9. Wellbeing in the more-than-human world

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1. INTRODUCTION

The Millenium Ecosystem Assessment (MA 2005) reports that over the past 50 years, "changes that have been made to ecosystems have contributed to substantial net gains in human wellbeing", but that these gains have been made at the expense of ecosystems – that is, the other species and beings who make up the more-than-human world (Abram 1996). In the face of accelerating extinction, environmental degradation, and injustice, a more radical transformation of the consideration of wellbeing is necessary to address these entangled challenges. In this chapter, we therefore draw out a research and action agenda for Ecological Economics (RAEE) to allow for a more expansive assessment for achieving the wellbeing of non-humans – which is a crucial step in the journey to a world of sustainable wellbeing for all beings (Plumwood 1996). Most wellbeing literature deals with non-humans primarily insofar as it directly relates to humans (e.g. Nature's gifts, nature's benefits, ecosystem services), yet more-than-human wellbeing exists independently from, though inextricably entangled with, human wellbeing. Figure 9.1 contrasts two ways of thinking of wellbeing: first, as a human outcome that all living things contribute to, and second, as the experience of all beings within an interconnected web – the second way emphasizes that "the *whole system* matters, both to humans and to the other species we are interdependent with" (Costanza et al. 2017). This chapter explores how scholars can assess the wellbeing of non-humans beyond their contributions to human wellbeing, as shown in the second half of the figure. This framework does not exclude human wellbeing – this expansion fully includes human wellbeing and its interconnections with the wellbeing of others.

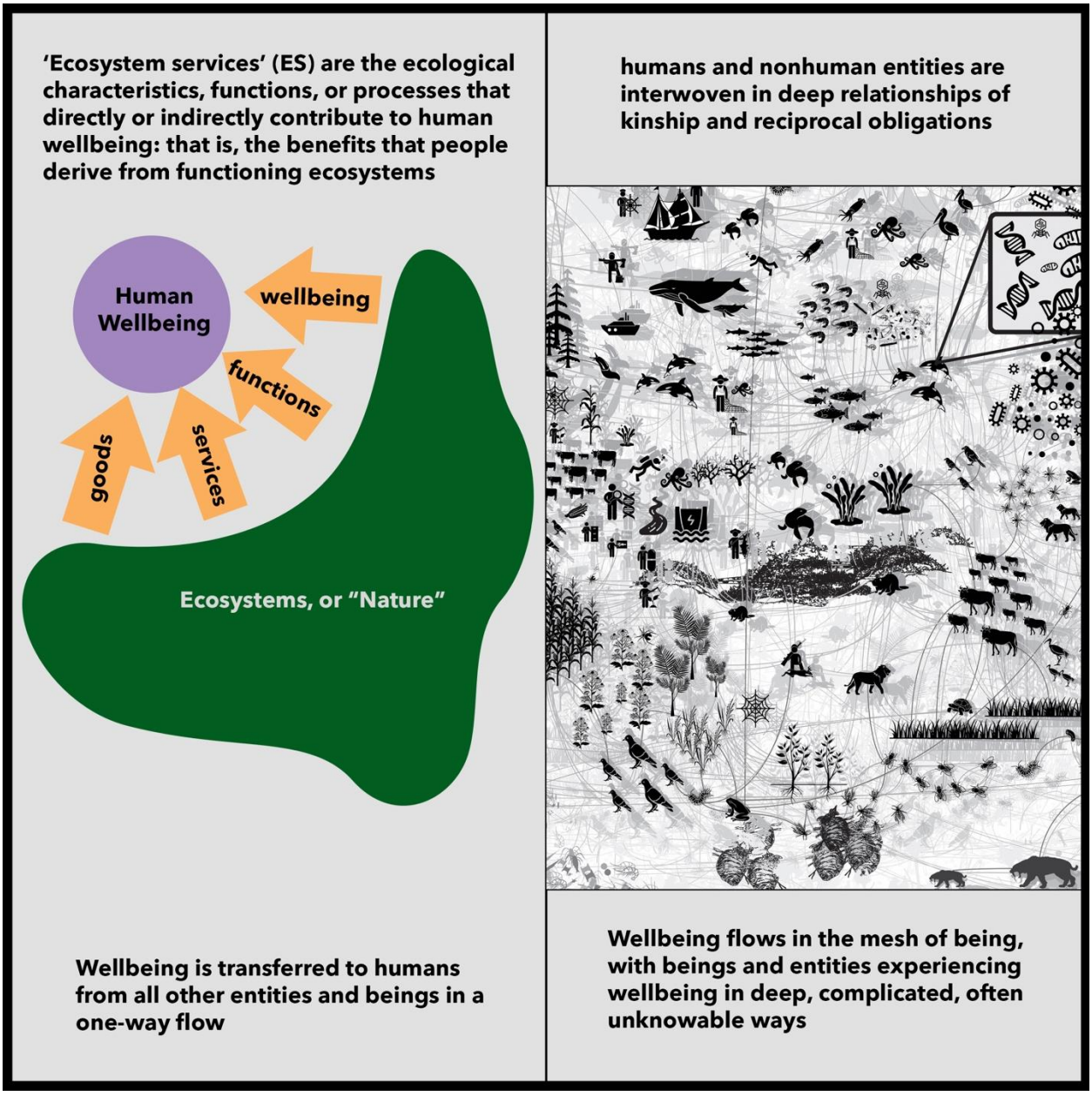

Figure 9.1 On the left, an "anthropocentric" way of thinking about wellbeing – Ecosystem Services is one such framework, and on the right, a decentered way of thinking about wellbeing

2. DEFINING WELLBEING

Wellbeing is generally considered a complex and multidimensional state, which includes aspects such as physical, mental, and social health, physical vitality, mental alacrity, social satisfaction, a sense of accomplishment, and personal fulfillment (Naci and Ioannidis 2015), associated with a positive physical, social, and mental state (Summers et al. 2012) and "interlinked social, cultural, spiritual, environmental and psychological aspects of health" that emphasize the "connections between human beings, nature, and spiritual beings" (Kealiikanakaoleohaililani and Giardina

2016). As it becomes increasingly clear that beings other than humans can experience these dimensions of wellbeing in addition to dimensions beyond what humans may experience, it is imperative to take into account the wellbeing of all beings. We begin by using the same term "wellbeing" for humans as well as non-humans, which "*helps reinforce interactions and processes between humans and nature. In addition, the use of wellbeing encourages a focus not just on the absence of physical illness or decline in ecosystem state, but also on less easily translated elements such as connection to place, or mental and spiritual wellbeing of nonhumans*" (Callion 2017). Expanding the consideration of wellbeing to all beings will allow us to "chart a more ethically defensible, socially acceptable, and scientifically robust path," in conservation and in achieving wellbeing (Wallach et al. 2018).

Abandoning the distinction between humans and the ecosystems that encompass them, we can see that not only is human wellbeing an expression of the life-supporting capacity of the environment (Rapport et al. 1998), but that the wellbeing of all life is an expression of the ecological mesh within which we all share our experience of the world. Human wellbeing shares many similarities with the wellbeing of other forms of life, and understanding how wellbeing is experienced in the more-than-human world (Abram 1996) is important for both understanding the aspects of wellbeing that are most crucial for humans, and for developing strategies for preventing deterioration in the life-support systems of Earth (Rapport et al. 1998).

2.1 Moving Towards a De-centered, Non-Anthropocentric Understanding of Wellbeing

While there are many unique things about those beings considered "human," there is no "magic wall" that separates humans from everything else in the experience of wellbeing (Brevik and Barbieri 2019). Three of the dimensions which dispel the idea of a magic wall are our evolutionary relationships, our mosaic being, and our shared traits and characteristics with other beings. First, our complicated and tangled evolutionary history belies a clear species boundary around "humans"; prehistoric mating between *Homo sapiens* and other hominids is problematic for distinguishing what is and was "human" and for the biological concept of species in general (Hey 2001;). Second, humans, like all multicellular life, are "mosaic beings" – we think of ourselves as individuals, but the ubiquity of microbial symbiotes that affect not only our metabolism, but our cognition, creates fuzzy boundaries and problematizes deeply held beliefs of what defines a human (Margulis 1976; Mayer et al. 2014). At lower hierarchical levels, our cells contain mitochondria and genetic elements, who were once free-living beings and now exist with/as us as symbiotes – neither of us exist without the other (Guerrero et al. 2013; Quammen 2018). Third, there is no evolved species trait that allows *all* humans and *only* humans to experience wellbeing in a unique fashion (Milligan 2011). By decentering anthropocentrism in the domain of wellbeing, we hope we "can open another door to a richer world, and can begin to negotiate life membership in an ecological community of kindred beings" (Plumwood 2009).

3. WHO IS BEING WELL?

In this section, we discuss the entities which may be considered as experiencing wellbeing, from individuals to species, to ecosystems to the entire biosphere. It is important to remember when discussing the various "who's" that these levels do not necessarily exist in ways a human may be able to comprehend them, but may be useful tools for us to understand the world, considering the human mind's limited ability to understand the complexity of the real world (O'Neill 2001) - and the framing of "who is being well" differs between cultures (Watts 2013). When thinking about wellbeing, we strive to comprehend how different "levels" of wellbeing interact and overlap with the whole biosphere (in time and space), which is made up of ecosystems composed of many species composed of individuals composed of a mosaic of cells and symbiotic relationships, in the context of the atmospheric, aquatic, and terrestrial conditions of their respective places.

3.1 Individuals

Many approaches to more-than-human wellbeing consider this question on the level of the individual organism. Often this follows Western individualist moral philosophy in considering wellbeing, utility, and/or rights primarily on the level of individual people. Which individual organisms are considered depends upon the approach utilized.

3.2 Aggregate Ecological Entities

Many approaches to more-than-human wellbeing consider wellbeing at a higher hierarchical level than the individual organism. Wellbeing of aggregate entities delimited by genetics is often considered at the level of population, species, or other taxonomic level. Many people also care about the wellbeing of aggregate entities delimited spatially and by biophysical processes, as habitats, ecosystems, or biomes. At the largest scale, people express concern for the wellbeing of "nature," "creation," "the Earth system," or "Gaia" as a whole. Valuing aggregate entities faces profound philosophical problems, as it is not clear how these entities possess wellbeing of their own. For instance, "the species problem" remains unresolved in biology, with more than 20 proposed demarcation criteria (Wilkins 2009).

3.3 Spiritual Entities

Human concern for wellbeing often goes beyond the physical world. Many are concerned about other humans' fates in an afterlife and feel disgust for abuse of the dead. Similarly, traditional belief systems often regard the wellbeing of spirits, including those of individual organisms, species, ecosystems, rivers, non-biotic nature (rocks, mountains), and all of life together. Watts (2013) describes an Indigenous framework where "if we accept the idea that all living things

contain spirit, then this extends beyond complex structures within an ecosystem. It means that non-human beings choose how they reside, interact and develop relationships with other non-humans," possibly with profound implications for wellbeing. While often associated with non-Western or non-scientific worldviews, spiritual entities also have important influences on scientists and Western environmentalists, as in framing nature as "god's creation" or the non-instrumental values seen by conservationists in geologic aspects of landscapes (e.g. Muir 1890). Of course, these entities are viewed with even more scientific skepticism than the aggregate entities discussed above; they are not generally regarded as possessing even instrumental value for understanding natural systems. Others have argued that sacredness ethics is a potent means for promoting behaviors and beliefs that allow humans to understand ecological wellbeing, and "must be the foundation of any successful sustainability effort, with success achieved only when resource management practices and policies engage the spirit and are aligned with equitable and respectful interactions among human and non-human" (Kealiikanakaoleohaililani and Giardina 2016).

4. APPROACHES TO CONSIDERING AND PROMOTING WELLBEING

4.1 Individual

Western individualist moral philosophy: utilitarian and rights-based frameworks

Utilitarian animal liberation theorists such as Singer (2002) locate the wellbeing of non-human animals in their capacity to suffer, their ability to experience poor wellbeing. Conversely, deontologists such as Regan (2004) locate it in animals' subjectivity – acknowledging that many animals, like humans, have sense perceptions, beliefs, desires, motives, and memories (Regan 2004 – their ability to conceive of their own wellbeing. These conceptions of wellbeing have been operationalized by movements including those for humane treatment of domesticated animals, veganism and animal-rights, and "Compassionate Conservation" – the philosophy that ecological conservation should be pursued in a manner that respects the wellbeing and interests of individual animals (Ramp and Bekoff 2015; Wallach et al. 2018).

Umwelt

Jacob von Uexküll (1957) described the idea of an *umwelt*: an experience of the world that is distinct for each individual organism, based on the perceptual and experiential abilities of that being, created through evolution and learning in dynamic relation to its environs. Applying this concept to our discussion, the aspects of life that impact the wellbeing of a grasshopper, for example, may include warmth, sunlight, and grass – and likely do not include things like access to education or childcare services. Thomas Nagel (1974) asked "What is it like to be a bat?" and discussed the limits of imagining other beings' experience of the world. However, we know what

certain things feel like, like hunger, temperature, or pain, and can acknowledge that our individual world of experience is a certain range of abilities limited by our embodied form (Morton 2016). This view, rooted in ecology and evolutionary biology, provides a way to think about and assess the wellbeing of any living thing. A human *umwelt* shares some similarities with those of all living beings – and so humans may be able to understand certain ways of measuring and assessing wellbeing, but other aspects may not be accessible to us. Some may critique this framing as "anthropomorphizing" – projecting human values onto others, however, while we acknowledge that it is not possible for us as humans to fully understand what wellbeing means to others, to say that we cannot understand at all is disingenuous.

The perspective of *umwelt* shares some commonalities with indigenous approaches to non-human wellbeing. Viveiros de Castro writes of Amazonian Indians; "these peoples, animals and spirits have their own perception of the world … The difference is thus not between humans and animals, but is relative and depends on the viewpoint of the subject under consideration. Animals thus see in the same way as humans, but what they see is different because their bodies are different" (Lestel 2013). An understanding of wellbeing built around *umwelt* reframes the living world as a set of overlapping experiential worlds of individual beings. This insight may cause us to question "the ethical legitimacy of the ecological relations in which we engage," and imply a duty to "not dominate (too much) at the expense" of others (Tønnessen, 2011). Given the web of interrelations implied by *umwelt*, the wellbeing of one individual of a species is connected to the wellbeing of all others, such that there are often tradeoffs – "wellbeing" to a wolf means "being eaten" to a moose.

4.2 Species and Population-level Approaches

Conservation biology and non-extinction

Wildlife and conservation biology have provided a rich understanding of how populations of species are distributed and affected by human decision-making, and conservation guidelines often focus on the number of individuals in a population as a metric to determine the "health" of a species (Trombulak et al. 2004). Many authors have called for an increased focus on the wellbeing of these species (Wallach et al. 2018; Bekoff 2013; Moore and Nelson 2011). Lestel (2013) proposes that "ecology should not be concerned only with survival but also with a fulfilled life." For some species, metrics such as body condition, disease status, and individual fecundity can be used to assess health, similar to those used for assessing human health (Fernando et al. 2009; Right Whale Consortium 2018). Cultural knowledge, as described by Jesmer et al. (2018) may also be significant for the wellbeing of species – especially the relationship between the population and the landscape, and the continuity of the knowledge through cultural transmission. However, ways to assess these aspects of wellbeing can be challenging for humans to apply, especially when a species does not share clear commonalities with humans.

4.3 Aggregations Delimited by Space and Physical Processes

Land ethic and ecosystem health: integrity and stability or ecological functioning

One of the first and most cited modern conceptions of more-than-human wellbeing came from Leopold (2001): "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends to do otherwise". This "land ethic" remains influential for many conceptions of wellbeing in the more-than-human world.

The ecosystem health framework, a means to quantitatively operationalize the land ethic, has been used to describe changes in ecosystems (Costanza 1992). Ecosystem health emphasizes vigor, organization, and resilience (Rapport et al. 1998), expressed in biophysical indicators such as nutrient cycling, species richness, and population stability (Chan 2008). These metrics are intertwined with wellbeing of the ecosystem and its constituent beings. However, as Chan (2008) points out, "terms such as degradation, good, and healthy convey values. There is no objective definition of ecosystem health, so our chosen baseline reveals our preferences and worldview." These inherent subjectivities open the concept of ecosystem health to numerous critiques. This points towards ecosystem health having been used primarily as a measure of the ecosystem's ability to support human wellbeing in the long term, rather than as a concern for ecological wellbeing in itself.

Ecosystem services and economic valuation

"Ecosystem services" (ES) are the ecological characteristics, functions, or processes that directly or indirectly contribute to human wellbeing: that is, the benefits that people derive from functioning ecosystems (Costanza et al. 2017). While the ES framework mostly deals with tangible contributions to human wellbeing from the rest of nature, it provides both concepts that justify protecting ecosystems, and a mechanism for humans to articulate their non-Anthropocentric and non-utilitarian values for nature.

Though anthropocentric in its formulation, the framework of cultural ecosystem services provides a means for articulating value held by human individuals and communities. The spiritual and moral value that humans hold for non-humans are included in cultural services, describing *what humans believe is intrinsically valuable in and about non-human nature* rather than *what is objectively valuable in and about non-human nature* (Milcu et al. 2013), and may include understandings of non-human wellbeing.

The problems of determining "intrinsic" versus "instrumental" values in cultural ecosystem services, as well as the entanglement of cultural values in other ecosystem services, has led to the development of a "relational values" framework (Chan et al. 2016; Comberti et al. 2015). In this view, human values for nature cannot be neatly separated into intrinsic and instrumental values; they are inextricably tied up in notions of personal and group identity, moral responsibilities, and notions of "the good life." Thus, human interest in protecting non-human nature always has elements of both intrinsic and instrumental values, where a human may say "protecting nature gives me the opportunity to do the right thing" (Chan et al. 2016).

Emphasizing "relational values" means that humans both receive and give services and goods to and from other parts of the ecosystem, which contribute to wellbeing. We may visualize this as a web of instrumental value and Ecosystem Services (right side of Figure 9.1). For instance, humans receive aspects of wellbeing from other species, and also provide other species wellbeing; for example, mice and corn benefit from habitats humans provide. Similarly, trees support the wellbeing not just of humans, but of many species. Rather than genes or species or "nature" having intrinsic value, all beings (including humans) are entangled in a web of value, wellbeing, and services, much of it not accessible or knowable to humans. This expansive view of Ecosystem Services as a network of wellbeing may find some congruence with indigenous frameworks, which emphasize humans "as components of a complex system that make up with other organisms an ecological web" (Kealiikanakaoleohaililani and Giardina 2016).

"Wildness," "wilderness," and "noninterference"

The ethos of "wilderness" and "wildness" have had a strong influence on ethics in the Western world. Here, we define "wildness" as the principle of independent action and creativity by natural systems (Hettinger and Throop 1999). In this way, ecological wellbeing is the *autonomy* of the ecosystem and its forces. This view is in tension with any other view of improving wellbeing, human or non-human, as it implies that humans should avoid asserting control, even for the purpose of improving wellbeing. In environments that currently have low levels of human disturbance, this conception can be operationalized as wilderness conservation, while in areas with a large anthropogenic influence in the past, humans can undertake to "rewild" a landscape, taking "action at the landscape level with a goal of reducing human control and allowing ecological and evolutionary processes to reassert themselves" (Klyza 2001, p. 285).

Framing wellbeing through the lens of ecological restoration centers on maintaining ecosystems at a state without large-scale human intervention (Angermeier 2000; Czech 2004) or "repairing the damage that humankind has done to the environment" (Tonino 2016). For some, this state is that which preceded industrialization, but others argue that restoration should aim for much older systems and dynamics (Donlan 2005; Tonino 2016). Restoring a perturbed ecosystem to a desired prior state may involve a long-term or indefinite extermination campaign of invasive flora and fauna. This may include the use of hunting, herbicides controlled burns, and reintroductions of previously extirpated species (Shelton 2004). These interventions can have extreme negative wellbeing impacts on members of "invasive" species (Wallach et al. 2018). Kimmerer (in Tonino 2016) discusses how "the restoration targets we choose should be based on our relationship with a place, not just on an abstract idea of what is 'natural.' No matter how we approach it, however, restoration is a human-engineered solution. We decide what this place will become."

Deep-time and cosmic narratives

Incorporating evolutionary concepts may provide ways to think about wellbeing on long timescales. Proponents of concepts such as the Epic of Evolution or the Cosmic Story argue that

accepting evolutionary history helps create a narrative on which to base our moral systems. For one, as Goodenough (2009) argues, it helps develop an empathy for other organisms, not just for the services they offer humans, but as beings themselves; if people accept the "History of Nature," humanity can "ground a common set" of human values (Goodenough 2009). Once we understand "our deep affiliation with, as well as dependence on, all the creatures and habitats of the planet" along with "its wonder and its fragility," there comes an "outpouring of reverence and care" (Goodenough 2009). Relatedly, Brown and Garver (2009) consider that people who truly "understand ecosystems in their evolutionary and cosmic context are people who live in a 'world of wounds,' to use Leopold's phrase." As such, they unavoidably see, "at nearly every turn […] thoughtlessness, violence to other beings on the planet, a palpable lack of caring that is painful to the beholder" (Brown and Garver 2009). In fact, this "aesthetic reaction to these wounds" has been the reason for many conservation efforts (Brown and Garver 2009).

Gaia, Sila, and planetary boundaries

Lovelock and Margulis (1974) demonstrated that the Earth's geochemistry is mediated by the influences of living organisms, and hypothesized that these processes are self-regulating and keep the Earth hospitable for life – a framework which echoes the Inuit concept of "Sila," "the breathe [sic] that circulates into and out of every living thing" and includes climate (Todd 2016; Qitsualik 1998). This planetary perspective of processes has recently been envisioned through the concept of nine planetary boundaries which constitute the biophysical thresholds for a safe operating space for humanity (Rockstrom et al. 2009). The "gaia hypothesis" as articulated by Lovelock (2000, 2007) argues that humanity should be concerned with the wellbeing of Gaia for reasons of self-preservation, but others have often conceived of Gaia as having wellbeing in "her" own right. It is important to acknowledge that the expansion to a planetary perspective be it geophysical (Gaia) or geotemporal (Anthropocene) often comes with a "flattening," the erasure of differences between individuals and experiences.

4.4 Approaches Which Cross Scales

Our histories suggest that humans have held concern for the rest of nature since before the dawn of recorded history. Indigenous and other traditional worldviews often discuss care for the more-than-human world in terms very different from those used by scientifically minded environmentalists. However, there are important similarities. In both discourses, there is a belief in the common interests of human and non-human nature – that the behaviors, attitudes, and processes that support the two are the same, at least in the long run. For instance, the Maori state in the agreement between Whanganui River and the Crown, "Ko au te awa, ko te awa ko au—the health and wellbeing of the Whanganui River is intrinsically interconnected with the health and wellbeing of the people" (Callion 2017). Ishmael Angaluuk Hope describes the Inupiaq view that "We are taught that there is no hierarchy. It's not "everything else, and then 'man', you know,

‘humans’, on top, they’re separate from everything. We’re taught that everything is equal*”* (Hope et al. 2014).

Indigenous authors, scholars, and scientists have contributed significantly to discourses of caring for the more-than human. However, we must balance the need to include indigenous voices and the tendency towards “appropriation of Indigenous thinking in European contexts without Indigenous interlocutors present to hold the use of Indigenous stories and laws to account [which] flattens, distorts and erases the embodied, legal governance and spiritual aspects of Indigenous thinking” (Todd 2014). Indigenous and traditional perspectives both overlap and contrast with scientific and Western ones discussed here. For an example of a synthesis between these frameworks see Kealiikanakaoleohaililani and Giardina (2016).

Many perspectives emphasize human duties of proper relationships with other entities in nature, and that these entities achieve wellbeing by being treated with respect, honor, and care by human actors (Todd 2014; Nadasdy 2007; Brightman 1993). Consider the concept of Honorable Harvest, as discussed by Kimmerer (in Tonino 2016): “The Honorable Harvest tells us to take only what we need and never more than half of what’s available, to use everything that we take, to minimize the harm that is done, to share what we’ve taken, and to be grateful and always return the gift, giving something back in return.” This recognizes that it may be challenging to distinguish between needs and wants when assessing wellbeing.

These perspectives often include concern for beings not always considered to have interests within the scientific worldview: deceased animals, animals as species, whole ecosystems, creation as a whole or non-biotic aspects of nature. For example, while rivers are partially biological systems, the moral value assigned to rivers in Hindu cosmology is largely distinct from their ecological processes, at least in practice (Tomalin 2002); spiritual values for rivers can be in direct conflict with concern for ecological health (Nagarajan 1998). Conceptions of “rights” for nature, or aspects thereof, mix non-Western ontologies with the Western legal regime (Vidal 2011). Rights imply entitlements or freedoms, and are inextricably tied up in most Western conceptions of wellbeing. As of now, four countries, New Zealand, Ecuador, India, and Columbia, have given rivers legal standing (Chapron et al. 2019). Thinking about the legal rights of non-humans, and even those entities that are not always considered “alive,” may open pathways to explore how the wellbeing of those entities may be considered.

5. RESEARCH QUESTIONS AND SPECIFIC CHALLENGES

5.1 Cross-scale Tradeoffs

In some cases, the wellbeing of individual animals appears to conflict with goals of ecological restoration and conservation. Efforts to restore ecosystems to greater health or naturalness by hunting invasive species, and rewilding efforts that create conditions where feral animal populations may suffer, have been criticized on animal welfare or rights grounds, displaying inherent tradeoffs between “ecocentric” and “zoocentric” ethical imperatives (Shelton 2004; van Klink and Kampf n.d.; Keulartz 2009; Barkham 2018). Some have even suggested that concerns

about individual animals' wellbeing supports drastic human management of natural systems, including humane extinction of predators, and distribution of contraceptives for other animals (McMahan 2015). Peter Singer (2015) argues that "[J]udging by our past record, any attempt to change ecological systems on a large scale is going to do far more harm than good." After all, "it is well documented that preventing damage can be catastrophic" (O'Neill 2001).

There may also be tradeoffs between individual wellbeing and that of their species as a whole. Predation culls weaker animals, including those with disease and high parasite burdens, increasing the overall health and vigor, and arguably the wellbeing of future generations (Everett 2001), though the animal eaten is obviously harmed. From an evolutionary view, the wellbeing of species in predator–prey or parasitic relationships is inexorably linked; through selective pressures, such species co-create one another (Everett 2001). Indeed, evolution by natural selection is foundational to the existence, and thus the ability to experience wellbeing, of all individuals of all species.

The question of noninterference becomes extremely difficult to answer when it comes both to having different standards for humans and other-than-humans, and when acknowledging that we *have and continue* to intervene globally at an alarming scale (thus the designation of the Anthropocene; Lewis and Maslin 2015).

How can we reconcile sickness, death, predation, among different members of our ecological world?

A patch of forest succumbs to fungal blight in a wet year as a part of healthy forest dynamics, a baby caribou is eaten by a wolf pack: but we certainly do not often justify human suffering, death, and being eaten by predators as part of healthy ecosystem dynamics. How can you not interfere when you are in relation to all others?

How do we take the more-than-human world into account when assessing wellbeing?

5.2 Human/More-than-human Tradeoffs

Much destruction of the lives and habitats of others, both human and non-human, is justified in the name of increasing human wellbeing (such as cutting forests to increase economic growth, land clearing to increase food production, consumption of single-use plastics to increase human health, and fossil fuel extraction and for just about every part of our economy). Here we list a range of broad research questions which may be answered by transdisciplinary collaborations between Ecological Economics and other disciplines.

How can we increase human wellbeing without decreasing the wellbeing of others in the whole community of life?

Which aspects of human wellbeing (eudaemonic vs hedonic) are most able to be increased with fewer tradeoffs for other species? What methods can we use to focus increases in wellbeing for those components of wellbeing, while minimizing increases in those aspects of wellbeing which cause the most harm to others?

In which cases have increases in human wellbeing led to increases in wellbeing for other species and beings?

How can wellbeing be measured or articulated in a way that includes all those beings in the community of life who are able to experience wellbeing? Do these metrics provide for ways to achieve all we want for human wellbeing? Are metrics that are based on the state of individuals too restrictive for such questions?

How can the (perhaps unknown) wellbeing of non-humans be integrated into human decision-making?

In what ways are human and non-human wellbeing entangled? Do frameworks which explicitly provide for the wellbeing of non-humans provide protection against short-sightedness? Does considering more-than-human wellbeing ease the consideration of a diversity of human ways of being well from diverse places and cultures?

In what situations/under what conditions would action/policy recommendations differ if considering non-human wellbeing as opposed to solely a wise and precautionary consideration of long-term human thriving?

RESEARCH AND ACTION AGENDA

- How does taking non-human wellbeing into consideration inform and improve how we assess human wellbeing?
- How are Singer's and Regan's ideas reconcilable with ecology?
- How do beings that do not suffer in a way that humans can easily understand, perhaps clams or cockroaches, experience wellbeing or the lack of wellbeing?
- Can wellbeing be increased for all beings, or does the wellbeing of one depend on the suffering of others?
- Can the concept of *umwelt* be used to understand the different ways wellbeing might be experienced by different beings, based on the way they experience the world?
- What does acknowledging the perceptual differences between experiences of wellbeing do to our ability to acknowledge the wellbeing of others, including humans?
- What aspects of wellbeing are common to different groups of life – for example: all humans, or all mammals, or all multi-celled organisms?

- Different levels of function are deeply related, and which are emphasized may have differing consequences. For instance, an organism within a well-functioning ecosystem may have good chances of functioning well, itself. What of the cells within the organism?
- Might we speak of a virus' flourishing? Or a cancer cell, whose success may lead to the collapse of the organism or higher-level system.
- When a species is very different from humans, how can we assess wellbeing beyond simply "survival" of the species?
- What aspects of life which we consider to be detrimental to human wellbeing, such as the threat of predation, are reconcilable with other forms of wellbeing and conservation? How do we measure wellbeing in animals, plants, and others?
- How might we decide if a certain action might decrease the wellbeing of some individuals of one species while increasing the wellbeing of some individuals of other species – for example, when thinking about species deemed "invasive" (Theodoropoulos 2003)?
- In the field of conservation biology, species are often treated as having value in and of themselves, with many programs dedicated to preventing the extinction of species, or increasing the populations of species considered to be at risk of extinction. But how does the number of individuals of a species, or the existence of a species, relate to wellbeing?
- How do measurements currently used relate to wellbeing, such as the rate of increase of a population, or the maintenance of a population over time? Are these measurements true assessments of how individuals of the species are experiencing wellbeing?
- Could a species or population be performing well on certain metrics, while still not experiencing wellbeing (perhaps domesticated and factory-farmed animals)?
- On what level is wellbeing best considered?
- Does a whole system experience wellbeing, or is it individuals within that system who experience wellbeing?
- Does working towards a "well-functioning, well-ordered" system lead to subjective wellbeing for those who experience it?
- Is wellbeing a necessary component of a stable, integrated, and beautiful system, or could a system be stable, yet suboptimal when it comes to wellbeing?
- If only human wellbeing is taken into account, do we see repeated focus on privileging short-term human wellbeing over medium- to long-term human wellbeing, as well as immediate and continued negative impacts on the wellbeing of other species, such as in forest management (O'Neill 2001)?
- While considerations of the wellbeing of malaria parasites (and the negative correlation between them and human wellbeing) are generally considered bizarre, if we take into account the inherent conflicts of interests present in an ecosystem, can we gain insight into the role these conflicting interests play in the experience of wellbeing?
- Would wellbeing exist without ecological and evolutionary conflict?
- How can the framework of ecosystem health incorporate the pluralism of ecological being?

- Can an framework such as Ecosystem Services ever fully account for the wellbeing of species who are not human?
- Can these frameworks consider the relational web of wellbeing of individuals, species, or ecosystems if humans are not involved?
- How much should humans do to increase the wellbeing of others?
- Should we focus on minimizing the harm we continue to be responsible for, through environmental degradation, climate change, and other ways we harm the more-than-human world?
- How have human changes in ecosystems led to changes in wellbeing?
- Does the presence of predators lead to greater overall wellbeing among individuals of species than an ecosystem without predators?
- How can our understanding of natural selection and extinction inform our ideas of wellbeing?
- Is the wellbeing of some individuals dependent on the extinction of others, for example, is human wellbeing dependent on smallpox being made extinct, or is the wellbeing of many beings alive today dependent on non-avian dinosaurs having gone extinct?
- Even though smallpox causes grievous harm to humans, can we use a shared sense of wellbeing to empathize with diseases or species we come into conflict with, to see if considering the wellbeing of those beings might lead to new ways to coexist?
- What would a framework which focused on the wellbeing of our "enemies," like mosquitos and crop pests, look like?
- Can a planet experience wellbeing?
- How have different cultures articulated wellbeing on the scale of climate and cycles of life?
- What are the important justice, ethical, and moral considerations for responsibility and agency to consider when connecting anthropocentric wellbeing and planetary wellbeing, and at what timescales?
- Does this planetary wellbeing perspective inform considerations of all wellbeing?
- Does Gaia offer a way to more holistically consider and address the anthropocentric transgression of planetary boundaries within the Anthropocene?
- When we think about wellbeing, how can we separate needs and wants, both our own and those of other humans and other beings?
- Do considerations of other-than-human wellbeing differ between humans who live in different relationships with other species, such as between societies which differ in their primary mode of acquiring food and other resources – agricultural, fishing, hunting, or the range of cultures which use different means?
- How does the way that humans in a society interact with non-humans (farming, factory-farming, hunting, fishing) change how wellbeing is conceived of? How can these conceptions be incorporated into decision-making and social/institutional norms?

REFERENCES

Abram, D. 1996. The Spell of the Sensuous : Perception and Language in a More-than-Human World. Pantheon Books.

Angermeier, P. L. 2000. "The Natural Imperative for Biological Conservation." *Conservation Biology* 14(2): 373–381.

Barkham, P. 2018. "Dutch Rewilding Experiment Sparks Backlash as Thousands of Animals Starve." *The Guardian*, April 27, 2018, sec. Environment.

Bekoff, M. (ed.) 2013. *Ignoring Nature no More: The Case for Compassionate Conservation*. Chicago, IL: University of Chicago Press.

Bentham, J. 1879. *An Introduction to the Principles of Morals and Legislation*. London: Clarendon Press.

Brevik, K. and Barbieri, L. May 2019. "There Is No Magic Wall." Minding Nature.

Brightman, R. A. 1993. *Grateful Prey: Rock Cree Human–Animal Relationships*. Berkeley, CA: University of California Press.

Brown, P. G. and Garver, G. 2009. *Right Relationship: Building a Whole Earth Economy*. San Francisco, CA: Berrett-Koehler Publishers.

Chan, K. M., A, Balvanera, P., Benessaiah, K., Chapman, M., Díaz, S., Gómez-Baggethun, E., Gould, R., et al. 2016. "Opinion: Why Protect Nature? Rethinking Values and the Environment." *Proceedings of the National Academy of Sciences* 113(6): 1462–1465.

Chapron, G., Epstein, Y. and López-Bao, J. V. 2019. "A Rights Revolution for Nature." *Science* 363(6434): 1392–1393.

Comberti, C., et al. 2015. "Ecosystem Services or Services to Ecosystems? Valuing Cultivation and Reciprocal Relationships between Humans and Ecosystems." *Global Environmental Change* 34: 247–262.

Costanza, R. 1992. "Toward an Operational Definition of Ecosystem Health." *Ecosystem Health: New Goals for Environmental Management* 239: 269.

Costanza, R., de Groot, R., Braat, L., Kubiszewski, I., Fioramonti, L., Sutton, P., Farber, S. and Grasso, M. 2017. "Twenty Years of Ecosystem Services: How Far Have We Come and How Far Do We Still Need to Go?" *Ecosystem Services* 28.

Czech, B. 2004. "A Chronological Frame of Reference for Ecological Integrity and Natural Conditions." *Natural Resources Journal* 44(4): 1113–1136.

Donlan, J. 2005. "Re-Wilding North America." *Nature* 436(7053): 913.

Everett, J. 2001. "Environmental Ethics, Animal Welfarism, and the Problem of Predation: A Bambi Lover's Respect For Nature." *Ethics and the Environment*: 42–67.

Fernando, P., Janaka, H. K., Ekanayaka, S. K. K., Nishantha, H. G. and Pastorini, J. 2009. "A Simple Method for Assessing Elephant Body Condition." Gajah. Vol. 31.

Goodenough, U. 2009. Ecomorality: Toward an Ethic of Sustainability. In L. Mazur (Ed.), *Pivotal Moment: Population, Justice, and the Environmental Challenge* (pp. 372–382). Washington, DC; Covelo, California: Island Press.

Guerrero, R., Margulis, L., Berlanga, M., Bandi, C., Macallister, J. and Margulis, L. 2013. "Symbiogenesis: The Holobiont as a Unit of Evolution." *International Microbiology* 16(3): 133–143.

Hausdorf, B. 2011. "Progress Toward a General Species Concept." *Evolution* 65(4): 923–931.

Hettinger, N. and Throop., B. 1999. "Refocusing Ecocentrism." *Environmental Ethics* 21(1): 3–21.

Hope, I. A., Veryovka, D., Koenig, D., Roberts, G., Swanson, M. and Vesce, S. 2014. "Never Alone." E-Line Media.

Huta, V. 2018. "Pursuing Eudaimonia Versus Hedonia: Distinctions, Similarities, and Relationships." In *The Best within Us: Positive Psychology Perspectives on Eudaimonia* (pp. 139–158). Washington, DC: American Psychological Association.

Jesmer, B. R., Merkle, J. A., Goheen, J. R., Aikens E. O., Beck, J. L., Courtemanch, A. B., Hurley, M, A., et al. 2018. "Is Ungulate Migration Culturally Transmitted? Evidence of Social Learning from Translocated Animals." *Science* 361 (6406): 1023–1025.

Kealiikanakaoleohaililani, K. and Giardina, C. 2016. "Embracing the Sacred: An Indigenous Framework for Tomorrow's Sustainability Science." *Sustainability Science* 11: 57–67.

Keulartz, Jozef. 2009. "Boundary Work in Ecological Restoration." *Environmental Philosophy* 6(1): 35–55.

Latour, B. 2018. Facing Gaia: Eight Lectures on the New Climatic Regime.

Leopold, A. 2001. *A Sand County Almanac*. Oxford: Oxford University Press.

Lestel, D, and études cognitives. 2018. "The Withering of Shared Life through the Loss of Biodiversity." *Social Science Information* 52(2): 307–325.

Lewis, S. L. and Maslin, M. A. 2015. "Defining the Anthropocene." *Nature* 519(7542): 171–180.

Margulis, L. 1976. "Genetic and Evolutionary Consequences of Symbiosis." *Experimental Parasitology* 39(2): 277–349.

Mayer, E. A., Knight, R. Mazmanian, S. K., Cryan, J. F. and Tillisch, K. 2014. "Gut Microbes and the Brain: Paradigm Shift in Neuroscience." *The Journal of Neuroscience : The Official Journal of the Society for Neuroscience* 34 (46): 15490–15496.

McMahan, J. 2015. "The Moral Problem of Predation." *Philosophy Comes to Dinner: Arguments about the Ethics of Eating*, 268–294.

Millenium Ecosystem Assessment, 2005. "Ecosystems and Human Wellbeing."

Milligan, T. Speciesism as a Variety of Anthropocentrism. 2011 Boddice, R. (2011) Anthropocentrism: Humans, Animals, Environments

Moore, K. D. and Nelson, M. P. 2011. *Moral Ground: Ethical Action for a Planet in Peril*. San Antonio, TX: Trinity University Press.

Morton, T. 2016. *Dark Ecology: For a Logic of Future Coexistence*. New York: Columbia University Press.

Naci, H. and Ioannidis, J. P. A. 2015. "Evaluation of Wellness Determinants and Interventions by Citizen Scientists." *Journal of the American Medical Association* 314(2): 121.

Nadasdy, P. 2007. "The Gift in the Animal: The Ontology of Hunting and Human–Animal Sociality." *American Ethnologist* 34(1): 25–43.

Norton, B. G. 2008. "Convergence, Noninstrumental Value and the Semantics of 'Love': Comment on McShane." *Environmental Values* 17(1): 5–14.

O'Neill, R. V. 2001. "Is it Time to Bury the Ecosystem Concept? (With Full Military Honors, of Course!)." *Ecology*. Vol. 82.

Plumwood, V. 1996. "Androcentrism and Anthrocentrism: Parallels and Politics."

Qitsualik, R. 1998. "Word and Will Part Two: Words and the Substance of Life." *Nunatsiaq News* November 12, 1998.

Quammen, D. 2018. *The Tangled Tree: A Radical New History of Life*.

Ramp, D. and Bekoff, M. 2015. "Compassion as a Practical and Evolved Ethic for Conservation." *BioScience* 65(3): 323–327.

Rapport, D. J., Costanza, R. and McMichael, A. J. 1998. "Assessing Ecosystem Health." *Trends in Ecology & Evolution* 13(10): 397–402. https://doi.org/10.1016/S0169-5347(98)01449-9.

Regan, T. 2004. *The Case for Animal Rights*. Berkeley, CA: University of California Press.

Right Whale Consortium. 2018. North Atlantic Right Whale Consortium 2018 Database (Anderson Cabot Center for Ocean Life at the New England Aquarium, Boston, MA, U.S.A.).

Shelton, J. 2004. "Killing Animals That Don't Fit In: Moral Dimensions of Habitat Restoration." *Between the Species* 13(4): 3.

Singer, P. 2002. *Animal Liberation*. New York: Ecco.

Singer, P. 2015. *Animal Liberation: The Definitive Classic of the Animal Movement*. New York: Open Road Media.

Summers, J. K., Smith, L. M., Case, J. L. and Linthurst, R. A. 2012. "A Review of the Elements of Human Wellbeing with an Emphasis on the Contribution of Ecosystem Services." *Ambio* 41, 327–340.

Theodoropoulos, D. I. 2003. *Invasion Biology: Critique of a Pseudoscience*. Blythe, CA: Avvar Books.

Todd, Z. 2014. “Fish Pluralities: Human–Animal Relations and Sites of Engagement in Paulatuuq, Arctic Canada.” *Etudes/Inuit/Studies* 38 (1–2): 217–238.

Todd, Z. 2016. “An Indigenous Feminist’s Take on the Ontological Turn: ‘Ontology’ is Just Another Word for Colonialism.” *Journal of Historical Sociology* 29(1): 4–22.

Tonino, L. 2016. “Two Ways of Knowing: Robin Wall Kimmerer on Scientific and Native American Views of The Natural World.” *The Sun*.

Tønnessen, M. 2011. “Mapping Human Impact – Expanding Horizons: Interdisciplinary Integration.” *The Space of Culture – The Place of Nature in Estonia and Beyond*: 93–106.

Trombulak, S. C., Omland, K. S., Robinson, J. A., Lusk, J. J., Fleischner, T. L., Brown, G. and Domroese, M. 2004. “Principles of Conservation Biology: Recommended Guidelines for Conservation Literacy from the Education Committee of the Society for Conservation Biology.” *Conservation Biology* 18(5).

Uexküll, J. von. 1957. “A Stroll through the Worlds of Animals and Men.” In Claire H. Schiller (Ed. and trans.), *Instinctive Behavior: The Development of a Modern Concept* (pp. 5–80). New York: International Universities Press.

van Klink, Ed GM, and H. Kampf. n.d. “Implementing Veterinary and Animal Welfare Regulations in Semi-Natural Pastoral Landscapes in the Netherlands.”

Watts, V. 2013. “Indigenous Place-Thought and Agency amongst Humans and Non-humans (First Woman and Sky Woman go on a European Tour!).” *DIES: Decolonization, Indigeneity, Education and Society* 2(1): 20–34.