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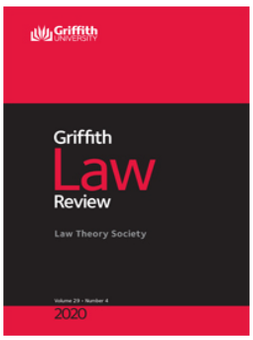

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INTRODUCTION

Environmental law's extinction problem

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ABSTRACT
The extinction of species and ecological systems is occurring more quickly than any other time in human history. Our social and cultural institutions and the concepts and framings that underpin them are key contributors to modern extinctions. In this paper we ask how engaging explicitly with extinction enables a critical and hopeful rethinking of environmental law. We explore the potential of this question by summarising and categorising the literature that discusses how extinction provides a useful frame and moral compass for interrogating environmental law rules, systems and ambitions. Through an evaluation of biodiversity-related multilateral environmental agreements we illustrate the potential of our approach. We demonstrate that if law is to effectively address mass extinction then we need to also interrogate the values and worldviews perpetuated by existing and potential future legal instruments. Drawing on the papers from this special issue we argue that there is much scope for scholarship to develop critical and hopeful approaches for environmental law to address the ecological, social and ethical challenges of extinction.

KEYWORDS
Extinction; human-nature relationship; biodiversity; hope; critical environmental law

1. Introduction

The idea of extinction may seem a morbid way to frame the rethinking of human-nature relationships and the law. Extinction often denotes a specific event, namely the death of the last member of a species. At the same time, extinction can also refer to a process, a set of human inspired activities, decisions and behaviours that contribute to the demise of a species. Whilst evolutionary pressures can, and do, contribute to extinction,[1] the human footprint has an increasing and accelerating role in eradicating species forever.[2]

The finality of extinction generates deep ethical and practical challenges and considerations. Framings of mastery and intentional harm and damage are troubling aspects of the dominant contemporary relationship that human beings have with nature.[3] Nowhere is this better illustrated than the discourse around extinction. The issue of extinction not only requires us to make sense of the significance of species loss to humanity but also

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[1]Frankham (2005).
[2]See, e.g. Kolbert (2014); Di Marco et al (2018).
[3]For the idea that human volition is an important change that the Anthropocene describes, see Hamilton (2017).

requires us to interrogate the societal structures that continue to expedite extinction processes.

The capacity of rules, principles and institutions to structure human lives and relationships means that these systems can irreversibly impact a species. Specifically of relevance to this special edition, the deep societal and cultural norms and values that underpin developments in environmental law are key contributors to species extinction. For environmental law, extinction is both a pragmatic and technical consideration and a critical and moral compass against which to measure law's effectiveness and its ethical dispositions. A 'moral compass' in our view is a broad way to characterise the pulling power of values that take us beyond thinking about the natural world in purely utilitarian terms. Extinction can encourage these kinds of discussions as the frame of reference that it supports can enliven debates about whether a species is worth more than what we can do with it. As such, extinction can therefore also help generate new vocabularies to enable the study of the technical and pragmatic approaches that we take to law.

Environmental law has generally sought to balance human interests alongside potential threats to species and ecological communities. As such, the extinction lens helps examine whether environmental institutions are achieving an appropriate balance and ensuring the integrity of nature for a future that accounts for all species on planet Earth. The lens of extinction not only provides the conservation movement with a powerful way to question how human beings are protecting and conserving species, including our own;[4] this frame also encourages greater recognition of fundamentally diverse ways of thinking about the discourses surrounding our relationships with nature. For instance, a turn to Indigenous cosmologies prompts recognition that the 'western conservation movement', with its species and protected area focus, are relatively new approaches that have emerged only in the last 120 years.[5] Framing extinction solely against these concepts of Western science can hinder a broader understanding of relationships within multi-species and multicultural worlds, which extend much further back in time.

The overarching question of this introductory paper is this: Can engaging with ideas of extinction enable a critical and hopeful rethinking of environmental law? Our aim in this paper is to contribute both to the broader environmental law literature and also emerging fields of research such as 'extinction studies'. We do this in three parts. In the first part, we survey the extinction literature and its discussions of law and governance. Using extinction as the frame and context, we discuss three ways that the literature assesses and critically engages with environmental law. These are: (i) the limits of technical legal approaches; (ii) the need to broaden understandings of what can go extinct; and (iii) the importance of greater pluralism in the values and worldviews that shape discourses of human relationships with nature. We use Part two to survey and discuss primary biodiversity-related instruments of international law and interrogate them using the extinction frame. In doing so, we highlight not only the piecemeal approach to extinction of the primary environmental instruments but also how particular conservation values have been privileged within international law. In the final part, we situate the papers in this collection within the literature review in part one. We conclude by drawing attention to the clear thread across the papers which emerges as a sense of hope in the

[4]We are borrowing here from Nijhuis (2021).
[5]Pascual (2021), p 1.

potential for environmental law to contribute to desirable futures across multi-species worlds.

2. Extinction, law and governance

Extinction raises a range of practical, methodological and also metaphysical questions for law and governance. In this section, we discuss three broad issues in environmental law in the context of extinction as a frame for analysis and critique: the need to (i) move beyond technical approaches such as listing; (ii) broaden appreciation of the potential subjects of extinction and (iii) expand the values and worldviews for understanding extinction. We avoid discussing restoration issues because our concern in developing this frame is to focus attention on the drivers of extinction, rather than on the possibilities for recovery.[6]

2.1. The limits of technical legal measures

Our first set of concerns relate to how Environmental Law as a first resort creates lists as a way to manage threatened and endangered species. The studies that discuss the utility of such an approach to managing the challenge of extinction helpfully highlight the gaps that often exist in lists of endangered species and identify resourcing and compliance issues that need to be fixed.[7] However, researchers have also looked more closely and critically at the utility and failure of creating such things as lists and ask whether they make a difference when it comes to the broader problems associated with trying to deal with extinction. In this collection, Michelle Lim for instance discusses whether technical lists of endangered and threatened species divert our attention away from more meaningful solutions. She discusses the politics, economics and regulatory challenges of creating, managing and working with lists, which draws effort and attention away from the necessarily broader problem of conservation. Lim's paper resonates strongly with that of Woinarski and colleagues who argued that law, governance and management strategies were instrumental in driving the extinction of three Australian vertebrate species. Listing of these species as endangered and threatened enabled a broad range of regulatory efforts by different tiers of governments in Australia. Despite this, these species were lost due to the lack of concerted and rounded efforts to directly address the problem and potential of their extinction.[8]

Ideally, each species should be recognised as being special and worthy of saving in its own right,[9] whether that be because of its genetic complexity, sentience and capacity to form relationships, or simply its intrinsic value. The complex interconnected roles of species within and across ecosystems also demonstrate that species are worthy of protection, and further highlights the importance of the multiple components which make up the tangled webs of life. Despite this, our governance and conservation efforts show a clear preference for birds and mammals. This bias or tendency to focus on certain living things and not others raises important questions about how we approach and think about

[6]For this aspect, see, e.g., Akhtar-Khavari (2020); Akhtar-Khavari and Richardson (2019).
[7]See, e.g. Scheele et al (2018); Martin-Lopez et al (2011); Farrier et al (2007).
[8]Woinarski et al (2016).
[9]See Smith (2018) for the idea that endangered species have intrinsic value.

the topic of extinction. This is clearly a blind spot for law and governance which should be concerned with all species and their connections to each other.[10] For instance, invertebrates are not often found in threatened and endangered species lists, despite making up almost 95per cent of all biota. [11] In a recent essay, Bolam and colleagues focused purely on birds and mammals and asked whether recent conservation efforts and actions had contributed to preventing extinction.[12] The purpose of the paper was to assess the extent to which Aichi Target 12 of the 1992 *Convention on Biological Diversity* had generated responses aimed at reducing extinction. Whilst finding that policy had made a difference, the paper presented statistics as if the narrow focus on birds and mammals was sufficient for testing the foundations for conservation efforts relating to extinction.

2.2. Broadening understandings of what can go extinct

Whilst traditionally the focus of legal research has been around technical and functional solutions linked to lists and direct regulatory responses from institutions, the second set of concerns, that we address in this paper, focus more on broadening how we think about the design, utility and operation of the law. These concerns examine how the law functions and what this, in turn, means for legal and governance decisions and approaches made about extinction. These approaches vary from political and ideological concerns around how and why we classify species, to how we use emotions in legal design, and how the law mediates our experiences with non-human species.

Ecological systems and communities, like wetlands and reefs, can also become extinct. For instance, a recent paper by Bergstron and colleagues focused attention on the potential of significant ecosystems collapsing from the tropics through to the Antarctic.[13] Losing significant and complex interrelationships amongst plants and animals within the 19 identified ecosystems that were studied is as important as the extinction of a single species, if not more so, given the challenging prospects of not being able to restore these unique systems. This study focused attention on noteworthy ecosystems, but numerous other systems are also under pressure, and whose complexity, beauty, individuality and importance as a unified collection of interacting living and non-living things make them worthy of the superlatives we use when something goes extinct.[14] Much research already exists on the governance of complex systems like wetlands and rivers and how they interact and engage with their surrounding environments.[15] Erin O'Donnell in this special edition addresses the issue and claims that rivers as complex ecological communities or systems can also go extinct.[16] O'Donnell discusses the scientific and legal opportunities in using an extinction frame to examine the issue of conserving these systems. In the context of legal and governance approaches to extinction, complex ecosystems, like rivers and wetlands have been critical habitats for the survival of species, rather

[10]See Smith (2018) for instance about the idea that all species have intrinsic value. Other views on this topic are also discussed in the papers by Lim and also Woolaston and Akhtar-Khavari in this volume. See also van Dooren (forthcoming) more generally on the value of species, beyond the charismatic and 'useful' in the context of the extinction debate.
[11]See Woolaston and Akhtar-Khavari in this volume.
[12]Boalm et al (2021).
[13]Bergstrom et al. (2021).
[14]See, e.g. Kilvert (2021), discussing the importance of ecosystems and natural places that do not always attract attention.
[15]O'Donnell (2018); Macpherson (2019).
[16]See also, Beasley (2021).

than being recognised as significant in and of themselves. Drawing on the broader literature around rivers, O'Donnell's paper challenges law and governance to move beyond concern for the extinction of individual species.

Beyond categories and classification that could be broadened, Turnhout and Purvis have also argued that by focusing on the idea of species we also tend to narrow how we think about and assess biodiversity, and the various knowledge systems that have come to measure and value it.[17] This argument is critical in the context of metrics and information systems we develop for institutional use, but which then create bias or limit what and who we see as important in thinking about biodiversity and also extinction. This argument is important in the context of this discussion because birds, mammals, invertebrates and living things don't necessarily mean the same thing to everyone or have universal significance. As Turnhout and Purvis suggest,[18] a deeper and broader focus on biodiversity, rather than the narrower concept of species, will enable the use and development of a wider range of metrics and information systems that will likely have an overall greater impact in minimising anthropogenic extinctions.

A maturing law and governance approach to extinction requires broader ways of approaching why and what we protect from becoming extinct. The approach taken by Article 2 of the *Convention on Biological Diversity* could be viewed as an example of a broad approach to protecting species. The Article defines biodiversity as 'the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'.[19] This is in contrast to Target 15.5 of the UN Sustainable Development Goals that commits governments to 'by 2020, protect and prevent the extinction of threatened species'. Whilst in the next section we discuss how the focus of international law has to move beyond the extinction of species, the differences between these two instruments represent the critical nature of the political choices that we make when we define something. Unfortunately, as papers like those of Esther Turnhout and Andy Purvis in this special issue point out, the ambitions in Article 2 have not been realised because of the narrow ways in which the concept of species prefigured how we considered biodiversity.

The idea that law and governance approaches can engineer and direct political dispositions, and even how human beings feel about species, is of increasing importance to the discussion of the concept of extinction. Whilst Article 2 of the *Convention on Biological Diversity* has not had the positive influence of broadening what is considered biodiversity, the articles by Lim, and Woolaston and Akhtar-Khavari show how the law can influence our emotional connection with species and in turn, affect our abilities to engage in conservation activities. Policymakers and legal institutions have to facilitate a broader range of inputs to enable morally and emotionally informed decisions as well as utilitarian ones. This criticism of the operation of the law and its impact on extinction, whilst approaching it from a different perspective, shares a common concern with O'Donnell,

[17] See also the recent paper by Unai Pascual et al, which also includes Esther Turnhout as an author, arguing for thinking about biodiversity in a more decolonised (our term) manner: Pascual et al (2021).
[18] Including also those who have co-authored Pascual et al (2021) along with Unai Pascual.
[19] *Convention on Biological Diversity*, opened for signature 5 June 1992, 1760 UNTS 79 (entered into force on 29 December 1993) (CBD).

and Turnhout and Purvis, in that all of the authors suggest that environmental law needs to be more attentive to the ways that it narrows the concerns surrounding extinction.[20]

2.3. The need for greater pluralism of values underpinning law

Beyond broadening how we think about concepts and ideas within the law, a third set of approaches explore the reasons for the influence and potential role for law, drawing on the broader cultural, social, and general ideological assumptions around the problem of environmental damage, harm and extinction. These discussions generally interrogate questions relating to what we do when we protect nature, and for whom extinction matters when we have political and institutional debates about these issues.[21] As such, they represent approaches that think about and explore the law in the context of its application, and the design of the systems that drive the application of rules.

Extinction is more than the death of something with physical properties and characteristics. It has philosophical, ethical, moral, and emotional consequences and meaning. Given that law and governance frameworks typically try and move forward using consensus, and often have to develop across different communities and countries, the discussions around extinction become difficult when broader sets of values have to be taken into account. Even the scientists who create the evidence used in legal processes have questioned the limits of modelling and predictions relating to extinction.[22] This does not bode well for policy decisions depending on their scientific assessment. A number of the studies in this collection, like those from Paul Govind, Glenn Albrecht, and Jeremy Bendik-Keymer point to how culture, ethics and ideology complicate law and governance responses to extinction.

Indeed, context and culture are critical to understanding the nature of the extinction problem in the first place. Courchamp and colleagues have pointed to the importance of culture by illustrating how ten very charismatic animals are at risk of going extinct because the use of their images on corporate branding makes them appear to the public more prevalent than they are.[23] This issue of what is valuable and important also comes out aptly in the foreword to *Extinction Studies*, where Cary Wolfe has written that:

> extinction-whatever else it may be - is never a generic event and is always a multi-contextual phenomenon requiring multi-disciplinary modes of encounter and understanding. That fact is worth remembering when we ask the question: When a being, human or non-human, dies, what goes out of the world? What is lost to the world? And what world are we left with?[24]

Wolfe is reminding us that loss, death and extinction are more than physical and individually isolated social events. We are entangled with one another and non-human beings, and certain incidents will highlight the relational aspects of life more than others. In *Extinction Studies*, Rose, Van Dooren and Chrulew use their introduction to describe

[20]Environmental law is normally seen as lacking reflexivity thats required for it to adapt and enable contextually relevant influences on its development and implementation. See for instance, Garmestani and Benson (2013); Feindt and Wiland (2018).
[21]Escobar (1998).
[22]See, e.g. Purvis et al (2000).
[23]Courchamp et al (2018).
[24]Wolf (2017), ch viii.

how 'extinction stories' better deal with the significance of our 'entanglement' in the context of thinking about the last and the end of some species. This, they argue, ensures that the significance and importance of loss is dealt with and understood, intellectually and culturally, at the site and location of its occurrence rather than abstracting it away from our senses and experiences. [25] The meaning of extinction is best explained by being able to feel, sense and experience it locally and in place, particularly because humans and non-human beings are deeply entangled with one another. Paul Govind in this volume also argues that better ethical frameworks for law are created by stories at the local level that bring human and non-human worlds together.

What these authors are highlighting is the significance of human culture, imagination and stories in shaping how effective conservation efforts will be through governance institutions. Ursula Heise in her significant work titled *Imagining Extinction: The Cultural Meanings of Endangered Species* has argued that extinction is primarily a cultural problem and issue. Whilst she acknowledges that significant efforts are undertaken by individuals and scientists for conservation, she also posits that they will only be successful as long as they are carried out and support certain cultural frameworks that tell particular stories about what we value. In her chapter titled 'The Legal Lives of Endangered Species: Biodiversity Law and Culture' Heise argues that 'how' countries have historically conceptualised and thought about nature and what is at risk of going extinct will deeply influence whether their laws function effectively to avoid extinction. Her main argument is that 'cultural imagination' is more likely to contribute to the shape and design of biodiversity laws within countries than scientific investigation and conservation efforts. It seems that for Heise, whilst the law can shape culture, the potential of rules and governance institutions will only emerge if they mobilise the culturally important stories.

In contrast, Watson illustrates how Indigenous law adopts stories as law in a much more explicit way. She explains how legal knowledge in many First Nation legal systems emerges and continues from 'living, singing and storytelling', where 'Law is lived, sung, danced, painted, eaten and in the walking of the ruwe (land/Country).[26] Lim, in this volume, builds on the idea of the cultural power of stories. While not presenting stories as law in the way described by Watson, Lim employs fiction as a methodology to examine colonial laws anew. By presenting anthropomorphised stories of the last individual of a species, through the use of story-telling, Lim attempts to promote deeper introspection about the limitations and potential of the law and the impacts of dominant human values on multi-species worlds.

Postcolonial studies have also contributed to the idea that colonial values and constructs have narrowed our thinking on how we govern and what is being valued. Jeremy Bendik-Keymer in this volume has argued that governance institutions have co-opted the abstract ways in which we value land. As such, the centuries-old Indigenous culture of listening to the land ('ecological reflexivity') and responding accordingly, has been thwarted by property and land abstraction. Moral accountability to the land is critical for averting harm, but Bendik-Keymer argues in this piece that colonial powers kept this in check through industrialism, capitalism, and the associated phenomena. Similarly, Poelina and colleagues, emphasise the critical importance of 60 millennia of the

[25]Rose et al (2017), pp. 1–17.
[26]Watson (2014), p. 12.

place-based wisdom of Indigenous peoples on the continent now called Australia. They underscore how such wisdom and the Indigenous knowledges and frameworks that this wisdom is embodied in, are 'vital for the future survival of species and nations'.[27]

This idea that colonialism has deeply shaped institutions that in turn drive extinction agendas via legal institutions is also a theme in Glenn Albrecht's paper in this special issue. Albrecht argues that the western-created human rights discourse separates, prioritises, and creates competition amongst those who claim to have it. As such giving nature rights will fail to avert extinction. Whilst Bendik-Keymer argues for moral accountability to be enshrined in the law, Albrecht argues that we need to invent new concepts, like *Ghehds* (meaning to unite, to gather together). Such concepts can help rebuild a new jurisprudence that is more oriented towards 'unity, cooperation, and inclusion'. Albrecht, it seems, is arguing that governance approaches to extinction have to rethink concepts to avoid encouraging individuality and competition. Instead he encourages and starts the process of developing alternative jurisprudential foundations based on 'entitlements of coalescence, vagility, passage, movement and flow within organically and symbiotically unified wholes'.

In sum, the lens and moral compass of extinction can facilitate an analysis of law beyond the best interpretation of rules in a given context. As briefly discussed above, the extent of current extinction and the finality of species loss calls on us to interrogate and forensically examine values and structures which underpin law. More fundamentally, it requires us to assess and re-imagine our relationships with nature. Extinction calls on us to expand notions of the loss of nature and articulate why such loss matters. Ultimately, this lens provides a means for thinking clearly and purposefully about human-nature relationships; both of our culpability but also what needs to change. The frame of extinction makes us confront the irreversible 'end'. By forcing us to a precipice,[28] it provides an opportunity and an imperative to respond to avert the extinction of species and ecosystems on the brink. Critically, it also requires us to work our way back up the chain of extinction to identify the drivers and root causes of biodiversity loss. The lens of extinction, which explores unsustainable human-nature relationships at their ultimate and logical conclusion, therefore enables examination of the limitations, contributions and potential of law to shape a thriving multi-species world. In the section that follows, we illustrate how the frame of extinction described above enables a greater depth of engagement with the utility (or otherwise) of existing legal instruments.

3. Reinvigorating extinction as a forensic frame to think about the law

The scholarly contributions just surveyed have highlighted that the challenge of extinction can frame discussions of the law, even if the multiples ways of thinking about extinction vary significantly in terms of methods and approaches. In this section, we make our contribution more directly apparent by interrogating, and forensically studying primary instruments of regulation using the extinction frame. We hope that this brief study illustrates the potential for more sustained studies along the same theme. In particular, we want to highlight the potential of extinction to enable more thematic and conceptual assessments of the law in a way that opens up opportunities for change.

[27]Poelina et al (2020), p. 6.
[28]Wyborn et al (2020).

The analysis below focuses on key biodiversity-related multilateral environmental agreements (MEAs). This discussion reveals how the narrow conceptualisation of nature, as envisaged by the 'conservation movement',[29] is reflected in the focus on charismatic species and wilderness and pristine areas in earlier biodiversity-related instruments such as the Convention on Migratory Species (CMS) and the Convention on the International Trade in Endangered Species (CITES). Earlier instruments remain important not only due to their (relatively) effective implementation and enforcement mechanisms but also due to their explicit focus on extinction. Nevertheless, as will be discussed below, by privileging certain framings and values of nature these instruments are insufficient to stem current extinction trajectories as they do not adequately target key drivers of biodiversity loss or the underlying value-change required. In contrast, the Convention on Biological Diversity (CBD), concluded in 1992 (about two decades after CITES and the CMS), hints at a more inclusive and holistic approach to conservation. However, without genuine commitments to implementing these values or any explicit focus on extinction, the CBD is also found to be insufficient.

3.1. Approaches to extinction and conservation within international law

As discussed above, there is a dire need for greater pluralism in the values that underpin nature laws. Pascual and colleagues illuminate the contrast between how the 'conservation movement' conceives of and values nature and how it is understood within broader communities and knowledge systems. This mismatch of understanding, they argue, is part of the reason for the continued downward trend of global biodiversity loss.[30] Pascual and colleagues illustrate how the dominant formal ways of understanding and relating to nature privilege the values of the predominantly western conservation movement. This has been legitimised by normative scientific positions particularly from the field of conservation biology. The authors highlight the historical focus of mainstream conservation movements on charismatic species and 'pristine' places. This, in turn, prioritises particular aesthetics and values concerning what 'nature' is and what it should be.[31]

The myth of pristine areas and the narrative of the need to protect these untouched lands to address global biodiversity is increasingly being challenged.[32] Conservation movements, which aim to protect supposed 'untouched lands' are relatively recent ideas, and do not account for the multiplicity of longer-standing relationships that societies – especially First Nations – have had with the land.[33] Archaeological and paleoecological evidence now demonstrates what Indigenous and local communities have long known. That is, that current trends towards the 6th mass extinction are not the result of human interactions with a pristine, untouched 'wilderness'. Rather, contemporary biodiversity loss largely stems from the colonisation and intensification of land-use in biologically and culturally diverse landscapes.[34]

[29]Pascual et al (2021).
[30]Pascual et al (2021).
[31]Pascual et al (2021), p. 1.
[32]Ellis et al (2021).
[33]Pascual et al (2021), p. 1.
[34]Ellis et al (2021).

Nevertheless, the myth and narrative of humans as separate from nature and the value placed on charismatic species and 'wilderness' areas persists in, and is perpetuated by, international law. This is particularly so in early biodiversity-related multilateral legal instruments. These instruments remain part of the canon of global biodiversity law. Regional and global biodiversity-related conventions, from as early as the 1930s, have focused specifically on particularly endangered species[35] or protected areas.[36] Even when Conventions turn to systems as a whole, such as in the *World Heritage Convention*, the focus remains on maintaining a natural, pristine environment that appears to be defined as untouched by humans.[37] The *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*[38] and the *Convention on Migratory Species* (CMS), concluded in the 1970s, also remain an important part of the suite of biodiversity-related MEAs and it is to these two Conventions that we now turn.

3.1.1. Species-based approaches – a clear extinction focus

There are several similarities between CITES and the CMS. This likely reflects the era in which they were concluded. CITES focuses on the illegal trade in endangered species and the CMS on the particular vulnerabilities of migratory species that cross international borders. Nevertheless, both Conventions have a clear focus on protecting specific species from extinction.

Appendices of threatened species are key components of both CITES and the CMS.

CITES sought to combat extinction through the relatively simple method of closing markets that had opened up to trading species. The Convention sets out its three appendices in Article II 'Fundamental Principles'. This Article explicitly indicates that Appendix I is to contain 'species *threatened with extinction* which are or may be affected by trade', Appendix II is dedicated to species that may be threatened with extinction if trade in these species is not subject to strict regulation, and Appendix III includes species that any state party deems to require protection through trade measures which require the cooperation of other parties. The Convention also provides for the inclusion of 'look alike' species in Appendix II. In other words, those species that closely resemble potentially endangered species.

Similarly, the CMS consists of two appendices. Appendix I, contains lists of endangered migratory species, [39] where endangered species are specifically acknowledged to be migratory species '*in danger of extinction* throughout all or a significant portion of its range'.[40] Appendix

[35] *Convention on International Trade in Endangered Species*, opened for signature 3 March 1973, 993 UNTS 244 (entered into force 1 July 1975)(CITES); *International Convention for the Protection of Birds*, opened for signature October 18, 1950, 638 UNTS 186 (entered into force 17 January 1963); *International Convention for the Regulation of Whaling,* opened for signature 2 December 1946, 161 UNTS 74 (entered into force 10 November 1948).

[36] *Convention for the Protection of the World Cultural and Natural Heritage*, opened for signature 23 November 1972, 1037 UNTS 151 (entered into force 17 December 1975); *Convention on European Wildlife and Natural Habitats*, opened for signature 19 September 1979, ETS No. 104 (entered into force 1 June 1982); *African Convention on the Conservation of Nature and Natural Resources*, opened for signature 15 September 1968, 1001 UNTS 3 (entered into force 16 June 1969); *Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere*, opened for signature 12 October 1940, 161 UNTS 193 (entered into force 1 May 1942); *Convention Relative to the Preservation of Flora and Fauna in their Natural State*, opened for signature 8 November 1933, 172 LNTS 241 (entered into force 14 January 1936).

[37] See, e.g. Woolaston (forthcoming), ch 5.

[38] On this convention see, Hutton and Dickson (2000).

[39] *Convention on the Conservation of Migratory Species of Wild Animals*, opened for signature 6 November 1979, 1651 UNTS 333 (entered into force 1 November 1983)(CMS), art 3.

[40] CMS, art 1.

II contains threatened (though not necessarily endangered) migratory species that would benefit from international co-operation and agreements 'for their conservation and survival'.[41]

CITES, in particular, has a relatively effective enforcement and implementation system. Articles III-V provide for the regulation of species across each of the appendices. Through the use of its permit system,[42] and in conjunction with measures that allow countries to confiscate, penalise and send specimens back to the source country,[43] the Convention contains several robust implementation measures. The CITES Secretariat has also done a good job of linking the imperative of tackling the international trade in wildlife to creating co-benefits in addressing the illicit trade in drugs and firearms to facilitate shared interest and resources for the Convention's purposes.

Despite this, the species-based approach of CITES and the CMS has its limitations. To begin with, the approach exemplifies a focus on the values of nature largely held by the western conservation movement, limiting our conceptions of what is valued and valuable. This is further illustrated in the bias in species listing which is well-established in the scientific literature and discussed by Lim in this volume.[44] Such listing biases prioritise charismatic species (especially megafauna) and those that are easier to study. Indeed, there is only one species of insect (the monarch butterfly *Danaus plexippus*) currently listed in any of the CMS appendices(in contrast to the 385 migratory birds and 200 mammals on the CMS Appendices). Only 10 reptiles are listed, along with 21 species of ray-finned fish and 40 species in the class Chondrichthyes (i.e. sharks, rays, skates, saw-fish and chimaeras).[45] Meanwhile, the politicised nature of species listing under CITES is well-documented.[46]

Further limitations of species-based approaches are that they fail to even sufficiently engage with the complex biophysical interactions across natural systems let alone the interconnected socio-cultural issues of social-ecological systems. As a result, species-based approaches are prone to problem shifting and perverse outcomes and often do not anticipate broader threats to biodiversity and limit the capacity to identify solutions. Specifically, CMS and CITES deal only with a limited set of species. That said, the particular focus of these Conventions is partly why they have been relatively successful in addressing important international issues relating to biodiversity and perhaps in slowing the extinction process for certain species. CITES, in particular, goes some way to address a key driver of biodiversity loss: the direct exploitation of species (e.g. fishing, hunting, logging). The direct exploitation of species is the primary driver of extinction in the ocean and the second greatest driver of biodiversity loss on land.[47] Nevertheless, these Conventions and the particular approach adopted are far from sufficient to address broader drivers of biodiversity loss on the scale required to prevent mass extinction.

[41]CMS, art 4.
[42]CITES, art 6.
[43]CITES, art 8.
[44]See Lim (2021), this volume; Martín-López et al (2011), p. 677; Farrier et al (2007), p. 219; Walsh et al (2012), p 134.
[45]Convention on the Conservation of Migratory Species of Wild Animals, 'Species', https://www.cms.int/en/species?field_species_class_tid=1857.
[46]Sky (2010); Gehring and Ruffing (2008).
[47]Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019).

3.1.2. The evolution towards ecosystem-based approaches and the move away from an explicit focus on extinction

More recent biodiversity-related MEAs have adopted a whole-of-ecosystem approach, which includes uncharismatic species and those that do not have immediate economic significance. By acknowledging the incomplete understanding of the number and types of species within an ecosystem and their abundance,[48] the approach opens up consideration of a wide range of intervention measures that integrate understandings of ecological processes that include landscape-level dynamics as well as smaller-scale interactions across soil ecology and species biology.[49] Such approaches move beyond the species-specific conservation approaches of previous conventions.

The 1971 Ramsar Convention,[50] which targets the conservation of wetlands, was one of the first to adopt an ecosystem-based approach. Reflecting other biodiversity-related conventions of this era, Ramsar also has listing at its core. The Convention compels states to 'designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance' (i.e. the List).[51] Later Conventions such as the 1997 UN Watercourses Convention and the CBD take a more sweeping approach. For example, the UN Watercourses Convention requires watercourse states to 'individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses';[52] and to avoid the introduction of potentially harmful alien or new species into the ecosystems of transboundary watercourses.[53] Subject to caveats, the CBD also requires countries to implement a range of conservation measures in-place (in-situ conservation)[54] and in controlled conditions outside species' natural habitat (ex-situ conservation).[55]

While the move in international law to recognise and implement ecosystem-level approaches to biodiversity should be applauded, in contrast to earlier conventions, the focus on extinction as a measurable indicator has been diluted with no direct reference to 'extinction' in any of the three Conventions just discussed. Aichi Target 12 under the CBD, aimed to achieve, by 2020, prevention of 'extinction of known threatened species' and improvement in the conservation status of those species. The inclusion of a specific extinction prevention target facilitated focused attention on extinction prevention. Nevertheless, not only was this target not met, there is no similar extinction focused target in the draft of the Aichi Target's successor – the 'post-2020 framework' of the CBD.

Further, Ramsar, the UN Watercourses Convention and the CBD attempt to include broader values and understandings of biodiversity that acknowledge a range of human-nature interactions. However, the framing of 'use', be it 'wise'[56], 'equitable'[57] or

[48]Walker (1995).
[49]Ehrenfeld (2000).
[50]*Convention on Wetlands of International Importance Especially as Waterfowl Habitat*, opened for signature 2 February 1971, 996 UNTS 245, (entered into force 21 December 1975) (Ramsar Convention).
[51]Ramsar Convention, art 2.
[52]*Convention on the Law of the Non-navigational Uses of International Watercourses*, opened for signature 21 May 1997, 2999 UNTS (entered into force 17 August 2014)(UN Watercourses Convention), art 20.
[53]UN Watercourses Convention, art 22.
[54]CBD, art 8.
[55]CBD, art 9.
[56]Ramsar Convention, art 2(6), art 6(2)(d), art 6(3).
[57]UN Watercourses Convention, art 5, art 6 re: equitable and reasonable use; UN Watercourses Convention, art 10 re: Relationship between different types of use – where 'special regard' is to 'be given to the requirements of vital human needs.'

'sustainable'[58], within these conventions, do not provide the optimal means for reflecting the multiple ways in which humans and nature interact. Depending on its interpretation, such a framing potentially prioritises instrumental and transactional ways of engaging with nature above relationships with the natural world premised on stewardship and reciprocity.

Notably, the CBD, does open the door for the recognition of broader values and relationships with biodiversity. The Convention is on its face a comprehensive overarching instrument for biodiversity. The CBD not only adopts a holistic approach both in terms of its definition of the various components of biodiversity which encompasses the diversity of the living and non-living from the species, ecosystem and genetic components of nature.[59] The Convention also expands the range of values of nature in its objectives: conservation, sustainable use and the equitable sharing of benefits arising from genetic resources and provides a comprehensive suite of measures that address complex issues which relate to safeguarding the multiple values of nature. However, the myriad of qualifications contained within the Convention reduce the CBD to an instrument of aspiration as opposed to one which requires real action – perhaps reflecting the true intention of the parties during its negotiation.[60]

Art 10(c) of the CBD, for example, includes the obligation to 'Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements'. States are, however, only required to do so 'as far as possible and as appropriate'. Similarly, Art 8, requires state parties to 'respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities'. This too though is qualified by being 'subject to its [the state party's] national legislation'.

Examining biodiversity-related MEAs through the frame of extinction set out in this paper and the wider volume highlights the need to (1) identify ways to move beyond the path dependence in law which can entrench outdated western scientific understandings; (2) interrogate the values and worldviews concerning nature that are prioritised in contemporary legal systems which largely maintain colonial approaches; (3) maintain and broaden a focus on extinction while facilitating greater engagement with varied cosmological views on the human relationship with nature and with each other. Avoiding the 6th mass extinction requires a coordinated strategy. A strategy that has, at its core, a rejection of assumptions that individual extinctions and mass extinction is inevitable or acceptable.[61]

On the one hand, this calls existing instruments to the task of addressing avoidable extinction events. At the same time, addressing extinction requires law to operate at a level far beyond the individual event. Law needs to address webs of causation and human-induced drivers of unprecedented global extinction at multiple, interconnected government scales. It also requires laws and legal instruments to engage more deeply with emotion. This is because emotion facilitates connection with underlying values surrounding extinction in particular grief and loss but also hope and wonder.[62] Connecting

[58]Sustainable use is one of the objectives of the Convention on Biological Diversity, see CBD, art 1; CBD, art 10 sets out requirements as to the 'sustainable use of components of biodiversity'.
[59]CBD, art 2.
[60]Lim (2021).
[61]McCarthy (2012).
[62]Woolaston & Akhtar-Khavari; and Lim in this volume.

with emotion broadens thinking about extinction beyond the extinction of particular species but also to the extinction of ecosystems[63] and of experiences. On the other hand, extinction forces re-examination of dominant framings of human relationships with nature.[64] This is where the work of genuine decolonisation is needed.[65] Such an approach would ask not only what needs to be conserved and how; not only who needs to be involved in answering these questions; but also ultimately whose laws and worldviews are privileged in addressing these questions. Therefore, addressing environmental law's extinction problem requires deep engagement with pluralism in the making of science and knowledge but also in the making of decisions and law. This in turn requires a re-think of what science and legal instruments use to measure success.[66]

4. Paper synopses and conclusion

This paper has argued that extinction has the potential to open up the development of the law to broader knowledge systems, and new ways of thinking and feeling. The frame of extinction also has the scope and potential to help us forensically interrogate not just technical legal responses to potential loss, but ideologies that sustain the life and deep systemic drivers that have brought us to the brink of the 6th mass extinction. The papers in this collection all create opportunities for the reader to think more deeply about how we structure ourselves as a multispecies society as well as humanity's place in nature. The papers provide us with a rich vocabulary and a set of ideas and approaches that enable further discussions about our role as a species in the extinction of non-human beings. In this section, we outline the multiple facets of the papers in this collection. In particular, we illustrate how the papers in this collection contribute to two unique discussions about environmental law's extinction problem. The first group assesses the concepts and ideas that are so deeply entrenched in how we structure our lives that we have forgotten how they can also contribute to the extinction challenge. These papers fit into what we described in part one of this paper as the third and more contextual approach to studying the law which draws on broader disciplinary traditions outside (but related to) the law. In these papers, the idea of extinction serves to interrogate certain foundational ideas that deeply structure how human beings use the legal system to mediate our relationship with the natural world.

Glenn Albrecht starts this collection with a critique of 'rights' as a foundational problem of the Anthropocene. The paper argues against the individuality and human autonomy that is encouraged by the rights discourse. He rallies in particular against the concept of environmental rights. Instead, Albrecht argues that we need a new concept that can culturally, ethically and legally facilitate symbiotic engagement within unified wholes. He introduces the term *Ghehds*, to describe and imagine an alternative and more complex set of relationships that assume 'unity, cooperation and inclusion'. In the 'Extinction of Rights and the Extantion of Ghehds' Albrecht calls on us to rethink not just rights but all deeply held legal structural values that do not enable flow and movement between us and the natural world.

[63]O'Donnell (2018).
[64]Govind in this volume.
[65]See the following papers in this volume: Bendik-Keymer; Albrecth; O'Donnell; and Lim.
[66]See Esther and Purvis in this volume.

Paul Govind also critiques the concept of rights. Govind's contribution helps us think about our responsibility towards non-human beings. He argues that our legal relationship to the land through property law entrenches a hierarchy between human beings and the natural world that then contributes to the extinction problem. Govind takes one of the most sacred of legal institutional structures and suggests that through property, the law disconnects human beings from the space and place that they occupy. As a consequence, humans become concerned with utility rather than the material of land and non-human beings living on it. Govind uses this as an opportunity to imagine the law as shifting us ethically away from rights and towards enabling responsibility that people will have to the land. He argues that legal developments must be founded on an ethic of responsibility that will require human and non-human beings to equally flourish in 'places' that they occupy. Govind aims to move the law away from allowing disembodied and neutral concepts, like rights, to be used to impose human beings on other species occupying space and place in the world.

Govind and Jeremy Bendik-Keymer share a similar concern with what happens when people are given exclusive legal rights to something. Both papers recognise that land abstraction through property rights enable and support the extraction of value from the land and the natural world. Bendik-Keymer sees property however, as a systemic and structural challenge that European imperialism is responsible for enabling and promoting. In a departure from traditional legal scholarship on extinction, he argues that the drivers of mass extinction are not the usual culprits like land-use changes but rather 'globalisation, capitalism, and industrial economy'. Notwithstanding, Bendik-Keymer argues that the international system continues to support these culturally determined and instantiated drivers because land abstraction remains an important underlying support for the continued existence of imperial cultural constructs. Critically, however, he examines how decolonisation and 'returning land to indigenous sovereignty' can facilitate changes that can have significant bearings on the problems of extinction. This charts a more complex but deeply transformative way of rethinking the solutions for modern nation-states in averting the future extinction of species.

The second group of papers look more closely at the everyday operation of legal and governance institutions and query how the law and it's institutions, and how we use them have narrowed how we view and respond to extinction challenges. The papers in this group also oscillate across disciplines and ways of thinking about the law.

Katie Woolaston and Afshin Akhtar-Khavari argue that decision-making around land-use often involves a compromise because of the wide range of factors that need to be taken into account by decision-makers. They argue that extinction concerns are not prioritised, particularly concerning invertebrates or less charismatic non-humans. Building on the thread of the first set of papers, this paper illustrates how the moral imperative to take into account how we feel about extinction is trumped by concerns with utility and the benefits that will come from the projects being undertaken. Woolaston and Akhtar-Khavari argue that the law tends to attenuate the moral imperatives to avoid extinction by ignoring empathetic and compassionate concerns that we may have towards non-human beings. The lack of emotional validation by decision-makers and the law can prioritise utility considerations that also contribute to making us more apathetic towards extinction, thereby changing our emotional response. Their paper asks that the law genuinely engage with a broader range of concerns relating to the potential extinction of invertebrates by allowing emotional attachments to be considered.

Michelle Lim also asks us to look more critically at the tools developed by the law to govern threatened or endangered species. Lim helps us to think about the range of complex thoughts and emotions that accompany the death of the last of a species, which she refers to as 'endlings'. The law often aims to manage threatened and endangered species so they don't become extinct, via the use of lists. Lim however argues that these kinds of governance strategies do not help avoid extinction. In fact, she urges us to see that in its design and implementation the law often ignores extinction by focusing on lists and other superfluous means of technically regulating our relationship to potential 'endlings'. By deploying story-telling as her method for engaging in legal scholarship, Lim seeks to imagine the world from the perspective of an 'endling' to suggest ways in which the law can develop more responsibly and empathetically towards them. This more inclusive and culturally determined direction will, in her view, create a deeper response to extinction than what lists seek to engender.

Erin O'Donnell examines how different legal systems are recognising rivers and the ecosystems that sustain them as entire living beings with legal rights. At the same time though, rivers are being deprived of the flow of water that they need to exist. O'Donnell makes the point that legal systems that have recognised rivers are yet to contribute to our understanding of what it would mean for them to go extinct. However, she also identifies three ways in which the legal recognition of the river as a living being with rights can exacerbate the challenge of extinction for them. For instance, their recognition as living entities now means that we need to see degradation and pollution as potential drivers of extinction. Whereas O'Donnell uses the idea of the legal person to think about the limits of the law for conserving rivers, she also imagines new possibilities for legal pluralism in this discussion. The human-nature relationship that can inform how we protect rivers can be deeply influenced by the confluence of ideas from different traditions that can in turn create a stronger sense of responsibility. This, O'Donnell argues, is a much better way for environmental law to manage extinction of rivers than compared to the simple creation of more rules. Her paper critically complements Lim's, in that whilst both recognise innovations in environmental law, they also identify their limits in the context of their failure to avert extinction. Both also acknowledge the turn to appreciating and working with ideas from diverse cosmologies and using traditional knowledge to think about how we respond to major drivers of extinction.

Following these pieces, Esther Turnhout and Andy Purvis critique the use of the concept of 'species' itself in legal instruments, and science-policy initiatives like the IPBES Global Assessment. They argue that the concept of species narrows how we come to represent the richness inherent in the natural world. The concept of species diversity and richness is potentially problematic in the larger sense of not being practically feasible to measure and identify the interrelationships within an ecosystem, and points out that it is not central to biospheric processes which in turn influence the drivers ultimately affecting the natural world. More importantly, Turnhout and Purvis discuss the variety of practices and methods that exist for assessing and valuing biodiversity as compared to the 'statistical, accounting, archival, and database practices' that are represented by focusing on species alone. Whilst more charismatic species will always receive attention, they argue that biodiversity is more than simply the conservation of particular species. Biodiversity is a 'move from a domain of particular and knowable living creatures to one of generalizations, unknowability and diversity'. The piece complements the papers in this second group of papers by asking us all to carefully account for the role that our

concepts and ideas can play in limiting how we think about extinction generally and in the context of law. More fundamentally Turnhout and Purvis argue that a narrow or limited sense of species can exacerbate extinction processes.

To conclude we draw from a recent essay that Fischer and Riechers have written arguing that hope, rather than grief and anxiety, are better ways of approaching the work we do as conservationists.[67] They draw inspiration from the work of Michael Soule who is well recognised as one of the intellectual founding fathers of conservation biology.[68] One of these ideas is the notion of 'impermanence'. They argue that impermanence is a reference to the fact that the world is constantly in a state of flux. Such notions of impermanence are not out of place in Indigenous understandings of the world. Poelina and colleagues for example, explain the concept of 'the long now' – one where time is cyclical. Understood as 'bringing past, present and future together in a continuing present.[69] Similarly, Irene Watson conveys that 'Being is a continuous cycle; being always returns to become another, returning to its beginning, past and future'. Critically, Watson emphasises: 'This process cannot be extinguished; it is the law'.[70]

Whilst today we may be experiencing ecological death and destruction, the sense that nothing is permanent and that tomorrow things could be different should create and enable a sense of hope. Whilst 'we' started our introductory essay with a note about the morbid nature of the topic of extinction we want to finish by pointing to the opportunities and possibilities that papers in this collection argue and hope for.

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[67]Fischer and Riechers (2021).
[68]See, Inouye and Ehrlich (2020).
[69]Poelina et al (2020), p. 8. See also, Wooltorton et al (2014).
[70]Watson (2014), p. 17.

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