Thematic Section: Biodiversity Revisited

Biodiversity narratives: stories of the evolving conservation landscape

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Summary

Narratives shape human understanding and underscore policy, practice and action. From individuals to multilateral institutions, humans act based on collective stories. As such, narratives have important implications for revisiting biodiversity. There have been growing calls for a 'new narrative' to underpin efforts to address biodiversity decline that, for example, foreground optimism, a more people-centred narrative or technological advances. This review presents some of the main contemporary narratives from within the biodiversity space to reflect on their underpinning categories, myths and causal assumptions. It begins by reviewing various interpretations of narrative, which range from critical views where narrative is a heuristic for understanding structures of domination, to advocacy approaches where it is a tool for reimagining ontologies and transitioning to sustainable futures. The work reveals how the conservation space is flush with narratives. As such, efforts to search for a 'new narrative' for conservation can be usefully informed by social science scholarship on narratives and related constructs and should reflect critically on the power of narrative to entrench old ways of thought and practice and, alternatively, make space for new ones. Importantly, the transformative potential of narrative may not lie in superficial changes in messaging, but in using narrative to bring multiple ways of knowing into productive dialogue to revisit biodiversity and foster critical reflection.

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Introduction

Narratives shape human understanding and underscore policy, practice and action; they frame an issue, define which actors are included or excluded, assign culpability and prescribe action. As a heuristic for deconstruction, narratives can serve as a critical analytical tool and help unpack why destructive, ineffective or unjust systems persist. However, narratives are also understood as a tool to mobilize and inspire action. On a deeper level, narratives also stabilize ontological categories: they are at once simple storylines and anchors for particular views of how the world works. Narrative analysis draws attention to how humans act by highlighting emotion, affect and meaning; it complicates notions of humans as rational economic maximizers or as acting based on facts. Careful attention to narrative highlights the essential role of the social sciences, humanities, arts and cognitive science to biodiversity conservation and can serve to connect different ways of knowing. Narrative may be defined on one level as a simple causal story; however, it is also a cognitive structure containing the ontological categories that make up a worldview (Veland et al. 2018). Rather than put forth one definition of narrative, this review explores multiple understandings of narrative and presents narratives from within the conservation arena.

Scholars from diverse disciplines explore the significance of narratives on scales from individual decisions to collective policy- and institution-making. For example, from the field of cognitive science, scholars suggest that human brains quite literally process the world through narratives (Dahlstrom 2014). From development studies, scholars show how narratives shape how problems are defined, which actors should do what, and what solutions are desirable (Leach & Mearns 1996); other scholars show how laws, programmes, policies and funding streams flow from underlying narratives (Shanahan et al. 2011). As such, narratives can be a powerful tool to shape the world and mobilize individuals and groups. However, once entrenched and embedded, they can be hard to supplant, even in the face of contradictory evidence (Roe & van Eeten 2004). Despite dominant Enlightenment notions of human action being based on facts, scholars suggest that compelling narratives, rather than reason, drive human action (Lakoff 2010, Dahlstrom 2014, Veland et al. 2018). Narrative, then, has important implications for the conservation of biodiversity.

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This review seeks to bring biodiversity into direct engagement with the idea of narrative and to reflect upon and jostle the categories, myths, causal assumptions and even vocabulary that make up conservation narratives. This review articulates why narrative is important, engaging perspectives from social science about the role of narrative in shaping relations between humans and non-humans, and it presents some of the main contemporary narratives from within the biodiversity space. It explores productive tensions, unanswered questions and areas ripe for future debate to facilitate critical reflection on the roles that narratives play, and it draws attention to the ways in which narratives may limit or expand possible solutions to biodiversity challenges. This survey of the landscape of conservation narratives provides fertile ground for revisiting biodiversity.

To begin, the review examines explicit calls for new narratives within the conservation field. This is followed by a selective review of how narrative is considered within social sciences, including critical (i.e., scholars interested in the ways narrative upholds domination and power) and advocacy perspectives (i.e., scholars who seek to use narrative pragmatically to advance a given agenda). Archetypal narratives from within conservation and related arenas are then presented, along with real-world examples where these narratives are deployed (from academic literature, conservation organizations, popular campaigns, etc.), accompanied by counter-narratives that go along with them. As the biodiversity conservation field is diverse and complex, the archetypal narratives presented are far from exhaustive: rather, the selection aims to map the terrain to present the main narratives underpinning high-profile agendas. These narratives were selected in dialogue with select conservation experts, who felt that these were the dominant or emerging narratives shaping contemporary policy discourse. As a contribution to the research agenda outlined by the Biodiversity Revisited Initiative (Wyborn et al. 2020), the review concludes with possible directions for future research.

Calls for a 'new narrative' in conservation

As biodiversity continues to decline, many voices from the conservation field call explicitly for a 'new narrative'. For example, Halle (2018) critiques the doomsday tilt of much conservation rhetoric, calling for '[a] narrative that, against the sober background of our present predicament, is up-beat, inspiring, and shows how to connect concern with action. It must build on stories that inspire. The dominant narrative is too dismal – focused on the Sixth Great Extinction, on what we are losing, on how close we are to the precipice'.

This harmonizes with a host of others from non-governmental organizations (NGOs) and academic literature. In a typical example, Balmford and Knowlton (2017), the engineers of the Conservation Optimism campaign to promote conservation success stories (Conservation Optimism 2020), argue that Martin Luther King's 'I Have a Dream' speech would have been less effective as 'I Have a Problem'. These critiques insist that the careening-towards-apocalypse storyline serves to paralyse and alienate people, rather than motivate them.

Other scholars and practitioners call for conservationists to be better storytellers. For example, Rose (2018, p. 522) argues that conservationists need to hone 'the science of storytelling' and convey compelling messages that resonate with policy and popular audiences. Similarly, Lakoff (2010) argues that saving the environment will require stories that exemplify values and rouse emotions, rather than present facts. Bird Life International buttresses their calls for new narratives with a toolkit on 'reframing nature' to help

people think about the words they use to discuss nature (Hurrell 2019). Calls for new narratives come from distinct academic and practical perspectives and arrive at diverse conclusions about what such a new narrative should look like. However, there is one common thread: the stories of old are not achieving the goals they were meant to, and conservationists need to think critically about the narratives that they deploy.

A closer look at the role of narrative in science, advocacy and action

Narratives, like frames, stories, metaphors and discourses, are simultaneously a communicative device and a cognitive tool. They follow a structure with a beginning and end, contain cause-and-effect relationships and feature specific characters over a particular time period; they provide scaffolding for human understanding (Dahlstrom 2014). Such structures provide reference points or coordinates that help humans to navigate the world; they stabilize assumptions and constitute 'reality as we know it' (Veland et al. 2018, p. 42). In this way, narratives are important ontologically – they provide the very categories of being that make up a worldview (Veland & Lynch 2016). Narratives may, on the surface, tell 'what happens', but on a deeper level, narratives delimit what is thinkable and possible for the past, present and future (Veland & Lynch 2016). This take on human cognition contrasts with conventional Enlightenment views by which people comprehend the world through observation and reason.

Narratives are also a device to communicate complex phenomenon and a means to frame problems and solutions on collective scales. Shanahan et al. (2011) argue that narrative is a key feature of policy processes: stakeholders employ words, images, symbols and tales of winners and losers strategically to persuade decision-makers and sway public opinion. Using the story of disabled people, who were historically viewed as a societal burden in the USA, these authors show how a coalition of stakeholders crafted a powerful new narrative that reframed society as the villain and disabled people as the victims, leading to new legislation protecting the rights of disabled people. Stone (1989) conveys a similar idea: culturally and legally, drunk driving accidents are blamed on the individual driver, whereas blame could also be placed on vehicle safety, highway design, slow ambulances or alcohol distributors and vendors. In short, there is always a range of actors or locations on which to place blame. In these examples, the underlying situation remains the same, yet different narratives place the burden of responsibility on some actors rather than others. Policy formation, then, is often not about the facts, but about locating moral culpability in a chain of multiple possibilities (Stone 1989). Stories do not simply argue for one version of the empirical situation; rather, they grapple for 'the possibility of control and assignment of responsibility' (Stone 1989, p. 283). Political actors use symbols, metaphors and storylines to manipulate the characteristics of an issue, all while making it seem that they are simply describing the facts (Stone 1989).

Given this potency to influence policy and thus shape the real world, many scholars engage with narrative from a critical perspective. Particularly from the field of development studies, scholars examine how dominant narratives may uphold, produce and reproduce power structures and hegemonic ideologies. Roe and van Eeten (2004, p. 36) illustrate this with some familiar examples from their work in Africa: if cattle numbers increase, it is a tragedy of the commons; if resource extraction increases, it must be due to population booms; if trees are cut, it is due to deforestation. Such

Table 1. Narratives and counter-narratives.

Narrative	Counter-narratives
Eco-centric: nature has an inalienable right to exist and should be conserved for its own sake (e.g., Kopnina et al. 2018)	'Nature' is a particular social construct (e.g., Cronon 1995); efforts to conserve pristine nature have caused social injustice (e.g., Adams et al. 2004)
Faith, spirituality and ethics: there is a spiritual imperative to conserve nature (e.g., Negi 2005)	Conservation should be guided by evidence and scientific knowledge (e.g., Sutherland et al. 2004)
Anthropocentric: nature underpins human society and economy and therefore must be conserved (e.g., Millennium Ecosystem Assessment 2005)	Anthropocentric narratives undermine the intrinsic value of nature (e.g., Soulé 2013); not all elements of nature benefit humans (e.g., Redford & Adams 2009)
Economics: conservation needs to work with the economic powers that be (e.g., Kulhow 2019)	Capitalist economies are fundamentally destructive (e.g., Büscher et al. 2012)
Crisis: humans are destroying the planet and ourselves (e.g., Extinction Rebellion 2020)	Conservation will be better served by optimistic messaging (Conservation Optimism 2020); crisis narratives oversimplify environmental challenges (e.g., Hulme 2016)
Big data, the Fourth Industrial Revolution and ecomodernization: technology will save humanity and the planet (e.g., Asafu-Adjaye et al. 2015)	Nature-based solutions are preferable to high technology (Natural Climate Solutions 2019)
Anthropocene: there is no nature besides the one humanity makes (e.g., Crutzen 2002)	Anthropocene narratives ignore social roots of environmental destruction (e.g., Malm & Hornborg 2014)

narratives of environmental change shape policy and become so prevalent as to seem like common sense (Leach & Mearns 1996). Importantly, they suggest certain types of solutions presupposed on the assumption that local practices are destructive and need to change; simplistic and generic narratives about environmental degradation limit the possible solutions sought.

Critical scholars offer a related critique of global narratives in international aid policy that caricature local actors in ways that may be out of touch with complex realities on the ground. In a classic example, Adger et al. (2001) examine the narrative structure of global environmental discourses, identifying two categories: populist, where local people are driven through no fault of their own to destroy their environment; and managerial, where local people are villains and outside experts are the necessary heroes. In each frame, complex local realities are rendered illegible, and top-down, technocratic solutions are prescribed on a global level.

By making certain ideas seem natural or inevitable, dominant narratives may also limit the means for resistance, debate and transformative change. Once a narrative has become pervasive, all solutions are framed with reference to it (Veland & Lynch 2016). Adger et al. (2001) find that local-level solutions can rarely be justified without reference to global imperatives of deforestation and climate change, for example. Escobar (1998) reinforces this point, suggesting that the development of the concept of biodiversity articulated a master narrative of biological crisis that suggests the nature of 'the problem', the way to solve it and what kind of knowledge is required to do so. This narrative privileges Western, scientific ways of knowing and being (Escobar 1998) and thus limits possibilities to draw from alternative knowledge systems. By highlighting their power to naturalize assumptions, these scholars show how narratives necessarily privilege particular ways of knowing and being and limit the vocabulary for possible alternatives (Veland & Lynch 2016). Put more simply, the very telling of a problem might constrain its solution.

In contrast, many from the conservation arena seek to harness the power of narrative to promote pre-set agendas. For example, Rose (2018) argues that conservationists need to play the role of storyteller to help people engage in conservation issues. Similarly, Lakoff (2010), Halle (2018) and Dahlstrom (2014) adamantly argue for a coherent, simple message that will mobilize diverse stakeholders. Dahlstrom (2014) suggests that the question is not whether narrative should be used to communicate about science, but rather how to use its power to persuade. Similarly, Legagneux

et al. (2018, p. 1) argue that 'an international communication strategy is urgently required to raise public awareness on biodiversity issues'. Similarly, Kusmanoff et al. (2020) offer guidance on how to more effectively frame conservation messages in order to build public support. These authors focus on how narrative motivates people to act and strive to use them in a way that connects people to their respective cause. Rather than examine narrative to unearth assumptions about problem and solution framing, narrative is taken on a more superficial level – a repackaging of information that resonates with people. As these examples show, the literature on narrative is diverse, ranging from a deep reflection on epistemology and ontology, to a method for rebranding a pre-existing set of aspirations.

Narratives and counter-narratives

This section reviews selected narratives underpinning conservation practice and thought, alongside the main critiques or counter-narratives to each narrative (Table 1). Each qualifies as a narrative because it offers a distinct causal understanding of the conservation problematic and identifies distinct heroes, villains and necessary action. These narratives are not necessarily mutually exclusive, and delineation between some is slightly artificial; however, each foregrounds certain elements over others. Such archetypes are an attempt to capture the underlying storyline behind various conservation paradigms and to provide a helpful heuristic for reflection; thus, they are necessarily highly stylized and simplified. Examples of each narrative used in the real world are included; however, it should be noted that, in practice, individuals and organizations may draw from multiple, even conflicting narratives at different times.

Eco-centric: nature needs to be conserved for nature's sake

In this narrative, non-human nature has an inalienable right to exist. In framing human activity as generally destructive, the solution involves creating areas outside of human reach where nature can flourish and biodiversity can be preserved. Central to this narrative is the concept of pristine nature (where human activity is strictly limited), which often underpins the establishment of protected areas. In typical examples, Kopnina et al. (2018) and Doak et al. (2015) defend the eco-centric stance, emphasizing the moral duty of humans to let other species flourish. As Kopnina et al.

(2018, p. 144) argue, 'Such a commitment is owed to the myriad species we share this world with, from the inhabitants of majestic forests to the birds that soar in the sky'. These storylines foreground nature's intrinsic value, arguing that nature ought to be preserved for its own sake and does not need to serve human interests in order to continue to exist (Mace 2014).

Half Earth provides a contemporary example of this narrative in action. Promoted by famed conservation biologist EO Wilson, the initiative aims to cover half of Earth's surface in protected areas using remote-sensing data to designate which spaces are of most importance for biodiversity (Half Earth 2020). In a promotional video, Wilson explains how '[Half Earth] is founded on science, but at its heart is our transcendent moral obligation to defend all life … we are the mind of the living world, we must now become its guardian and steward' (Half Earth 2020). Here, Wilson encapsulates a classic eco-centric storyline, suggesting that natural dynamics must be set outside of human dynamics for continued existence.

Principal critiques of this narrative include promoting an essentialized version of nature, which is in fact always socially constructed and culturally mediated (e.g., Robbins 2012), and the tacit dualistic view of humans and nature (e.g., Cronon 1995). Other critiques highlight the impacts of protected areas on local peoples (e.g., Adams et al. 2004), and the sometimes-problematic social ripples from protected areas encapsulated by terms such as 'fortress conservation' (Brockington 2002) or 'conservation refugees' (Dowie 2009). Another critique focuses on the failure of protected areas to engage with underlying drivers of biodiversity loss, explicitly global capitalism (e.g., Brockington et al. 2008). Others have criticized this narrative on more pragmatic grounds, such as Marvier and Kareiva (2014), who argue that pristine nature is a failed metaphor – it simply has not had enough appeal to accomplish its goals.

Faith, spirituality and ethics: conservation is a spiritual imperative

Related to the intrinsic value narrative are voices that seek to explicitly connect conservation with religion and ethics. This narrative suggests that since religions contain codes of conduct and moral belief systems, there may be substantial overlap with the goals of biodiversity conservation. For example, Negi (2005) explores how the values of Jainism, Hinduism, Buddhism and Islam contain sanctions against environmentally destructive behaviour that could provide guidance for coexistence with other species. Extending ethical and moral conduct towards non-human nature has also been interpreted institutionally, such as in New Zealand, where rivers have been granted legal personhood with corresponding rights, or in Ecuador, where the Rights of Nature are officially ratified in the constitution. In these narratives, religious perspectives provide sources of wisdom on how to understand and act towards nature in ways that are neither instrumental nor economic, but based on a transcendent system of beliefs. Although this review did not surface direct counter-narratives to religious narratives, this storyline contrasts with the predominant narrative that drives for 'evidence-based', objective scientific knowledge to guide conservation (Sutherland et al. 2004).

Anthropocentric: nature needs to be conserved because it provides important things for humans

This narrative brings to the fore the things that nature provides for society. This narrative has many variations; for example, the benefits of nature for human health and well-being (Sandifer et al.

2015) or arguments connecting conservation to poverty reduction and social justice (e.g., Adams et al. 2004). However, ecosystem services provide perhaps the most common expression of the paradigm. Brought into the mainstream with the publication of the Millennium Ecosystem Assessment (2005), ecosystem services now form the basis of many governance institutions and 'have become the central metaphor within which to express humanity's need for the rest of living nature' (Redford & Adams 2009, p. 786). Ecosystem services provide a prime example of an anthropocentric narrative for conservation – the goods and services provided to human societies by nature underpin societies and economies and therefore must be conserved. Ecosystem services spark fierce debate both in principle and on pragmatic grounds. To name just a couple, scholars argue that economic justification undermines other values (Soulé 2013), while others argue that managing for ecosystem services does not necessarily benefit biodiversity; a plantation may capture as much carbon as a diverse, complex forest (Redford & Adams 2009). A recent deployment of this narrative can be found in the concept of nature's contribution to people (NCP), which is central to the conceptual framework of the Intergovernmental Science-Policy Panel on Biodiversity and Ecosystem Services (IPBES). NCPs are framed as 'all the contributions, both positive and negative, of living nature … to people's quality of life' (Díaz et al. 2018, p. 270). Although the conceptual framework contains an explicit focus on incorporating different ways of knowing and valuing nature (Díaz et al. 2018), this narrative still implies a one-way relationship in which conservation of nature is justified on the grounds that it provides important things – granted different peoples will understand these contributions in unique ways (Maier & Feest 2016). In this narrative, from flood control to pollination to aesthetic and cultural value, nature must be conserved because it is a purveyor of necessary elements for a good human life.

Economics: conservation needs to work with the economic powers that be, not against them

Closely related to anthropocentric narratives are those that explicitly link nature conservation with business. Rather than position conservation against economic growth, a growing narrative recasts economic interests and conservation goals as complementary. Contemporary examples of this narrative are illustrated in the New Deal for Nature and People campaign. For example, an NGO spokesperson writing about the New Deal says, '[A]sking how we save the planet without killing economic growth is a false dichotomy' (Kulhow 2019). Similarly, from academic literature, Dinerstein et al. (2019) argue that the private sector can save billions by investing in biodiversity conservation. This narrative also features prominently in the so-called 'new conservation debates'. In their new postulates, Kareiva and Marvier (2012, p. 967) argue that 'only by seeking to jointly maximize conservation and economic objectives is conservation likely to succeed'. In this narrative, corporations shift from 'villain' to 'strategic partner' to promote green finance and affect markets via cooperation with business, thereby creating mutually beneficial relationships between conservation and economic growth.

A vibrant literature responds to this narrative, critiquing various elements of the 'neoliberalization of conservation' (Büscher et al. 2012). The basic counter-narrative claims that global capitalism drives most environmental destruction, so any solution that fails to engage with this underlying driver will reproduce rather than ameliorate the problem (Büscher et al. 2012). A key theme

of this counter-narrative criticizes the fact that win–win rhetoric tends to spatially relocate concern for the environment away from the destruction caused by businesses and the consumptive lifestyles that support them and channel it into faraway landscapes. Indeed, many corporate campaigns conceal the complex and proximate connections between people's consumption patterns and biodiversity loss while promoting the continued consumption of commodities that drive biodiversity decline (Igoe et al. 2010). These two narratives fall into sharp contrast – on the one hand are conservationists insisting that working with business is not only a necessary evil, but rather a force for good (Kareiva & Marvier 2012), and on the other hand are concerns that conservation is increasingly a realm for the expansion of capitalist logic, which perpetuates destructive practices (Igoe et al. 2010).

Crisis narrative and the sixth mass extinction: humans are destroying the planet and ourselves

This narrative foregrounds ecological crisis, telling how humans are ruining the Earth, unravelling our own life-support systems and spiralling towards collapse. This narrative is espoused in academic literature, such as by scientists framing their work in terms of the sixth mass extinction (e.g., Briggs 2017, Ceballos & Ehrlich 2018), but has taken an even firmer hold in popular discourse and imagination. Fuelled by scientific authorities, such as the Intergovernmental Panel on Climate Change (IPCC 2018) figure of a 1.5°C warming threshold and the IPBES Global Assessment Report statistic of 1 million species facing extinction (IPBES 2019), examples of popular deployments abound. Editorials in newspapers such as *The Guardian* (e.g., Carrington 2017) and *The New York Times* (e.g., Plumer 2019) discuss mass extinction and the self-imposed existential threat that humanity faces.

One popular manifestation of the crisis narrative comes from youth-led climate activists. Using tactics such as sit-ins, walk-outs, strikes and die-ins, youth activists worldwide have sparked a movement demanding action from leaders on climate change and species extinction. Organizations such as the UK Student Climate Network, the Sunrise Movement and Extinction Rebellion foreground the idea that humans are in desperate times. As the Extinction Rebellion website tells it, 'We are facing an unprecedented global emergency. Life on Earth is in crisis … we are in the midst of a mass extinction of our own making' (Extinction Rebellion 2020). Similarly, youth leader Greta Thunberg famously told political leaders 'I want you to panic' (Fridays for the Future 2020). These activists emphasize urgency and demand action on behalf of youth and future generations who will be left to deal with a 'ruined planet'.

Various counter-narratives respond to the crisis story. One pragmatic example simply proposes that optimism sparks more action than panic. This narrative can be seen in global campaigns such as Conservation Optimism and Earth Optimism. Earth Optimism (2020) 'celebrates a change in focus from problem to solution, from a sense of loss to one of hope in the dialogue about conservation and sustainability'. The organization argues for sharing success stories via social media and organizing events focused on what progress has been made towards sustainability. This narrative celebrates many small-scale success stories rather than focusing on the bigger, gloomy picture. This, they argue, rather than apocalypse, will inspire people to act. However, others argue that optimistic narratives lack sufficient evidence supporting their efficacy (Kidd et al. 2019a). The crisis narrative is also countered on more critical grounds; for example, Hulme (2016) argues that

crises suggest that there is one, absolute and coherent problem. This framing in turn implies inalienable, scientific solutions, which often do not address the cultural, social and political roots of our current predicament(s).

Big data, the Fourth Industrial Revolution and ecomodernization: technology will save humanity

Another common narrative promotes technological advancement as the answers to our ecological problems. One example comes from the Ecomodernist Manifesto – promoted by the Breakthrough Institute – that argues for a decoupling of human well-being from Earth's limited resources (Asafu-Adjaye et al. 2015). Pillars of the manifesto include the desirability of modern lives for all humans, cheap energy for all, intensified industrial agriculture and increased urbanization so that wild nature is allowed to thrive elsewhere (Asafu-Adjaye et al. 2015). In this narrative, through technology, modern lifestyles and consumption levels will be made available to all humans, and actually go along with a healthy planet.

In a similar vein, the Fourth Industrial Revolution, a term coined by the World Economic Forum (WEF) for the merging of digital, physical and biological technologies, has gained traction around conservation issues. In a series called Harnessing the Fourth Industrial Revolution for Life on Land, proponents (PricewaterhouseCoopers 2018) argue that the revolution will solve issues of biodiversity and habitat loss by helping humanity to fully appreciate natural capital as a source of biological assets (chemicals and materials) and biomimetic assets (functions and processes). Through nanotechnology, artificial intelligence, robotics and other innovations, humans can both learn and profit from nature in a new, inclusive 'bio-economy' (PricewaterhouseCoopers 2018). Along a similar vein, databases such as the UN Biodiversity Lab and the Global Biodiversity Information Facility promote big data as an essential tool for biodiversity conservation. This turn to big data is seen as key to tracking global trends in species populations and leading to more informed decisions for conservation (Bayraktarov et al. 2019).

Despite slight differences, these techno-optimist narratives are all centred on technology, information and innovation. Such narratives are countered on various fronts. One obvious example comes from campaigns that argue for explicitly natural (as opposed to technological) solutions to issues such as climate change. One example is the Natural Climate Solutions movement, which argues that solutions such as the restoration of natural carbon sinks like peatlands, wetlands and mangroves, rather than technology-based solutions such as bio-energy with carbon capture and storage (BECCS), for example, are the answer to both climate and biodiversity challenges (Natural Climate Solutions 2019). Critical social scientists also object to techno-optimist narratives; for example, Malm and Hornborg (2014, p. 64) say, 'After more than 200 years, we still tend to imagine "technological progress" as nothing but the magic wand of ingenuity which, with no necessary political or moral implications elsewhere, will solve our problems of local sustainability'. These authors insist that social and ecological injustice is fundamental rather than incidental to high-tech modernity.

Anthropocene: there is no nature besides the one humanity makes

Another high-profile narrative tells the story of the human impact on Earth being so pervasive that nature as independent and un-impacted by humans no longer exists – people now live in

the age of the Anthropocene (Crutzen 2002). As a self-identified crisis discipline (Soulé 1985), conservation biology assumes that something was better before the advent of the crisis. The Anthropocene narrative argues that society may no longer evaluate human impacts against a stable background or baseline; this is new territory, where the very sacred foundations of conservation are up for discussion. Although political ecologists and other critical scholars have long problematized the idea of an essential nature defined in contradistinction from humans, the Anthropocene concept has ushered the idea into broader academic and popular discourse, and it has become what Lorimer (2017) calls an intellectual zeitgeist. As conservation is fundamentally concerned with nature, and conservation biology is, at its core, interested in measuring changes against an *a priori* baseline, the Anthropocene necessarily has confusing implications for conservation.

Although the Anthropocene sparks fierce debate, mainstream invocations tell the story of technological advancement and population growth that has resulted in profound alteration of Earth systems, resulting in a planetary emergency. Coined by a chemist and biologist, research around the Anthropocene draws mostly from natural rather than social sciences, and focuses on environmental change rather than social change (Palsson et al. 2013). Some voices argue that the dominant Anthropocene narrative could benefit from more meaningful contributions from social scientists in global environmental change research (e.g., Lövbrand et al. 2015) or insights from a broader diversity of indigenous and local knowledge systems (Tengö et al. 2017). Many see the Anthropocene as an opportunity to reflect on the ideas, norms and ontologies of the past and to open up space to imagine them anew (Lorimer 2017). The Anthropocene narrative calls into question Enlightenment-era human–nature dualism and thus provides an opportunity to examine and challenge the collective assumptions about environmental problems that may have their roots in such a worldview (Lövbrand et al. 2015, Veland & Lynch 2016).

Critics point out some paradoxes in mainstream Anthropocene narratives. One critique argues that the concept at once acknowledges the profound role of humans on Earth and then fails to meaningfully engage with social systems, cultural values/norms and power structures of the 'Anthropos' (Malm & Hornborg 2014). Instead, concepts such as tipping points, planetary thresholds and other ostensibly objective quantifications are used to understand our current trajectory (Veland & Lynch 2016). The concept implies an abandonment of the Cartesian duality of humans and nature, and then quickly reverts back to the familiar tools of science based on the idea of external nature that can be objectively known and measured (Palsson et al. 2013, Lövbrand et al. 2015). A related critique of the dominant narrative problematizes the tendency of Anthropocene thought to aggregate and universalize humanity under one banner of 'human nature', when in fact both the origins and the impacts of our current crisis are highly contingent and unequal based on social difference (Malm & Hornborg 2014). The narrative thus forecloses opportunities to examine and reflect upon unjust and unsustainable social relations or imagine new ones (Malm & Hornborg 2014).

Robbins and Moore (2013) suggest that the concept sparks a sort of identity crisis and inspires contrasting narratives. For some, it cements the profound impact that humans have and justifies an imperative to save what little nature remains: something beautiful and good has been ruined, and humanity needs to show restraint, guided by scientists who understand the gravity of the situation. In short, science needs to be more normative than ever. On the other hand, some take it to show that science and our understanding of

Earth systems has always been normative – the Anthropocene disrupts landmark categories such as native, invasive, biomes, habitats, fixed species assemblages, etc., and exposes them as having always been socially constructed and value-laden; it marks the departure from any illusion of objective understanding of nature as separate from humans (Robbins & Moore 2013). In summary, the Anthropocene remains a contested concept, and scholars use it to frame diverse understandings and approaches to curbing biodiversity loss and addressing current human–environment challenges.

Discussion

As noted above, these narratives may overlap, come into conflict and harmonize in complex ways. For instance, although faith in technology is foregrounded in obvious examples such as the Ecomodernist Manifesto (Asafu-Adjaye et al. 2015), it weaves throughout many others. The Half Earth initiative puts forth a classic eco-centric narrative, yet it embraces the use of advanced technology for mapping and data collection to inform protected area development and thus draws on elements of technological narratives. Anthropocentric narratives, such as ecosystem services, also place great faith in technology to solve ecological problems. Similarly, protected areas arise as a proposed solution from seemingly contradictory narratives. For example, although The New Deal for Nature puts forth anthropocentric rhetoric, faith in markets and increased green technologies, it ultimately recommends increased global targets for protected areas, as is seen in Dinerstein et al. (2019), who endorse a New Deal, but advocate for putting 50% of Earth in protected areas.

Another surprising alignment comes from anthropocentric narratives such as those in the 'new conservation debates' (Marvier & Kareiva 2014) and critical scholarship on capitalism and conservation. Indeed, in 2012, Kareiva referenced Brockington's (2002) seminal work on 'fortress conservation'. Brockington and Kareiva share critiques of traditional conservation practices, yet Brockington and others writing critically about the neoliberalization of conservation critique precisely in the win–win rhetoric epitomized by Kareiva's pro-business stance; conversely, Kareiva concludes that business and conservation should be more closely aligned, not less. Similarly, in a blog post, Robbins and Moore (2015) highlight the ways in which eco-modernism and political ecologists have surprising commonalities. Though at first glance they might seem opposite, both share a rejection of the idea of pristine nature, seeing it as a destructive myth, both reject the 'paternalism, orientalism, and tone-deafness of environmentalism' and both criticize the neglect of working people in traditional conservation (Robbins & Moore 2015). In these examples, narratives that seem to directly conflict actually share common ground in their critiques of traditional conservation.

Juxtaposing conservation narratives also provides an opportunity to reflect upon who is thought to be driving the action in the biodiversity space. Although arguments for coordination between faith groups and conservation place importance on faith leaders, many of the narratives reviewed above maintain a central role for the scientific community. Anthropocentric narratives focused on alignment with business and ecosystem services place economists, business leaders and finance experts as on par and in strategic alignment with the scientific community; calls put forth in crisis narratives such as those from Extinction Rebellion demand action from law-makers. However, throughout the reviewed narratives, in general, the scientific community is assumed to be an authoritative source of knowledge on conservation issues; only

critical scholarship from within the Anthropocene discourse argues explicitly for new knowledge systems or new ways of knowing in addition to Western science and technology.

Future research directions

One fruitful tension raised by an examination of conservation narratives is between calls for unity and pluralism. As the above discussion indicates, there may be surprising overlap in what at first glance seem to be competing narratives. But, as Sandbrook (2014) questions, is conservation better together? As illustrated above, the biodiversity space is flush with narratives. This review has presented just a sampling, and it could have included others, such as narratives about social ecological systems, sustainable development, convivial conservation or resiliency. Future research should critically reflect on whether finding the definitive narrative for conservation is either possible or desirable, and if and how adding a new narrative to a crowded space will be effective.

Given the weight of our current ecological situation, many scholars do indeed call urgently for a unified new narrative for conservation. In one example, Kidd et al. (2019a) suggest that conservationists even draw from research in marketing to get people to support conservation and engage in environmentally friendly behaviour. Similarly, much global environmental change research articulates a grand human–environment narrative and raises a unified 'call to arms' to alter our planetary trajectory (Palsson et al. 2013). These calls harness the urgency of the ecological crisis and suggest an almost coercive use of narrative to get people on board with one unified mission. However, other scholars, especially from critical Anthropocene literature, take a more radical interpretation of the role of narrative for imagining transformed futures, arguing that the gravity of our current situation calls for precisely the opposite (Malm & Hornborg 2014, Lövbrand et al. 2015, Veland & Lynch 2016, Veland et al. 2018). The authors of this paper agree that, rather than guiding a cosmetic change to an existing scientific narrative, critically examining narrative(s) can help with reflection upon and questioning of underlying epistemologies and ontologies, opening up space for diverse understanding.

Such thought suggests that if a grand narrative is defined by scientific and technological ways of understanding nature, science will use its own tools, metrics and language and so constrain the types of solutions that are sought (Lövbrand et al. 2015). As Veland et al. (2018, p. 45) put it: 'Innovative and transformative thought will benefit from laying aside heroic narratives where a single villain (neoliberalism, industry, climate change) is defeated once and for all by a single hero (the environmental activist, the United Nations, the engineer, the consumer)'. They argue, rather, that if the ontological implications of the Anthropocene are taken seriously, this provides an opportunity to bring multiple ways of knowing into productive dialogue with one another and with positivist science. Narrative, in this view, cannot and should not provide a single, unitary answer to problems. It is not a technological or methodological fix; rather, its transformative power lies in opening the space for multiplicity (Veland et al. 2018). Narratives, then, should not seek to standardize and homogenize 'the human', but rather to accommodate difference, diversity and democratic pluralism (Lorimer 2017). Rather than as a means to aggregate humanity, engagement with narrative can be an opportunity for 'unprecedented listening' (Veland et al. 2018, p. 44). Future research could explore these different interpretations of narrative for conservation and consider what such 'unprecedented listening' might look like in practice. Moving beyond narrative as a technique

for rebranding may allow biodiversity conservation as a field to reflect on the underlying ontologies that comprise the above narratives and to 'listen' to myriad visions or worldviews that have been traditionally outside of the movement.

Conclusion

Narratives serve as scaffolding for interpreting the world; they profoundly shape the way humanity understands and therefore acts to sustain life on Earth. Narratives can also be used to think about how to better communicate science with diverse audiences (Dahlstrom 2014) or to raise the idea that science narratives should be brought into dialogue and tension with alternative narratives and worldviews (Veland et al. 2018). They provide an alternative to the 'information deficit' model and can potentially create shared understanding amongst diverse stakeholders. Narratives similarly shape and are shaped by policy and governance (Shanahan et al. 2011) and can be a tool to critically reflect upon existing governance arrangements and policy instruments and to imagine new ones. Narratives move people to act, and thus compelling and meaningful narratives are essential for transformed, sustainable futures (Veland et al. 2018). This review has highlighted some of the ways in which social scientists consider the work that narratives do, from structuring individual understanding to forming the basis of collective action through policy formation. It has examined critiques of the power of narrative to naturalize and perpetuate unjust or unsustainable systems and its potential to spark positive change. In reviewing archetypal narratives from the biodiversity space, this review has shown how contemporary narratives mobilize, adapt and combine different root justifications for conservation; actors deploy various framings of the problem at the heart of the conservation problematic, each resulting in different solutions sought. Efforts to search for a 'new narrative' for conservation can be usefully informed by social science scholarship on narratives and should reflect critically on the power of narrative to entrench and cement old ways of thought and, alternatively, to make space for new ones.

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