Water management: pragmatic and ethical issues for species-inclusive and sustainable water policies

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Abstract. *The Leaders' Pledge for Nature highlights the fact that since ecosystems underpin human well-being, we need to "recognize that the business case for biodiversity is compelling". In this article we argue that, in all areas of water management, there is an urgent need for a paradigmatic and practical shift to species-inclusive and sustainable water policies and practices. We believe that policies prioritizing human interests inevitably promote unsustainable forms of water management and use. This article outlines an alternative vision based on the "Half-Earth" (Wilson 2016) perspective,*

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emerging from the "nature needs half" or NNH movement. NNH researchers state that to maintain viable long-term populations of most of the Earth's remaining species, approximately 50% of landscapes and seascapes need to be protected from intensive human economic use. However, while terrestrial conservation measures are prominent in the literature, a Half-Earth, of fresh and sea waterscapes is rarely discussed. Our article addresses this omission. We ask what species-inclusive policies and practices in marine and freshwater conservation would look like? If government policy-makers direct spending towards sustainable fishing, for example, how can this align with a focus on marine biodiversity? How can an ecocentric view tackle the illicit finance involved in illegal fishing? How do we marry up existing conservation policy, which is people-centric, with ecocentric 'nature positivity'? We reflect on possible implications for ecocentric water management and sustainable water policies and practices from examples of non-governmental organizations (NGOs) Sea Shepherd and Greenpeace. We also note the potential for Strang's proposed 're-imagined communities' approach to be applied to river catchment and marine management, providing a conceptual model for rebalancing wider decision-making processes to include non-human needs and interests.

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1. Introduction: 'nature needs half' movement and water

The International Union for Conservation of Nature (IUCN, 2022) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019) have made it clear that, with increasing anthropogenic pressures on the environment, biodiversity loss, both on land and in aquatic ecosystems, has been accelerating rapidly. On 28 September 2020, a *Leaders' Pledge for Nature* was issued. Representing 64 countries from all the world's regions and the European Union, the heads of state promised to "step up global ambition for biodiversity and to commit to matching our collective ambition for nature, climate and people with the scale of the crisis at hand" (https://www.leaderspledgefornature.org). The pledge also highlighted the key drivers of the environmental crisis and the interdependence between ecological degradation and a decline in social and economic wellbeing.

> We are in a state of planetary emergency: the interdependent crises of biodiversity loss and ecosystem degradation and climate change - driven in large part by unsustainable production and consumption - require urgent and immediate global action. Science clearly shows that biodiversity loss, land and ocean degradation, pollution, resource depletion, and climate change are accelerating at an unprecedented rate. This acceleration is causing irreversible harm to our life support systems and aggravating poverty and inequalities as well as hunger and malnutrition. Unless halted and reversed with immediate effect, it will cause significant damage to global economic, social and political resilience and stability and will render achieving the Sustainable Development Goals impossible.[1]

Further, the *Leaders' Pledge for Nature* highlights the fact that since "nature fundamentally underpins human health, wellbeing, and prosperity', we need to "recognize that the business case for biodiversity is compelling". Put in monetary terms, the "benefits of restoring natural resources outweigh the costs ten-fold, and the cost of inaction is even higher".[2] This collective pledge demonstrates that governments and non-governmental organizations (NGOs) are trying to develop a vision of what "nature positive" conservation would look like. But it remains wedded to the assumptions about sustainability articulated in the Brundtland Report (1987) and more recently in the United Nations' Sustainable Development Goals (SDGs).[3]

The concept of sustainable development is also fundamental to the UK Government's recent Foreign, Commonwealth and Development Office report (FCDO, 2022), stating that the primary purpose of preserving or restoring the environment is for people's welfare and poverty alleviation. On a similar note, in relation to water, Palma (2017) emphasizes that marine biodiversity "is a critical aspect of all three pillars of sustainable development - economic, social and environmental - supporting the healthy functioning of the planet and providing services that underpin the health, well-being and prosperity of humanity" (p. 001)[4].

In practice, however, the focus on human economic development and economic growth, which is central to the SDGs, has often meant increased production and

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[1] https://www.leaderspledgefornature.org

[2] https://www.leaderspledgefornature.org

[3] https://sdgs.un.org/goals

[4] Meulenberg et al. (2022) also address these three factors through the lens of interdisciplinarity in this special issue (*Visions for Sustainability*, 18, pp. 11-36).

consumption of natural resources (Kopnina, 2020). Over an additional billion people have been born between the nineteen eighties and the time of writing this article. Yet sustainable development policies have been woefully and consistently inadequate in addressing biodiversity loss and habitat destruction (IPBES, 2019; Ceballos, Ehrlich and Raven, 2020; IUCN, 2022).

Biodiversity loss in marine environments has often been framed in anthropocentric terms, for example highlighting the coral reefs' demise and its impact on the tourist industry, or declining fishing stocks, with marine high temperature extremes amplifying the impacts of climate change on fisheries (Cheung et al., 2021). An even greater problem has been the loss of marine species that were not economically valued, but merely sacrificed as bycatch.[5]

This is not merely a matter of economic loss: it raises a question as to whether multi-species flourishing is even possible in the context of human development. Marine biologists studying changes in aquatic environments have long noted that in order to reverse ocean acidification, degradation of coral reefs, water pollution, or loss of fish populations the driving anthropogenic causes of decline need to be addressed (e.g., Doney et al., 2009; Good et al., 2020). To achieve multi-species flourishing in the context of water habitats it is necessary to redirect biodiversity conservation spending to support "nature positive" approaches (FCDO, 2022). This means, according to The Global Goal for Nature (naturepositive.org), reversing the current declines in biodiversity so that species and ecosystems can begin to recover. As social scientists have observed, these require changes in values and behaviour (e.g., Stern and Dietz 1994; Dunlap and York 2003). In line with this emerging scholarship, we argue that to address biodiversity loss it is necessary to shift away from a focus on economic benefits towards more nature-inclusive non-anthropocentric approaches (Washington, 2018; Taylor et al., 2020; Piccolo et al., 2022).

2. Nature needs half

Conservation biologists, as well as other scientists, including social scientists, have maintained that to sustain viable populations of most of Earth's remaining species we need to protect approximately 50% of all lands and waterscapes from intensive human economic use (Noss & Cooperrider, 1994; Locke, 2014; Kopnina, 2016b; Cafaro et al., 2017; Crist et al., 2021; Kopnina, Mahammad and Olareru, 2022). Popularised by the late biologist Edward O. Wilson (2016), the

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[5] https://www.worldwildlife.org/threats/bycatch

"nature needs half" (NNH) movement is committed to ecocentric ethics (Taylor et al., 2020; Crist et al., 2021; Piccolo et al., 2022), new interspecies relational arrangements that reject anthropocentrism (Strang, 2017, 2021, Wallach et al., 2020), and better resolutions of anticipated conflicts between human and non-human needs and interests (Crist et al., 2021).

NNH is grounded in basic principles: that all living beings have intrinsic value; and that all species have a right to continued existence, free from anthropogenic pressures; and that there is a need to recognize that habitat destruction is the leading cause of biodiversity loss (Noss & Cooperrider, 1994; Locke, 2014; Kopnina, 2016b; Cafaro et al., 2017; Crist et al., 2021). NNH expresses three main tenets: (1) habitat loss and degradation are the leading causes of biodiversity loss, (2) current protected areas are not extensive enough to stem further loss of biodiversity, and (3) it is morally wrong for our species to drive other species to extinction (Wilson, 2016). These principles generate an urgent imperative to set aside much more habitat to preserve other species, and conservation biologists agree that a majority of Earth's existing species will not survive unless we do so. NNH scholars argue that intraspecies justice should not come at the expense of interspecies justice (Cafaro et al., 2017; Kopnina et al., 2018; Crist et al., 2021). This applies to all species whether they depend upon terrestrial or water habitats, but this article particularly focuses on water, as water is as essential for terrestrial species as it is for life in marine and freshwater environments.

If we move towards approaches that "explicitly include ecocentric values and peoples' moral obligations to nature" (Piccolo et al., 2022), it is necessary to reflect on how to square this commitment to uphold non-human interests with a still urgent need to address human poverty and deprivation. For instance, if government policy-makers direct spending towards sustainable fishing, how does that align with a focus on marine biodiversity? How can an ecocentric view tackle the illicit finance involved in illegal fishing? How do we marry existing conservation policy, which is people-centric, with ecocentric "nature positivity"?

This raises an important point: that even a shift across to 'ecocentric' thinking fails to challenge the intrinsically dualistic assumptions that human and non-human kinds inhabit separate domains which are fundamentally alienated from and in competition with each other. Basically, anything that divides 'eco' and 'anthro' can be problematic, and that 'ecocentric' implies a swing of the pendulum to the other 'side' even if its proponents do appreciate that there are no 'sides'. But it is perennially difficult to get away from a separate "human" category of human. Economic development and nature conservation are often presented as a trade-off, or at best as complementary. It is this alienation, this

vision of separation, that permits the "externalization" of the costs of human activities to the non-human domain, and it is compounded by the unequal assessment of the value of the latter and the dominance of anthropocentrism, which positions humankind as not only separate from but also "above" a non-human world (Wallach et al., 2020; Piccolo et al., 2022).

So, while there is a strong case for a compensatory ecocentric bias to restore the well-being of non-human species in terms of policy and practice, we need, ultimately, to gain mainstream acceptance of conceptual models that acknowledge that human and non-human kinds inhabit and co-create a single, shared world that is materially and conceptually indivisible. In this sense, although dividing the world into a 'human half' and 'half for nature' is a useful heuristic device for underlining the need to protect habitats sufficiently to support biodiversity, it carries some risk of affirming the nature-culture dualism that undermines these goals. It is therefore important to stress that the NNH movement is not aiming to divide the world into human and non-human reserve areas, but with creating a balance that protects sufficient – i.e., half the world's – living space and resources for non-human species to be sustained within a whole, interdependent world. This is particularly important in the case of water management. In writing this article, we consider the concept of "management" that mimics the preferred language of the United Nations and the *Leader's Pledge for Nature*, to refer to pragmatic and practical implications of what ecocentric water sharing would look like.

3. Water management: examples from NGOs and lessons for NNH

Since the *Leaders' Pledge for Nature* highlights the "business case" (as they phrase it) for biodiversity conservation, the question of management comes to the fore. While NNH has ambitious plans, it still needs to develop the agenda for biodiversity in both terrestrial and marine as well as fresh water. How it might do so can be illustrated here by the case of water management by environmental non-government organizations (ENGOs) Sea Shepherd, and Greenpeace, who deal directly or indirectly with marine or freshwater biodiversity protection. Sea Shepherd and Greenpeace fit within the larger ENGO movement, including the World-Wide Fund for Nature (WWF), and Friends of the Earth, who have long focused on increasing awareness and encouraging individuals to take consumer responsibility for their choices in terms of consumption.

In business terms, marketing is often attached to the idea of selling a product or service to people: it is therefore not just anthropocentric, but economy centered.

However, as non-profit organizations, NGOs emphasize a different type of management practice, acting as advocates for certain causes and neglected populations. Rather than selling a product or a service that the buyer will use, they allow citizens to invest in issues that are important to them (Andreasen and Kotler, 2008, p.6). For years it was seen as inappropriate for non-governmental organizations to act as managers:

> Twenty years ago, management was a dirty word for those involved in nonprofit organizations. It meant business, and nonprofits prided themselves on being free of the taint of commercialism and above such sordid considerations as the bottom line. Now most of them have learned that nonprofits need management even more than business does, precisely because they are the discipline of the bottom line. The nonprofits are, of course, still dedicated to 'doing good'. But they also realize that good intentions are no substitute for organization and leadership, for accountability, performance, and results. Those require management and that, in turn, begins with the organization's mission (Drucker 1989, p. 91).

The necessity to compete for the loyalty of donors and to negotiate with much more powerful corporate entities means, however, that management and marketing have become an important aspect of running NGOs (Andreasen and Kotler, 2008, p. 11).

The Sea Shepherd Conservation Society is a non-profit environmental organization promoting marine conservation. The Sea Shepherd needs the support of donors and volunteers to protect endangered or illegally fished or hunted marine species, and it seeks this support not by conventional marketing but via the media. For example, brand awareness is generated through the television program Animal Planet, and through Whale Wars, which follows the activities of Sea Shepherd against predominantly Japanese whalers. In confronting commercial whalers, the program has generated considerable controversy, but it has also helped to open up a discussion about the treatment of non-human animals and the notion that water management may include literally patrolling the sea.

Some interrelated issues come into focus: the involvement in commercial activities (lotteries and merchandise) on the one hand, and the issue of Native People's rights in relation to fishing. These highlight some of the ethical but also pragmatic dilemmas in "ecocentric water management", as explained below. Within the Netherlands, such blending is exemplified by the sources of funding an NGO might receive. For example, Sea Shepherd became a beneficiary of the

Nationale Postcode Loterij, which not only provides a profit to its lottery winners but also donates much of the proceeds to non-profit organizations and helps to generate free publicity for them (Boutesteijn, 2012). As a beneficiary, Sea Shepherd has developed several volunteer-led programs to address larger issues associated not just with water but also seeking to protect water's non-human inhabitants (Boutesteijn, 2012). Sea Shepherd also generates profit by selling products, from T-shirts to backpacks[6] (https://shop.seashepherd.org/). This commercial activity, which will be further addressed in the Discussion section below, highlights one of the ironies of 'management' by non-profit organizations. Some controversies can ensue. Holmes Rolston, a well-known environmental philosopher, describes the following situation:

> Several indigenous groups in the United States, especially Alaska, maintain their right to cultural whaling. The Makah tribe in Washington state has reinstated their right to whaling, going back to the Treaty of Nakah Bay (1855) in which they ceded to the United States over half of their ancestral land to ensure their right to continue hunting whales. They may be traditional people, but they know how to enlist excellent lawyers… From the 1920's until the 1980s, the tribe ceased hunting, concerned about whale survival. After the gray whale was removed from the Endangered Species list in 1994, they decided to hunt again, revitalizing their ancient tradition. They harpoon the whale from a cedar canoe manned by eight men, trained for the hunt both physically and spiritually. They claim great respect for the whales they kill. They now shoot the whale with a rifle after it is harpooned, so that it dies with less pain. A number of Makah tribal members opposed resuming the hunt.
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> In 1999, the United States government allowed the Makah to take five whales a year for their ancestral hunt. They killed their first whale on May 17, 1999, with TV cameras in helicopters overhead, and with the threat of harassment by protestors' boats. Environmentalists are concerned about viable whale populations, especially if other native peoples make similar claims. There is a quota of 124 whales for native groups in the Northwest. Many also hold that eating whales, like eating chimpanzees, is immoral. Several hundred environmentalist and animal rights groups from over two dozen countries opposed the hunt, though Greenpeace and the Sierra Club did not.

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[6] https://shop.seashepherd.org/

Their permission to hunt was reversed in 2001. The issue has remained contorted by differing decisions, often involving environmental impact. Some of the 1999 Makah hunters, though now unauthorized, killed a whale in September 2007, the whale was immediately seized by the U.S. Coast Guard and sank unharvested (this is the word used by the Makah). The question posed for environmental anthropologists is what insights they can offer for enriching, or resolving, this issue, especially those relative to the ethical issues: the rights of the Makah, the 'rights' of the whales, and their conservation (2016, p. 22).

This certainly brings forth some ethical issues involved in not just "managing" territorial waters but thornier questions about ecological justice and non-human rights that NNH needs to consider further. One such issue is illegal fishing in Africa, with Sea Shepherd "working with local authorities and regional partners to combat one of the biggest threats to marine wildlife today: illegal, unreported, and unregulated (IUU) fishing".[7] But illegal fishing is often carried out by communities struggling with poverty, raising tensions between human or indigenous rights advocates, and those concerned about sustainability and animal welfare. This case therefore illustrates some of the complex ethical dilemmas involved in decision-making when multiple species are concerned.

A different type of water management is attempted by another ENGO, Greenpeace, which has historically been concerned with water pollution but has also recently developed regional focal points. Greenpeace's European division stated that "the European Union and governments must protect our water from the pollution that kills wildlife and harms our health"[8]. It has concentrated on issues such as single plastics, harmful industrial processes such as chemical dumping, and wider issues caused by the poor management of plastic and toxic waste.

The United Kingdom division of Greenpeace has focused on creating "ocean sanctuaries" as well as "sustainable fishing"[9]. The latter issue is framed as such: "Many species which were once common-place are now threatened, dwindling to the point where there aren't enough to catch and make a profit"[10]. However, it is worth noting that the emphasis remains on issues of social justice in the distribution of profit, poor working conditions and disadvantages to local

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[7] https://www.seashepherdglobal.org/our-campaigns/iuu-fishing/

[8] https://www.greenpeace.org/eu-unit/tag/waterpollution/

[9] https://www.greenpeace.org.uk/challenges/ocean-sanctuaries/

[10] https://www.greenpeace.org.uk/challenges/sustainable-fishing/

economies, rather than aiming to manage the overall problem of overfishing and the damage that it causes to marine ecosystems. As Greenpeace puts it (our emphasis):

> Just five families control nearly a third of UK fishing quotas and more than two-thirds of fishing quota is controlled by just 25 companies. Compared to smaller fishing operations, these big companies *employ fewer people*, use less sustainable fishing methods and *less money makes its way into local economies.*

> Our government already has the power to change the way it distributes quotas. Greenpeace is campaigning for a *fairer allocation system* that favors local, sustainable fishing *which will help create jobs* and allow fish stocks to recover.

> We're also taking on the corporate giants plundering our oceans. Thai Union, the biggest tuna company in the world and owner of John West, was turning a blind eye to *appalling conditions for workers* and destructive fishing practices.

It is not clear from the above why local fishing will be more sustainable (other than, perhaps, being smaller in scale), or how employing more people, creating more jobs, and stimulating local economies will help to address the issue of overfishing. The Australian division of Greenpeace has a more ecocentric framing, highlighting the cause of a problem:

> A healthy ocean has diverse ecosystems and robust habitats. But a myriad of human pressures – from overfishing to climate change – are causing ecosystems to collapse, the extinction of many marine species, and the destruction of ocean habitats. Our own Pacific Ocean, one of the last relatively healthy ocean ecosystems, is being plundered at an alarming rate.[11]

This suggests some variations in regional perspectives and approaches. When mentioning illegal fishing, as Sea Shepherd does, the Australian division points out that "In the Pacific, 46% of all fish caught may be illegal, unreported and unregulated". The UK division, on the other hand, seems to suggest that local/community fishing in developing countries is something that might be supported, if sufficient "regulation" or "management" can be agreed. These variations in regional priorities help to make visible the tensions inherent in a

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[11] https://www.greenpeace.org.au/what-we-do/protecting-oceans/oceans-in-crisis/

managerial vision founded on notions of trade-offs and competition between human and non-human interests.

4. Discussion

Ethically, a major impediment to addressing water scarcity, climate change, biodiversity loss, and pollution is the dominance of anthropocentrism, which positions humankind as separate from and "above" a non-human world (Wallach et al., 2020; Piccolo et al., 2022). Ironically, some of the more altruistic motives embodied by non-profit organizations such as Greenpeace and Sea Shepherds also show that professionalization and scaling up of efforts tends to encourage actions more reflective of capitalist ideologies or (as socialist/communist countries do not necessarily have a better track record of environmental protection) at least the anthropocentric norms common in industrialized societies (Kopnina, 2016a). While the need for sharing the planet more equitably is readily visible in NGO's engagements with water, they similarly reflect corporate terminology and practice. Management and marketing have become an important aspect of operating NGOs due to the aim for long-term financial stability, increased understanding of the value of techniques in marketing, and pressure from the public and government to conform to institutional conventions (Andreasen and Kotler, 2008; Andreasen, Goodstein, and Wilson, 2005, p.10). However, there are significant differences in the marketing strategies of commercial organizations and non-profit organisations. Although minor economic gains, such as tax breaks or gifts, can be acquired, marketing for non-governmental organizations is primarily concerned with promoting social transactions. Donating generates emotional satisfaction, self-esteem (Arnett, German and Hunt, 2003), and what has often been described as social capital.

The danger of being seen as neo-corporate entities, however, may overshadow some of the strategies that NGOs could successfully employ in securing multi-species flourishing and sustainable water management. While Sea Shepherd and Greenpeace criticise large-scale commercial fishing and industrial-scale production of 'sea products', their own *modi operandi*, from selling T-shirts to the professionalization of their organizations, seems to be at odds with these critiques. There is also the matter of ecotourism, wildlife tourist attractions and ethically complex "protected area" nature-based tourism, which many NGOs do not oppose. Thomsen (2022) concludes that at least in the case of terrestrial conservation in the American national parks, non-captive environments are optimal for supporting multispecies co-existence. Wildlife ecotourism in marine

environments, from whale watching to "swimming with the sharks" initiatives, illustrate how biodiversity can be wedded to both "business case", generation of money for local communities, and protection. However, ecotourism activities can disadvantage marine wildlife, for example, because increasing numbers of 'ecotourists' on boat tours affect the stress levels of whales and dolphins and can even kill them (Cressey, 2014). There remains a need for a broader posthumanist wildlife-human coexistence framework that can be applied through "policy, discourse, and governance" (Thomsen, 2022).

A further irony is that while some NGOs, such as Sea Shepherd and the Australian division of Greenpeace, may be prioritizing the total human responsibility for overfishing, their inclusion of disadvantaged fishers involved in illegal fishing may be in tension with their own aims to address social justice and alleviate poverty. A short-term aim to achieve social justice can elide a longer-term perspective which recognizes that overfishing leads to an "empty sea" – similar to the overhunting and "empty forest" syndrome – which is likely to affect disadvantaged populations the most. The NNH idea of "sharing" space may involve natural predation or fishing: what is significant is that it aims for the human extraction of so-called "resources" from the sea to be balanced in terms of other species' needs for fish and other marine "resources" as well.

It would be overly reductive to describe all humans as equally responsible for environmental degradation, which is unmistakably entangled with late-stage global capitalism and dominated by patriarchal, often Western, leadership in the "Global North" (Thomsen, 2022). However, as mentioned above, with an expanding human population, the global consumption (of fish, among other "resources") has been devastating for the environment (Kopnina, 2016a). As Dunlap and York point out, challenging the assumption that the poor do not support such "luxury" issues as environmental protection, national wealth is not correlated with environmental concerns (2003). A lack of basic resources or damage to ecosystems – "empty seas" or water pollution – is not sustainable whatever the level of national wealth entailed.

A similar tension attends the overuse of freshwater which degrades waterways and places the surrounding ecosystems under increasing strain, threatening water, food, and energy security. The World Bank points to a fast-approaching shortfall between water supply and demand, with related conflicts and increasing numbers of refugees[12]. Decisions about water management and use are often driven by

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[12] https://www.worldbank.org/en/news/feature/2021/08/23/going-with-the-flow-water-s-role-in-global-migration

short-term responses to these pressures that, as well as sacrificing the rights, needs, and interests of less powerful human communities, override those of non-human species and ecosystems. Thus, more sustainable engagements with the non-human domain are often sacrificed to trade-offs aiming to alleviate poverty, and to encourage the economic growth that is deemed to be essential to this goal.

Human and non-human interests alike lie in having healthy and robust ecosystems. However, if these ecosystems are used for the welfare of a single species only, the notion of balance and biological food-chains needs to be re-thought. At present most of the total biomass on the planet is used for human consumption, while wild species and their habitats are destroyed, creating a spiraling rate of extinction (Barnosky, 2008; Ceballos, Ehrlich and Raven 2020). The potential for circumscribing a balanced proportion of resources for the use of other species, sufficient to enable their flourishing, depends on social policies emphasizing the need for voluntary, non-coercive means of addressing population growth to achieve a smaller ecological footprint (Washington et al. 2018). As Dietz and O'Neill point out: "we need smaller footprints, but we also need fewer feet" (2013: 78). Aside from population concerns, a radical reform of economic system is necessary in order to address unsustainable production and consumption. Priority spending needs to be on projects that promote a "circular economy" (Nobre et al., 2021), steady-state economy (Daly, 1991), degrowth, and de-materialization (Dietz and O'Neill, 2013). These initiatives would include the production of long-lasting – and ideally fully reusable – appliances, and a similar approach to clothing and textiles. There is also a need for the development of products in material categories that are difficult or impossible to make "circular", such as food, with alternatives involving vegetarian/vegan diets (Kopnina and Poldner, 2022). Other reforms addressing broader issues of sustainability, especially in the human-dominated "half" of the planet, include housing policy that promotes repurposing and counters built-in obsolescence, and moves businesses to areas with unused housing and underemployment, rather than encouraging further growth and housing expansion into the green belt in regions that already have full employment. As this implies, there is a need for joined-up thinking in all areas, for example tying all developments to a requirement for compensatory planting of vegetation supportive of biodiversity.

All areas of production depend on water, and similarly joined-up thinking needs to be applied to water management to enable more sustainable water use practices. This is partly a matter of encouraging farmers to focus on crops that do not require high levels of irrigation (or fertilisers, herbicides and pesticides),

and partly a need for holistic river catchment management with better land use and conservation throughout (e.g., Lampayan et al., 2015; Baloch and Tanık, 2008). This would assist a move to create the continuous ecological corridors that are vital to wildlife conservation (Lawton 2010). A shift away from infrastructural violence to "green engineering" would both encourage wildlife conservation and provide better flood risk management.

Achieving such balanced outcomes sufficiently to save the planet requires us to challenge the all-pervasive notion of "ecosystem services" that makes human-non-human relations such a one-way street. This entails a shift away from anthropocentricity and the "othering" of non-human beings into a separate category of "nature", which underpins all forms of exploitation. In this sense, even being "nature positive" risks affirming the dualism that lies at the heart of the problem. In terms of water management, but also in general, we need to rethink the notion that one "side" has to be balanced against the other with "trade-offs": there are not two "sides" that are in competition with (or even complementary to) each other.

5. Re-imagined communities

A vision of 're-imagined communities' proposes a different theoretical starting point for thinking about river catchments (Strang 2017, 2021). Inspired by indigenous engagements with waterways, and by debates about ecological justice and ecological democracy (Baxter, 2005; Gray et al., 2020), this seeks more equitable engagements with ecosystems' human and non-human inhabitants. Broadening Anderson's concept of "imagined communities" (1991) to encompass all living kinds, it suggests a methodology enabling a deeper understanding of the diverse – and sometimes conflicting – water needs of the non-human beings and ecosystems within catchment areas. Strang proposes that, to promote this understanding, the agencies responsible for water management should build on efforts to "speak for" rivers and the non-human inhabitants of ecosystems. They should formally appoint a Council of Experts, or a similarly representative body, incorporating a range of disciplinary and local knowledges about non-human beings in the catchment area. The members of this body would apply their expertise to articulate the needs and interests of a cross-section of human and non-human actors within the ecosystem and ensure that, in all decisions affecting waterways, these needs and interests would not be ignored or overridden.

To avoid a common problem, in which watershed management groups are captured by stakeholders aiming to protect their own access to water, these representatives should be impartial and without conflicts of interest (Strang 2009). These bodies should be formally appointed, given financial support, and made central to policy and practice. A network of local groups could provide a pool from which similar national and international representational bodies might be drawn. Critically, they should be empowered by appropriate legislation at each scale, so that non-human rights, needs, and interests are necessarily taken into account in all decisions about rivers and related ecosystems. Such legislation could draw on the concepts of "ecodemocracy" (Kopnina et al.*.,* 2021) and "ecojustice" developed by groups such as the Earth Law Centre (2018); or the Earth Protectors Trust Fund created by the late Polly Higgins, lawyer, and campaigner against ecocide. This suggests an important potential for universities to work in partnership with policymakers, non-governmental organizations (such as the Earth Charter or Parties for Animals in various countries), and intragovernmental networks such as The Harmony with Nature program of the United Nations.

Such an approach challenges ingrained assumptions of dominion over the non-human world, questions the idea of water as a commercial asset, and rivers as mere providers of ecosystem services. It requires creative and practical solutions that work with ecosystems and their inhabitants instead of acting upon them. There are signs of hope: the United Nations' 2018 report promoted "nature-based solutions", and its 2021 report focused on diverse values in water (United Nations 2018, 2021). The International Water Association is seeking paradigmatic shifts in its approach, and water companies are coming under pressure to do things differently. There is widening recognition that "business as usual" is no longer an option. The current outbreak of the coronavirus demonstrates that there is at least some potential for governments and societies to respond with alacrity to global crises. Similar mobilization on water issues could be transformational, averting a greater long-term danger to public health and the viability of global ecosystems.

6. Conclusion

NNH is uniquely situated to engage in public policy and scholarly debates about conservation practices that tackle environmental change at a variety of scales. Using examples provided by Sea Shepherd and Greenpeace, this article suggests that even for non-profits concerned with water (and non-human rights), some

ethical trade-offs and difficult choices remain. The examples of how different branches of these NGOs operate – at least judging from their mission statements and action reports – offer some ways to move towards ecocentric water management and sustainable water policies and practices.

Such a move implies the combination of clearly articulating non-human needs and interests; providing legal protection for their rights; and above all promoting a vision of 're-imagined communities' that relocates humankind within a world of living kinds, can provide more sustainable ways of thinking and doing. Creating a world in which humans and all other species can flourish means ensuring sufficient habitat for other species while living prudently and justly in the remainder. Such a moral commitment is owed not only to non-human beings but also to future human generations, who will otherwise inherit a severely damaged planet. Ultimately, we must live so as to make not just half, but all the Earth, livable for all the planet's inhabitants.

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