by use, contract, grant, lease, or neglect (*Illinois Central*, 1892). The trust duty of U.S. state and federal governments has been held as a constitutional guarantee at least in some states (Robinson Township, 2012) and is now under consideration in federal court (Juliana, 2016). Other countries' superior courts have also ruled in favor of youth and future generations, often more clearly and powerfully than U.S. courts (Blumm and Wood, 2017).

We have not addressed the differing interests of youth, adults, future generations, or humans versus non-humans. We assert that each of these possesses its own ethical entitlements and could potentially have conflicting interests. The interests of youth in an unimpaired atmosphere have been discussed at length in legal scholarship (Blumm and Wood, 2017) and in ethics literature (Davidson, 2008). Given our present scope, we only point out that youth have some interest in use of nature and some interest in preservation, yet also increasing concern for non-human well-being (Bruskotter et al., 2018; Slagle et al., 2017), which suggests they may side with current adults, non-humans or futurity, depending on context. We predict this 'swing vote' will make youth powerful if our vision is implemented but also subject to capture by current adults. It is beyond our current scope to explore and predict how that tension might be resolved in different scenarios. The legal battles are complex and by no means settled, but the legal basis for our recommendations about advocates for future generations of humans rests on sound jurisprudence.

Advocacy for non-humans has a less clear path to legal standing in courts. There is a unifying theme to advocating for future generations of

humans and non-humans. They are all voiceless and share an interest in preserving the livability of the future planet. Although initially authentic non-human representatives might be relegated to the same team as representatives of future human generations by the legal code of a given jurisdiction, independent legal standing is not far-fetched. On the issue of non-human rights, we refer readers to recent philosophical, political and legal literature that have developed robust proposals for extending certain (i.e., inviolable or citizenship) rights to non-humans (Kymlicka and Donaldson, 2011; Nussbaum, 2011, 2017) that demand serious consideration. As for current wildlife law, legal standing for wildlife has been reviewed for the U.S. (Favre, 2010). The latter author found such representation minimal, but not expressly prohibited. For example, the U.S. Supreme Court decision in *Hughes v Oklahoma* (1979) struck down legal fictions of title, property, and ownership of wild animals by individuals and states. Indeed, even the notion that wildlife 'belong' to the sovereign U.S. public is a different sort of public property. For example, *Hughes v Oklahoma* (1979) also affirmed,

“...the general rule we adopt in this case makes ample allowance for preserving, in ways not inconsistent with the Commerce Clause, the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership... We consider the States' interests in conservation and protection of wild animals as legitimate local purposes similar to the States' interests in protecting the health and safety of their citizens.”  
(p. 335–337, *Hughes v Oklahoma*, 1979)

Likewise, the U.S. Supreme Courts in *Martin* (1842) and *Illinois Central* (1892) variously noted the special character of the public trust that we now call the environment or nature. Similarly, affirming that protection of wildlife lay within the police powers of the State then and in *Lacoste v Department of Conservation* (1924) suggests representatives for non-humans might petition the court for protection or relief from police powers.

We anticipate criticism that U.S. environmental laws, especially statutory and regulatory law, is a shabby example. We disavow any celebration of the U.S. system of governance, given its decades of failures in environmental law (Blumm and Wood, 2017; Wood, 2014b). Rather we hold up visionary constitutional provisions, common law, or statutes from around the world (Blumm and Guthrie, 2012; Blumm and Wood, 2017; Treves et al., 2018). For example, Rwanda's Constitution Article 76 reserves seats in its highest legislative body, the Chamber of Deputies, for “...twenty four (24) women... two (2) members elected by the National Youth Council...one (1) member elected by the Federation of the Associations of the Disabled.”, which nods to intergenerational equity and historically disempowered groups in the political processes often dominated by able men. Representatives of future human generations are now active in litigation in U.S. federal court in *Juliana* (2016), so it seems time to articulate our view of the minimum, necessary attributes of such advocates for future humans. To some extent, the same attributes should apply to authentic representatives of non-humans.

First, the representatives of youth and futurity, human or non-human, must adhere to a fiduciary standard of responsibility for the components of the trust that is nature (for definitions of the duties of fiduciary trustees, see Horner, 2000; Tobin, 1974). For this reason, a trustee for futurity must advocate for almost pure preservation of life, and even abiotic (non-living) components required for future uses. Second, trustees of future generations cannot answer directly to futurity or non-humans, because these are voiceless, therefore the trustees must be particularly responsive to current criticisms and improvements suggested from all quarters about how to perform their duties better. Accountability of the trustees of futurity might even be higher than that of the trustees of present-day, financial trusts, because the former will never face all their beneficiaries so they should anticipate challenges and self-criticize. We envision the highest standard of accountability, which would marry the highest financial accountability with the

highest standards of ethical and scientific integrity.

Scientific integrity has hallmarks of transparency, objectivity, and reproducibility of all claims, which would be essential to a trustee of futurity who must understand intimately the latest scientific evidence about the environment and its uncertainties, particularly about nature preservation and current uses of nature. Therefore, the authentic advocates for futurity must also be scientifically sophisticated trustees, and surely deserve all of our wisdom.

Without perfect equality of representation for humans and non-humans and for current life and futurity, the voiceless will always be discounted and thereby lose most debates over use and preservation. In sum, the process of multi-stakeholder arbitration in which most or all participants represent non-anthropocentrism as envisioned by Vucetich et al. (2018) would fail, we believe. It would fail because it still prioritizes humans over non-humans, lacks intergenerational equity, does not meet our criteria for authentic representation, does not consider sovereign rights, and does not allow for the counter-majoritarian authority of legitimate constitutional courts.

## 6. Practical recommendations for just preservation and multispecies justice

We advocate several fundamental changes to how decisions are made to preserve nature for futurity and use or allocate nature to current adults. We do not propose that every decision be decided by a separate court procedure. Each branch of government has a distinct trustee duty, which when properly exercised could prevent endless adjudication. But we do recommend that the differences between essential human needs that might justify use (e.g., annual harvest of timber or vital subsistence use of animals) be distinguished from the trivial human needs that seem ascendant today (Santiago-Ávila et al., 2018), and that non-human needs, including those of individuals, be considered equitably alongside those. We do recommend that decisions to preserve and use nature be subject to judicial decisions, not agency fiat or sole executive authority, as is often the case today, especially in the U.S. (Nie et al., 2017; Wood, 2014a,b). For example, the value judgment that maximum sustainable yield is an appropriate goal for a salmon population would never stand if grizzly bears, seals and sundry other consumers of salmon (Levi et al., 2012) were considered in an equitable manner. Yet, executive agencies in the U.S. and Canada appear to make such decisions routinely and then face costly, time-consuming, and bitter challenges on statutory and regulatory grounds against standards of administrative procedures that bear little or no relationship to trustee duties (Wood, 2014a,b). For decades, the environmental impact statements that U.S. regulatory agencies prepare or accept from users have been criticized because they bear little relationship to the best available science (Schindler, 1976), excuse trustees from their duties (Wood, 2014b), or exist in a thick layer of protections against challenges by the sovereign citizens of many nations (Blumm and Wood, 2017). That is why so many countries are seeing constitutional challenges to government policies on climate change, which is our generations' existential threat to humanity and all life on Earth.

## 7. Conclusion

Very simply, our proposal embraces the entitlement of all life to have a say in the globe-girdling exploits of current human adults. Current human adults have a strong moral duty to consider the interests of futurity and non-humans, at a minimum. Without strong non-anthropocentrism as we recommend, arguments for short-term profiteering from nature veiled by claims about poverty alleviation or economic trickle-down will continue to persuade the audiences that are dominated by current adults. We reject the criticism that our view is 'the perfect standing in the way of the good', because we propose a more just slate of advocates debating in front of an authentic

constitutional power to protect the legitimate entitlements of non-humans and the sovereign rights of futurity in each jurisdiction.

The remedies we propose will not come easily. The usual complaints of infeasibility and cost will surface, but we suggest that higher hurdles have been overcome by nations abolishing slavery, adjudicating the relationship of seceding states, weighing equal representation regardless of identity. The moral principles of non-anthropocentrism and intergenerational equity demand the same moral convictions as those pivotal issues for free societies and no less an investment of current resources. Non-humans and future generations of human, let alone all life, so vastly outnumber current human adults that we are advocating for the true grass-roots that spring to life each second worldwide.

## Competing interests

The authors declare no competing interests.

## Role of the funding sources

An Advanced Opportunity Fellowship from University of Wisconsin-Madison paid salary for FJSA. No other funding sources supported this work.

## References

- Attfield, R., 1998. Environmental ethics and intergenerational equity. *Inquiry* 41, 207–222.
- Barnosky, A.D., Matzke, N., Tomiya, S., Wogan, G.O.U., Swartz, B., Quental, T.B., Marshall, C., McGuire, J.L., Lindsey, E.L., Maguire, K.C., 2011. Has the Earth's sixth mass extinction already arrived? *Nature* 471, 51–57.
- Beauchamp, T.L., Childress, J.F., 2013. *Principles of Biomedical Ethics*. Oxford University Press, New York.
- Bekoff, M. (Ed.), 2013. *Ignoring Nature no More: The Case for Compassionate Conservation*. University of Chicago Press, Chicago.
- Bernard, R., 2016. *Precautionary Principle, Pluralism and Deliberation*. John Wiley & Sons, Hoboken, NJ.
- Blumm, M.C., Guthrie, R.D., 2012. Internationalizing the public trust doctrine: natural law and constitutional and statutory approaches to fulfilling the Saxion Vision. *UC Davis L. Rev.* 45, 741–808.
- Blumm, M.C., Paulsen, A., 2013. The public trust in wildlife. In: ExpressO, Available at: [http://works.bepress.com/michael\\_blumm/16](http://works.bepress.com/michael_blumm/16) (accessed).
- Blumm, M.C., Wood, M.C., 2017. "No ordinary lawsuit": climate change, due process, and the public trust doctrine. *Am. Univ. Law Rev.* 67, 1–83.
- Boyd, D.R., 2011. The implicit constitutional right to live in a healthy environment. *Rev. Eur. Comp. Int. Environ. Law* 20, 171–179.
- Boyd, D.R., 2013. The Status of Constitutional Protection for the Environment in Other Nations. The David Suzuki Foundation, British Columbia, Canada. <http://david Suzuki.org/publications/2014/whitepapers/DSF%20White%20Paper%204.pdf>, Accessed date: 30 May 2017.
- Bruskotter, J.T., Vucetich, J.A., Nelson, M.P., 2017. Animal Rights and Wildlife Conservation: Conflicting or Compatible? *The Wildlife Professional*, pp. 40–43 (July/August).
- Bruskotter, J.T., Vucetich, J.A., Slagle, K.M., Berardo, R., Singh, A.S., Wilson, R.S., 2018. Support for the U.S. Endangered Species Act over time and space: controversial species do not weaken public support for protective legislation. *Conserv. Lett.* 1–7 (e12595).
- Callicott, J.B., 1997. Conservation values and ethics. In: Meffe, G.K., Carroll, C.R. (Eds.), *Principles of Conservation Biology*. Sinauer Associates, Sunderland, MA, pp. 29–55.
- Castree, N., Braun, B., 2001. *Social Nature Theory, Practice, and Politics*.
- Ceballos, G., Ehrlich, P.R., 2018. The misunderstood sixth mass extinction. *Science* 60, 1080–1081.
- Ceballos, G., Ehrlich, P.R., Barnosky, A.D., García, A., Pringle, R.M., Palmer, T.M., 2015. Accelerated modern human-induced species losses: entering the sixth mass extinction. *Sci. Adv.* 1, e1400253. <https://doi.org/10.1126/sciadv.1400253>.
- Ceballos, G., Ehrlich, P.R., Dirzo, R., 2017. Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. *Proc. Natl. Acad. Sci.* 114, E6089–E6096. Available from: <http://www.pnas.org/content/early/2017/07/05/1704949114.abstract>.
- Chapron, G., Treves, A., 2017. Reply to comments by Olson et al. 2017 and Stien 2017. *Proc. R. Soc. B* 284, 20171743.
- Chapron, G., Epstein, Y., Trouwborst, A., López-Bao, J.V., 2017. Bolster legal boundaries to stay within planetary boundaries. *Nat. Ecol. Evol.* 1. <https://doi.org/10.1038/s41559-017-40086>.
- Cooper, D.E., Palmer, J.A., 1995. *Just Environments: Intergenerational, International and Interspecies Issues*. Routledge, New York.
- Crist, E., 2004. Against the social construction of nature and wilderness. *Environ. Ethics* 26, 5–24.
- Crutzen, P.J., 2006. The "Anthropocene". *Springer*, pp. 13–18.

- David, P., 2009. Ma'ingan and the Ojibwe. In: Wydeven, A.P., Van Deelen, T.R., Heske, E.J. (Eds.), *Recovery of Gray Wolves in the Great Lakes Region of the United States: An Endangered Species Success Story*. Springer, New York, pp. 267–278.
- Davidson, M.D., 2008. Wrongful harm to future generations: the case of climate change. *Environ. Values* 17, 471–488.
- Doak, D.F., Bakker, V.J., Goldstein, B.E., Hale, B., 2014. What is the future of conservation? *Trends Ecol. Evol.* 29, 77–81. <https://doi.org/10.1016/j.tree.2013.10.013>. (Elsevier Ltd.).
- Dryzek, J., 2005. *The Politics of the Earth: Environmental Discourses*. Oxford University Press, New York.
- Eckersley, R., 1992. *Environmentalism and Political Theory: Toward an Ecocentric Approach*. State University of New York Press, Albany, NY.
- Epstein, Y., 2017. Killing wolves to save them? Legal responses to 'tolerance hunting' in the European Union and United States. *Rev. Eur. Comp. Int. Environ. Law* 26, 19–29.
- Epstein, Y., Chapron, G., 2018. The hunting of strictly protected species: the Tapiola case and the limits of derogation under article 16 of the Habitats Directive. *Eur. Energy Environ. Law Rev.* 78–87 (June).
- Favre, D., 2010. Wildlife jurisprudence. *J. Envtl. L. Litig.* 25, 459–510.
- Godet, L., DeVictor, V., 2018. "What Conservation Does". *Trends Ecol. Evol.* <https://doi.org/10.1016/j.tree.2018.07.004>.
- Groom, M.J., Meffe, G.K., Carroll, T., 2007. *Principles of Conservation Biology*, 3rd edition. Sinauer Associates, Sunderland, MA.
- Homer, S.M., 2000. Embryo, not fossil: breathing life into the public trust in wildlife. *Land Water L. Rev.* 35, 23–80.
- Hughes v Oklahoma. 1979. U.S. Supreme Court. 441 U.S. 322.
- Hutchins, M., 2008. Animal rights and conservation. *Conserv. Biol.* 22, 815–816.
- Illinois Central Railroad Company v State of Illinois. 1892. U.S. Supreme Court. 146 U.S. 387.
- Johns, D., 2014. With friends like these, wilderness and biodiversity do not need enemies. In: Wuerthner, G., Crist, E., Butler, T. (Eds.), *Keeping the Wild: Against the Domestication of the Earth*. Island Press, Washington, DC, pp. 31–44.
- Jonsen, A.R., Siegler, M., Winslade, W.J., 1997. *Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine*. McGraw Hill, New York.
- Juliana et al. v U.S. et al. 2016. U.S. District Court Oregon. 6:15-cv-01517-TC.
- Kaltenborn, B.P., Brainerd, S.M., 2016. Can poaching inadvertently contribute to increased public acceptance of wolves in Scandinavia? *Eur. J. Wildl. Res.* 62, 179–188.
- Kareiva, P., 2014. New conservation: setting the record straight and finding common ground. *Conserv. Biol.* 28, 634–636.
- Kymlicka, W., Donaldson, S., 2011. *Zoopolis: A political theory of animal rights*. Oxford University Press, Oxford.
- Lacoste v Department of Conservation. 1924. U.S. Supreme Court. 263 U.S. 545.
- Levi, T., Darimont, C.T., MacDuffee, M., Mangel, M., Paquet, P.C., Wilmers, C.C., 2012. Using grizzly bears to assess harvest-ecosystem tradeoffs in salmon fisheries. *PLoS Biol.* 10, e1001303.
- López-Bao, J.V., Chapron, G., Treves, A., 2017. The Achilles heel of participatory conservation. *Biol. Conserv.* 212, 139–143.
- Lynn, W.S., 1998a. Animals, ethics and geography. In: *Animal Geographies: Place, Politics, and Identity in the Nature-Culture Borderlands*, pp. 280–297.
- Lynn, W.S., 1998b. Contested moralities: animals and moral value in the dear/symanski debate. *Ethics Place Environ.* 1, 223–242.
- Lynn, W.S., 2006. Between science and ethics: what science and the scientific method can and cannot contribute to conservation and sustainability. In: Lavigne, D. (Ed.), *Gaining Ground: In Pursuit of Ecological Sustainability*. University of Limerick, Limerick, IRL, pp. 191–205.
- Lynn, W.S., 2018. Bringing ethics to wild lives: public policy for barred and northern spotted owl. *Soc. Anim.* 26, 217–238.
- Martin v Waddell 1842. U.S. Supreme Court. 41 U.S. 367.
- Marvier, M., Kareiva, P., 2014. The evidence and values underlying "new conservation". *Trends Ecol. Evol.* 29, 131–132.
- Mathews, F., 2016. From biodiversity-based conservation to an ethic of bio-proportionality. *Biol. Conserv.* 200, 140–148.
- Meffe, G.K., Carroll, C.R. (Eds.), 1997. *Conservation Values and Ethics*. Sinauer Associates, Sunderland, MA.
- Midgley, M., 1998. *Animals and Why They Matter*. University of Georgia Press, Athens, GA.
- Midgley, M., 2001. *Gaia: The Next Big Idea*. Demos, London, UK.
- Naess, A., 1973. The shallow and the deep, long-range ecology movements. *Inquiry* 16, 95–100.
- Naess, A., 1989. *Ecology, Community and Lifestyle: Outline of an Ecosophy*. Cambridge University Press, Cambridge.
- Nie, M., Barns, C., Haber, J., Joly, J., Pitt, K., Zellmer, S., 2017. Fish and wildlife management on federal lands: debunking state supremacy. *Envtl. L.* 47, 797–932.
- Norton, B.G., 1984. Environmental ethics and weak anthropocentrism. *Environ. Ethics* 6, 131–148.
- Nussbaum, M., 2004. Beyond 'compassion and humanity': justice for nonhuman animals. In: Sunstein, C.R., Nussbaum, M.C. (Eds.), *Animals Right: Current Debates and New Directions*. Oxford University Press, New York, pp. 299–320.
- Nussbaum, M., 2011. *Creating Capabilities*. Harvard University Press, Cambridge, MA.
- Nussbaum, M.C., 2016. Working With and for animals: getting the theoretical framework right. *Denv. L. Rev.* 94, 609.
- Nussbaum, M.C., 2017. Working with and for animals: getting the theoretical framework right. *Denv. UL Rev.* 94, 609–651.
- O'Riordan, T., 1989. In: Peet, R., Thrift, N. (Eds.), *The Challenge For Environmentalism*. Unwin Hayman, London, UK, pp. 77–102.
- Orr, D.W., 2006. Framing sustainability. *Conserv. Biol.* 20, 265–268.
- Patz, J., Hatch, M., 2014. Public health and global climate disruption. *Public Health Rev.* 35.
- Peterson, M.N., Peterson, M.J., Peterson, T.R., 2005. Conservation and the myth of consensus. *Conserv. Biol.* 19, 765–767.
- Plater, Z.J.B., 2004. Endangered species act lessons over 30 years, and the legacy of the snail darter, a small fish in a pork barrel. *Envtl. L.* 34, 289–308.
- Plumwood, V., 2000. Ecological ethics from rights to recognition: multiple spheres of justice for humans, animals and nature. In: Low, N. (Ed.), *Global Ethics and the Environment*. Routledge, New York, pp. 188–212.
- Pooley, S., Redpath, S., 2018. Speaking up for collaboration in conservation: A response to Vucetich et al. (2018) Just conservation: what is it and should we pursue it? *Biol. Conserv.* 23, 186–187.
- Rawls, J., 2009. *A Theory of Justice*. Harvard University Press, Cambridge, MA.
- Redpath, S., Linnell, J.D.C., Festa-Bianchet, M., Boitani, L., Bunnefeld, N., Dickman, A., Gutiérrez, R., Irvine, J., Johansson, M., Majić, A., Mcmanus, B., Pooley, S., Sandström, C., Sjölander-Lindqvist, A., Skogen, K., Swenson, J.E., Trouwborst, A., Young, J., Milner-Gulland, E.J., 2017. Don't forget to look down – collaborative approaches to predator conservation. *Biol. Rev.* 92, 2157–2163.
- Regan, T., 2004. *The Case for Animal Rights*. University of California Press, Berkeley.
- Ripple, W.J., Wolf, C., Newsome, T.M., Galetti, M., Alamgir, M., Crist, E., Mahmood, M.I., Laurance, W.F., 15, s.s.f.c., 2017. World Scientists' warning to humanity: a second notice. *Bioscience* 67, 1026–1028.
- Robinson Township, Washington County et al. v Commonwealth of Pennsylvania et al. 2012. Supreme Court of Pennsylvania J-127A-D-2012.
- Sand, P.H., 2004. Sovereignty bounded: public trusteeship for common pool resources? *Glob. Environ. Polit.* 4, 47–71.
- Sand, P.H., 2014. The rise of public trusteeship in international environmental law. *Environ. Policy Law* 44, 201–271.
- Santiago-Ávila, F.J., Lynn, W.S., Treves, A., 2018. Inappropriate consideration of animal interests in predator management: towards a comprehensive moral code. In: Hoarvods, T. (Ed.), *Large Carnivore Conservation and Management: Human Dimensions and Governance*. Taylor & Francis, New York.
- Sarrazin, F., Lecomte, J., 2016. Evolution in the Anthropocene. *Science* 351 (6276), 922–923. <https://doi.org/10.1126/science.aad6756>.
- Sax, J.L., 1970. The Public Trust Doctrine in natural resource law: effective judicial intervention. *Mich. Law Rev.* 68, 471–566.
- Sax, J.L., 1980–1981. Liberating the public trust doctrine from its historical shackles. *UC Davis L. Rev.* 14, 185–194.
- Schindler, D.W., 1976. The impact statement boondoggle. *Science* 192, 509.
- Singer, P., 2000. Ethics across the species boundary. In: Low, N. (Ed.), *Global Ethics and the Environment*. Routledge, New York, pp. 146–157.
- Slagle, K.M., Bruskotter, J.T., Singh, A.S., Schmid, R.H., 2017. Attitudes toward predator control in the United States: 1995 and 2014. *J. Mammal.* 8, 7–16.
- Soulé, M.E., 1985. What is conservation biology? A new synthetic discipline addresses the dynamics and problems of perturbed species, communities, and ecosystems. *Bioscience* 35, 727–734.
- Soulé, M.E., 1995. The social siege of nature. In: Soulé, M.E., Lease, G. (Eds.), *Reinventing Nature? Responses to Postmodern Deconstruction*. Island Press, Washington, DC, pp. 137–170.
- Soulé, M.E., 2014. The "new conservation". In: Wuerthner, G., Crist, E., Butler, T. (Eds.), *Keeping the Wild: Against the Domestication of the Earth*. Island Press, Washington, DC, pp. 175–210.
- Stone, C.D., 1988. *Earth and Other Ethics: The Case for Moral Pluralism*. Harper and Row, New York.
- Thomas, C.D., 2017. *Inheritors of the Earth: how nature is thriving in an age of extinction*. Public Affairs, New York, New York.
- Tobin, J., 1974. What is permanent endowment income? *Am. Econ. Rev.* 64, 427–432.
- Toulmin, S., Jonsen, R., 1998. *The Abuse of Casuistry: A History of Moral Reasoning*. University of California Press, Berkeley, CA.
- Treves, A., Chapron, G., López-Bao, J.V., Shoemaker, C., Goekner, A., Bruskotter, J.T., 2017. Predators and the public trust. *Biol. Rev.* 92, 248–270.
- Treves, A., Artele, K.A., Darimont, C.T., Lynn, W.S., Paquet, P.C., Santiago-Avila, F.J., Shaw, R., Wood, M.C., 2018. Intergenerational equity can help to prevent climate change and extinction. *Nat. Ecol. Evol.* 2, 204–207.
- Underwood, P., 1994. Who speaks for wolf: a native American learning story. *Focus* 4, 45–51.
- Vucetich, J.A., Bruskotter, J.T., Nelson, M.P., 2015. Evaluating whether nature's intrinsic value is an axiom or anathema to conservation. *Conserv. Biol.* 29, 321–332.
- Vucetich, J.A., Burnham, D., Macdonald, E.A., Bruskotter, J.T., Marchini, S., Zimmermann, A., Macdonald, D.W., 2018. Just conservation: what is it and should we pursue it? *Biol. Conserv.* 221, 23–33.
- Washington, H., Chapron, G., Kopnina, H., Curry, P., Gray, J., Piccolo, J., 2018. Foregrounding injustice in conservation. *Biol. Conserv.* 228, 367–374. <https://www.sciencedirect.com/science/article/pii/S0006320718305020?via%0006320718305023Dihub>.
- Watson, J.E.M., Shanahan, D.F., Di Marco, M., Allan, J., Laurance, W.F., Sanderson, E.W., Mackey, B., Venter, O., 2016. Catastrophic declines in wilderness areas undermine global environment targets. *Curr. Biol.* 26, 2929–2934. <https://doi.org/10.1016/j.cub.2016.08.049>. (Elsevier).
- Weiss, E.B., 1984. The planetary trust: conservation and intergenerational equity. *Ecol. Law Quart.* 11, 495–581.
- Wood, M.C., 2014a. *Nature's Trust*. Cambridge University Press, New York.
- Wood, M.C., 2014b. Tribal trustees in climate crisis. *Am. Indian Law J.* 2, 518–546.
- Young, J.C., Thompson, D.B.A., Moore, P., MacGugan, A., Watt, A., Redpath, S.M., 2016. A conflict management tool for conservation agencies. *J. Appl. Ecol.* 53, 705–711.