



Nature's disvalues: what are they and why do they matter?

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This paper expands the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) values framing about nature and its contributions to people by exploring the notion of 'disvalues', which pertains to aspects of nature that reduce well being (*instrumental disvalues*), relationships that are detrimental to a dignified and flourishing life (*relational disvalues*), or the perception of badness in an absolute sense, regardless of the impact on people (*intrinsic disvalues*). Shedding light on how people express disvalues helps to better capture their preferences and subjective perspectives, as well as account for the socioenvironmental positions from which they speak. Considering the full spectrum of disvalues opens up new ways to better identify social–ecological trade-offs, a necessary step for seeking solutions and finding common ground on sustainability and justice.

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Abbreviations: NCP, Nature's Contributions to People; IPBES, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services; ILK, Indigenous and Local Knowledge; SDG, Sustainable Development Goal

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Introduction

Nature and its contributions are valued by people in many different ways. Yet, despite the attention that nature's *positive* values and contributions to human well being have received, the notion of nature's *negative* values remains comparatively undertheorized and understudied. We argue that values can be understood as having a positive or negative valence depending on the beliefs, preferences, and socioenvironmental position (see *Implications of addressing nature's disvalues*) of individuals and social groups. We use the term *disvalue* [47] to refer to values with a negative valence,¹ and posit that the lack of attention they have received in the literature should be addressed given the central role that values play as indirect drivers of the ecological and climate crises [26]. In this paper, we focus on and expand the framework put forward by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) about the multiple values of nature and nature's contributions to people (NCP) [44] by unpacking and illustrating through the use of examples the idea of nature's disvalues and associated detriments to people's quality of life.

In recent years, there has been an explosion of interest in the literature on valuing *positive* aspects of nature [10,11,18,45]. There is also a new turn towards recognizing a more plural understanding of values [27] and a greater diversity of worldviews. Both approaches reflect a conscious effort to expand the language of values beyond Western philosophy and economics, including to better reflect Eastern perspectives and those of Indigenous peoples [30,46,64]. Yet, for the most part, the focus on the positive contributions of nature persists.

However, NCP are defined as "both, the positive contributions, or benefits, *and* occasionally negative contributions, losses or detriments, that people obtain from nature" ([44]: 8). While this definition recognizes the existence of negative contributions, the NCP literature (and the ecosystem services literature therein) is mostly

¹ The discussion about nature's values has been mostly focused on the spectrum of values from 'positive value' to 'no value'. We intend to expand this spectrum by pointing to the concept of disvalue, thus recognizing that different aspects of nature can have positive value, no value, or negative value.

Table 1

Definitions and examples of disvalues of nature and of NCP.

Type of value	Definition	Example
Instrumental disvalue	Something that leads to an undesirable end, or has a negative impact on well being.	<i>The destruction of property and livelihoods caused by natural disasters which leads to human suffering</i>
Relational disvalue	Something that impedes the pursuit of a meaningful, dignified, and flourishing life and/or fosters relationships with nature (or with people through nature) deemed to be undesirable, improper, or reprehensible.	<i>Forceful displacement of people into a new territory in relation to which identity-constituting practices, rituals, and stories are emptied of meaning and generate estrangement</i>
Intrinsic disvalue	Something that is perceived to be bad in itself, regardless of its impact, consequences on, or reference to people.	<i>Actions, processes, or entities that are perceived to be unnatural or run counter to what is perceived as the natural order of things and thus bad, in and of themselves</i>

silent on how these negative aspects are perceived, expressed, and valued by people. The objective of this paper is to ignite further scholarly debate and research to address this gap and show why and how a more deliberate consideration of nature's disvalues can support environmental sustainability.

The disvalues of nature's detriments to people

The term 'value' when associated with nature and NCP has been used in a variety of ways, reflecting the plurality of understandings of the concept arising from different worldviews and disciplinary traditions [58]. Within the IPBES framework, the concept of value has been interpreted as 'a *principle* associated with a given worldview or cultural context'; as 'a *preference* someone has for a particular state of the world'; as "the *importance* of something for itself or for others"; or as "simply a *measure*" (emphasis added) ([44], 9). In the cases of *principles*, *preferences*, and *importance*, value is typically formulated in positive terms. Only in the case of value as a *measure* does it seem more intuitive and easy to frame it in positive, neutral, or negative terms: for example, when using monetary values to *measure* benefits and costs, or with the notions of willingness to pay (or accept) for some positive (or negative) effect on welfare [60]. Moreover, while there are good reasons to focus on the positive formulations of the values of nature and NCP, this leaves their negative formulations unclear and underrepresented in the literature, which leads to a void in the practical application of the notion of 'disvalues'.

In Table 1, we present some examples of how the concept of disvalues may be understood in a practical sense to show why the terminology to articulate disvalues is important for valuation and policy. For example, disvalue terminology can help articulate values referring to aspects of nature that reduce wellbeing (i.e. instrumental disvalues), relationships that are detrimental to a dignified and flourishing life (i.e. relational disvalues), or the perception of badness in an absolute sense, regardless of the impact on or reference to people (i.e. intrinsic disvalues).

In this paper, we show how these concepts about disvalue can provide practical constructs to represent diverse perspectives that people may hold and express when valuing (positively and negatively) the different facets of nature. We do not take a stance on whether one type of (dis)value justification is more or less valid than another. Instead, we present a framework for analyzing what type of value — or disvalue — underlies different arguments and positions around people's relations towards nature. In this sense we take a descriptive rather than prescriptive approach on the disvalues of nature and its contributions to people. It should be noted that, like values, disvalues are not entities but constructs. That is, they are ways of expressing why we favor or abhor an option or outcome. As such, any situation might be characterized simultaneously by a person as featuring a rich combination of instrumental, relational, and intrinsic values and disvalues — and characterized differently by other people.

Instrumental disvalues

Instrumental values refer to values of nature as means to achieve human ends or to satisfy human preferences² [5,24]. Instrumental values generally refer to the value of something (an entity, a relation, or a process) regardless of its intrinsic characteristics and only with respect to its impact or consequences on happiness or wellbeing. Although instrumental values are often linked to conventional economic thinking, they do not necessarily need to be formulated in economic terms [41]. In fact, the ecosystem services approach, which is frequently associated with an instrumental view of nature, can stretch well beyond the boundaries of conventional economics, such as in the case of sociocultural values [50].

Instrumental disvalues can be seen as being closely related to the idea of 'ecosystem disservices' [20,49,52]. In this sense, nature is understood to have instrumental

² We limit here our understanding to instrumental values with respect to people. Instrumental values can also refer to means to achieve the ends of nonhuman beings, as far as one assumes that they can act towards ends of their own, or to their negative impacts [47].

disvalue when it leads to an undesirable end with regard to human wellbeing, or when it serves as an obstacle to reach a desired level of wellbeing. For instance, the destruction of property and livelihood options caused by natural disasters leads to human suffering (undesirable end), while exposure to zoonotic pathogens (obstacle) can threaten a healthy life (desirable end).

Although focus on ecosystem disservices is still disproportionately low compared to their positive counterparts, the concept has received some recent attention: for example, assessments of the negative impacts of health related to the spread of pathogens found in wilderness [1], research on the impact of invasive alien species [59], zoning of watersheds based on water-related disservices [57], perception of disservices in urban areas [31], assessments of the ecological impact of forest management interventions [56], perceptions of disservices in coastal communities of the Global South [32], or culturally determined detrimental attributes of bird diversity, as cultural ecosystem disservices [16]. The concept of instrumental disvalue can help assess how people articulate these disservices and the impact they have on them.

Intrinsic disvalues

There is considerable ambiguity about the meaning of intrinsic values of nature, and almost no attempt to formulate them in a negative way in the environmental sustainability literature. The IPBES conceptual framework, for example, interprets intrinsic value (positively) as the value something has independent of any human experience of evaluation. Accordingly, intrinsic value is viewed as an inherent property of nature that is not ascribed or generated by human judgment [13,44]. Nevertheless, this interpretation is narrower than the full range of meanings that have been attributed to intrinsic values in environmental philosophy, where this moral concept originated, including the idea of humans valuing something for what it is in itself [23]. O'Neill [42] offers a helpful classification of the different meanings of intrinsic values. Yet, there are conceptual difficulties preventing some of the common philosophical understandings of intrinsic value from offering a meaningful notion of intrinsic disvalue, since something would have to be viewed as either *not* possessing intrinsic value or entirely lacking moral worth. Here we thus define *intrinsic disvalue* in line with a subset of these possible philosophical interpretations, as the property of *inherent badness*, regardless of its impact, consequences on, or reference to people. Intrinsic disvalue can be understood as 'something that detracts from the overall goodness of the world' ([2], 268).

The notion of intrinsic (dis)value is particularly useful in providing an operational conceptual basis to understand what people often express as inherently non-negotiable

positions, given that some justifications may be based on people's belief of the intrinsic or moral value of some aspect of nature. Consider for instance the intrinsic value that some people may place on the 'naturalness' of an ecosystem [4], that is, that the property of 'naturalness' is perceived to be good in and of itself. Based on this position, anything that runs counter to it may be framed in terms of its intrinsic disvalue, and thus perceived as incommensurable and non-negotiable vis-à-vis other value categories. On this basis, one can understand, for example, why some people oppose the use of genetically modified organisms (GMOs) on the grounds that they are perceived or believed to be 'unnatural'³, and thus have intrinsic disvalue; this is regardless of any instrumental disvalues (e.g. by decreasing genetic diversity, which increases vulnerability to diseases) or instrumental values (e.g. increased nutritional value of GMO varieties such as golden rice) [15] they may also have.

Another example of an argument that can be based on an intrinsic disvalue claim can be found in people who consider that invasive species are inherently bad on the grounds of a commitment to their belief on what is the 'natural' (and thus 'good') state of affairs in which species are confined to the ecosystems within which they originally evolved [54]. This belief can be held irrespective of (or in addition to) any benefits a specific invasive species may have for humans (e.g. economic value derived from harvesting them) [53] or of the disservices they might cause (e.g. the ecological or economic damage).

Relational disvalues

Relational value is a third category of values about nature that is increasingly gaining attention [7,6,51,55,3,39].⁴ The emergence of the notion of relational values stems from the claim that people often value nature because of the non-instrumental relationships they have with it. These relationships are seen as constitutive of their individual or communal identity and of the idea of 'eudaemonia' or a 'good life', intended as a meaningful, dignified, and flourishing life [28,7]. Relational values encompass values understood in the sense of both moral *principles* and *importance*. According to IPBES, relational values refer to "the meaningfulness of relationships, including the relationships among humans

³ We do not personally endorse this position given that understandings of what is 'natural' are culturally derived, and applying such judgments in the past has led to oppression and discrimination (as e.g. in the case of homosexuality or gender roles). Nonetheless, this justification is still often used by people. As such, our goal is merely to provide an operational value classification capable of recognizing this usage.

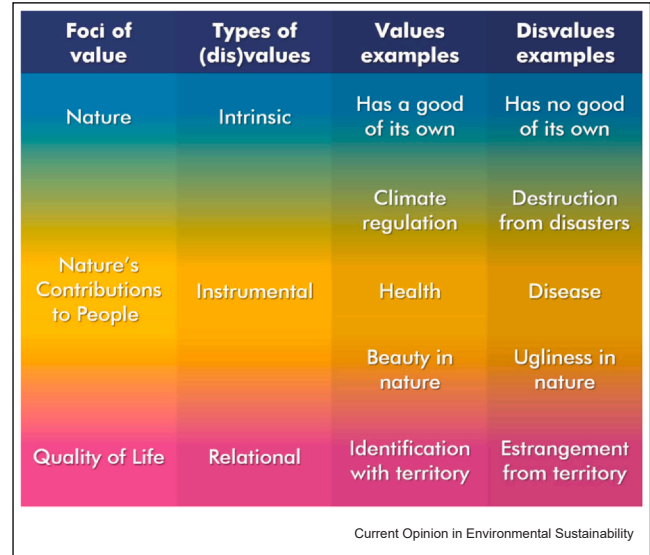
⁴ All of these use the term somewhat differently as the concept has been evolving over time. Our understanding in this paper matches Chan et al. [7,6].

and nature, and among humans, including across generations, via nature” ([26], p. 22). Unlike instrumental values, relational values are understood to be non-substitutable, and therefore not reducible to means to an end [24]. To illustrate, this is the case with the value ascribed to friendship. Friendship is an essential component of a meaningful, dignified, and flourishing human life, but per definition not reducible to a mere ‘means’, that is, a relationship with someone that is primarily based on what they can do for you is not one of friendship (relational) but one of convenience (instrumental). Kinship relationships with other-than-humans, as they are expressed in many Indigenous traditions, embody a similar understanding [48]. Accordingly, relational values are “associated with embeddedness, collective meaning, flourishing, heritage, beauty, self-transformation, sense of place, spirituality, livelihoods, justice, conviviality, care, and kinship” ([24], p. 3). As general guiding principles, relational values include responsibility, stewardship, and reciprocity in relation with nature or among people with respect to their natural environment. Relational values can be expressed in a variety of ways as they are closely mediated by culture, identity, and place [25].

Relational disvalues of nature and NCP can be understood as those that are detrimental to the pursuit of a meaningful, dignified, and flourishing life. For instance, wildlife attacks may lead to long-lasting emotional and psychological trauma, fostering relationships of fear, dread, phobia, or insecurity with respect to the natural environment [61]. Relational disvalues can also be associated with the displacement of communities (e.g. after forced removal from a protected area), or with the estrangement caused by rapid transformation of landscapes (e.g. due to climate change, when people suddenly find themselves in a new place whose meaning for the community is no longer ‘legible’ and in which identity-constituting practices, rituals, and stories are emptied of meaning or hindered) [63]. In this case, the relational disvalue refers to the *relation* with the new place and not to the place itself. While new relationships might be built over time, forced displacement does not only cause the loss of positive relationship to the old territory, but also the experience of alienation or estrangement with the new one (regardless of whether the place itself is intrinsically or instrumentally good or bad).

Relational disvalues are also those that foster undesirable, improper, or reprehensible relationships, such as when the accomplishment of traditional and ethical obligations towards other-than-humans is threatened. This is the case, for example, of the Lummi Nation, who consider the orcas that inhabit the Salish Sea to be their kin (people under the water) [21]. The region’s plummeting salmon population has led to the starvation of the orcas, a fact that is creating relational disvalue to the

Figure 1



Examples of types of values and disvalues related to nature, NCP, and a good quality of life on a gradient spectrum.

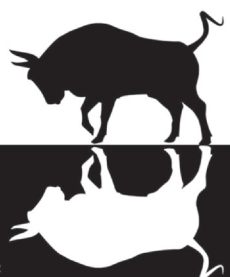
Lummi Nation as it is impeding them from honoring what they consider to be their obligations of responsibility and care towards the orcas [38].

Unpacking nature’s values and disvalues

Figure 1 expands on the ‘kaleidoscope view’ of the values used by IPBES [44]. It illustrates how the three categories of values (intrinsic, instrumental, and relational) that permeate people’s understanding of nature, NCP, and quality of life can map not only to values but also to disvalues. Although certain types of (dis)values may often be more closely associated with specific foci of value (e.g. NCP are often valued for instrumental and relational reasons), the distinction between and amongst foci and types of value is diffuse in practice. The shifting color gradient in the background of the figure represents this fuzziness by visually suggesting that despite our use of discrete categories for ease of communication, in practice the foci and types of value may sometimes overlap or blend into each other. Relational values, for example, may pertain to nature, NCP, and quality of life. Similarly, the examples of beauty and ugliness in nature can be seen as having elements of both instrumental and relational values.

Unpacking the notion of disvalue of nature can help to understand people’s justifications behind specific positions on environmental policy debates, given that otherwise certain value claims cannot easily be mapped onto a values framework. Making an effort to explicitly consider disvalues when looking at people’s relationships with nature has the potential to open up new ways

Figure 2

Values of supporters	<ul style="list-style-type: none"> • Instrumental value: e.g. Bullfighting generates economic activity by creating jobs and providing entertainment • Intrinsic value: e.g. Ending bullfighting would lead to the disappearance of the Spanish Fighting Bull breed • Relational value: e.g. Bullfighting has important cultural significance dating back more than 3000 years, with important ties national identity 	
Disvalues of detractors	<ul style="list-style-type: none"> • Instrumental disvalue: e.g. Bullfighting poses a risk of grave injury and death • Intrinsic disvalue: e.g. Bullfighting is a blood sport that is seen as immoral irrespective of any associated economic or socio-cultural values • Relational disvalue: e.g. Bullfighting is seen as a perversion of the principle of animal stewardship and as an abhorrent promotion of violence towards animals 	

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Examples of how values and disvalues are expressed and mapped onto the arguments of supporters and detractors of bullfighting in Spain.

of seeking solutions, finding common ground, and increasing mutual understandings. Figure 2 highlights the usefulness of considering both values and disvalues by showing how they underpin the value claims and justifications of both detractors and supporters of the highly controversial practice of bullfighting in Spain [9].

Implications of addressing nature's disvalues

There are multiple reasons why a better understanding and recognition of nature's disvalues is useful for science, policy, and practice in environmental sustainability. First, it can increase understanding of the indirect drivers of the environmental degradation crisis. Second, it can bring NCP trade-offs into focus. Third, it can help to address the normative aspects of power relations and social equity.

People interact with and shape their surrounding environment in ways that help them to not only maximize and respect its values, but also minimize and avoid its disvalues. Thus, a more deliberate consideration of both values and disvalues will provide a fuller understanding of anthropogenic environmental changes (i.e. what exactly has driven people in the past to act on or modify the environment in specific ways). It also will create opportunities to pursue more sustainable pathways in the future. This appears critical given that people's values of nature have been found to be key leverage points that, when acted upon, can support transformations towards sustainability [26].

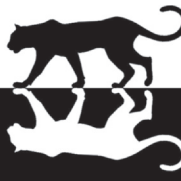
A specific environmental management decision may provide a value for one person (or social group) and a disvalue for another. Being able to articulate how people express both values and disvalues is important not only to capture people's preferences or subjective perspectives (rooted e.g. in their deep beliefs or worldviews),

but also to account for the socioenvironmental positions from which they speak. By expanding on Rolston's early paper on disvalues in nature (1992), we claim that whether something might or might not be a disvalue for individuals or social groups depends not only on their personal views but also on their particular location in ecological (such as exposure to hazards like floods or fires) and social (such as vulnerability due to racial, economic, or social injustice, and access to sovereignty and self-determination) systems.⁵

Taking this stance helps bring to light the pervasiveness of social trade-offs that arise from environmental decisions: for example, on how to manage a forest. Protecting a forest may increase its value for environmental conservationists (e.g. conserving biodiversity) and decrease it for local communities (e.g. restricting hunting). This means that in the pursuit of multiple societal goals—such as those reflected by the sustainable development goals (SDG)—trade-offs must be carefully considered between competing uses of nature [17]. For instance, ecosystems set aside for carbon-sequestering tree plantations (SDG 13) can compete with food production (SDG 2) or natural habitat conservation (SDG 15) [8]. In cases like these, it is necessary to understand all of the values and disvalues at stake when land is put to alternative uses, if socially acceptable and legitimate solutions are to be found [43]. For example, wetland conservation and restoration have been advocated as effective nature-based solutions to provide flood protection during extreme weather events [65]. However, this positive value is often difficult to detach from some

⁵ Rolston demonstrates how whether something is a disvalue in nature or not depends on its position in the ecological system (it might be at the same time a value for another species or in terms of evolutionary opportunities).

Figure 3

Values of supporters	<ul style="list-style-type: none"> • Instrumental value: e.g. Predators are keystone species that regulate ecosystems • Intrinsic value: e.g. Predators have a right to exist undisturbed • Relational value: e.g. Predators are perceived as kin; protecting predators is a fulfilment of obligations of responsibility 	
Disvalues of detractors	<ul style="list-style-type: none"> • Instrumental disvalue: e.g. Predators kill livestock and threaten livelihoods • Intrinsic disvalue: e.g. Predators are intrinsically bad and can be eliminated • Relational disvalue: e.g. Predators are perceived as a threat to a flourishing life; not being able to attend to predators impedes relational obligations towards livestock 	
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Examples of how values and disvalues are expressed and mapped onto the arguments of supporters and detractors of large predators in the wild.

detriments associated with the preservation of wetlands, such as providing breeding grounds for disease-spreading mosquitoes [22] (i.e. instrumental disvalue) or infringing upon local communities' relationships to landscapes that are meaningful for them or constitutive of their individual and collective identity [14] (i.e. relational disvalue). Thus, purposely examining both values and disvalues may help reveal how people's decisions to drain wetlands are not only driven by the benefits of alternative land uses (e.g. agriculture), but also about the disvalues that people wish to remedy.

There are also social equity implications of failing to take nature's disvalues into account, as someone's position (e.g. social, environmental, economic, geographic) may play a big role in determining whether something has value or disvalue [43]. Values vary across individuals and communities with different characteristics and may thus impact them differently. Consider the example of large carnivores (Figure 3). While many conservation-minded urban residents favor the preservation of large charismatic carnivores in the wild [19,33], rural — and often vulnerable and less powerful — stakeholders who live in proximity to the carnivores are usually the ones to suffer the financial and psychological burdens from human–wildlife conflicts [35,61].

Even when policies do explicitly consider the disvalues of nature for rural inhabitants, for example, in the context of human–wildlife conflicts, it is critical that they recognize and address the incommensurability between different types of values and disvalues. For example, many countries have put in place public financial compensation schemes for predator attacks with the goal of providing reparations to shepherds for lost livestock [36,29]. However, these compensatory schemes are reactive, triggered only after the human–wildlife conflict has already taken place, and do little to offset the relational disvalues associated with predators. These include the feelings of impotence associated with the inability to fulfill the responsibility of care and protection towards

one's herd, or the perceived existential threat that predators pose to their identities as shepherds. Additionally, monetary payments are instrumental in nature, and may be perceived as morally incommensurable with the relational nature of the disvalues they seek to compensate [12]. To understand this incommensurability, one need only imagine the experience of a parent who is prevented from protecting their child from harm, and how inadequate monetary compensation for the loss might feel.

Consider the example of the conservation of the spotted hyena in Kenya [62]. While the scientific community recognizes the value of the spotted hyenas as important ecosystem regulators, they also recognize that conservation efforts will be jeopardized if the values and disvalues of local stakeholders are not taken into account. This is because for the local Daasanach pastoralists, their livestock has not only economic value but also cultural value, which makes livestock losses from predator attacks particularly difficult to accept and has led to deep-rooted feelings of animosity towards the spotted hyenas. In this case, predators are perceived by locals as having a relational disvalue, as they obstruct the fulfillment of obligations of responsibility towards their livestock and impede a meaningful and flourishing life. Thus, any viable and legitimate conservation strategy will require a collaborative framework that integrates not only scientific approaches and methods but also Indigenous and local knowledge, cultural meanings, traditions, and values [62]. Using a value elicitation framework that is capable of explicitly articulating both values and disvalues may help raise the voices of those stakeholders whose wellbeing most closely depends on nature and NCPs in the search for equitable and environmentally sound solutions.

We posit that carefully considering nature's disvalues can be an asset in the design of policies that address human–wildlife conflicts [29]. For example, the Watterton Biosphere Reserve's Carnivores and Communities

Program, a community-based program in Alberta, Canada, was put in place with the aim of facilitating the peaceful coexistence between people and native wildlife. By implementing a series of safety workshops that taught participants about preventative measures, conflicts with large carnivores were reduced while simultaneously increasing locals' sense of security [37], effectively reducing not only instrumental but also relational disvalues associated with these animals. In this way, identifying and targeting the full spectrum of disvalues can open up new avenues for conservation while simultaneously increasing social equity.

Conclusion

The environmental conservation movement is struggling in its attempts to halt global biodiversity loss. This lack of success has been attributed, at least in part, to its failure to recognize the full diversity of ways in which people relate to, understand, and value their relationships with nature [43]. In its efforts to spur conservation, the movement has historically tended to frame the values of nature either in positive terms — such as with a focus on ecosystem services, the 'beauty' of wild nature, or the right of iconic species to live — or in seemingly apolitical biological or ecological indicators. Consequently, the disvalues of nature to local communities have been either ignored or hidden, and thus their associated burden rendered invisible. This is due in large part to the fact that the Western conservation tradition was originally inspired both by a romantic vision of nature as something that one can contemplate at a distance (held by those who do not have to actually engage with it) and by an instrumental consideration of nature as a resource for economic development [40].

Moving forward, we suggest that other approaches can be taken, including deliberately accounting for nature's diverse values *and* disvalues, which are expressed from a variety of positions and perspectives. Just as important as asking *what* (dis)values, we must also carefully consider *whose* (dis)values are relevant in any given context. These questions are not trivial, as how we frame the values of nature will shape conservation narratives and agendas [34,43,59] and ultimately determine the types of interventions that are deemed as desirable and legitimate.

Author contributions

B.L., D.L., and U.P. conceptualized the paper. All authors contributed towards writing the original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could

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