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## Eco-Necrotourism and Public Land Management: Last Chance Tourism, Ecological Grief, and the World's Disappearing Natural Wonders

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# ECO-NECROTURISM AND PUBLIC LAND MANAGEMENT: LAST CHANCE TOURISM, ECOLOGICAL GRIEF, AND THE WORLD'S DISAPPEARING NATURAL WONDERS

ROBIN KUNDIS CRAIG\* AND KATRINA F. KUH\*\*

## ABSTRACT

Last Chance Tourism. 500 Places to See Before They Disappear. 100 Places to Go Before They Disappear. *As these (real) book titles attest, climate change, often in combination with loss of biodiversity, has created a new kind of ecotourism, which we term eco-necrotourism—the desire to see natural wonders and rare species before they are lost or transformed forever. As a scholarly topic, eco-necrotourism is a small facet of an emerging necessity for climate change law and policy: the need for planners, managers, lawmakers, and policy writers to consider human psychological responses to climate change and its impacts. However, those responses will be place- and culture-specific, making this new component of climate change adaptation law as varied and complex as climate change adaptation itself. This Article offers a manageable starting place for theorists, managers, and policymakers: the potential impacts of human psychological responses to climate impacts on management of the world's nature parks.*

*Eco-necrotourism emerges from the intersection of two separately observed phenomena: the long-acknowledged promotion of last chance tourism and the relatively recent naming and explorations of ecological grief. While these two phenomena have become active topics of discussion in other disciplines, this Article is the first, we believe, to discuss their intersection and the emergence of eco-necrotourism as legal problems. Thus, this Article's first contribution to the legal literature is to demonstrate to readers—most importantly public lands managers—that eco-necrotourism is both real (at least for certain public natural wonders) and important for nature park managers who must increasingly deal with climate change and its impacts, including the psychological responses of former, existing, and future visitors. The exact implications of eco-necrotourism for managers will, of course, vary according*

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to the impacts that a nature park is experiencing, how tourism intersects with those impacts, and the legal authorities governing management of the protected area. Nevertheless, eco-necrotourism surfaces at least four novel and significant considerations for management: cognizing visitor psychological responses in adaptation planning; the need to reconceptualize use and access; preparing for the last visitor problem; and interrogating the meaning and methods of achieving intergenerational equity.

More generally, however, this Article provides the first concrete example of how subjective human psychological responses may complicate climate change adaptation planning. Specifically, instead of merely assessing likely climate change impacts and mapping scenarios—with, of course, input from the relevant communities, individuals, and interest groups—managers and governments will increasingly need to acknowledge that building capacity to address psychological reactions to climate change impacts is a crucial part of climate change adaptation.

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## INTRODUCTION

Glacier National Park is losing its eponymous features. Created in 1910 as one of the United States' first ten national parks, Glacier National Park is now warming “at nearly two times the global average and the impacts are already being felt by park visitors.”<sup>1</sup> As local

1. *Climate Change*, NAT'L PARK SERV., <https://www.nps.gov/glac/learn/nature/climate-change.htm> [<https://perma.cc/BNB8-C7RN>] (last updated May 19, 2022).

summer mean temperatures increased 1.66°C, “[o]ver two-thirds of the estimated 150 glaciers existing in 1850 had disappeared,” and “the surviving glaciers were greatly reduced in area.”<sup>2</sup> As one example, “Grinnell Glacier lost 113 acres between 1966 and 2015,”<sup>3</sup> and “[e]very glacier’s surface area was smaller in 2015 than it was in 1966.”<sup>4</sup> Within a few decades, there may be no glaciers left in Glacier National Park.<sup>5</sup>

For some, Glacier National Park’s loss of glaciers is one reason among many to get serious about climate change.<sup>6</sup> For many others, it’s a reason to visit ASAP.<sup>7</sup> Ignoring the 2020 “COVID blip,” when only 1.7 million people visited the park, since 2016, Glacier National Park has entertained roughly 3 million visitors each year, a decided increase from its average of roughly 2 million visitors per year between 2008 and 2015.<sup>8</sup>

Welcome to the world of eco-necrotourism: travel to see the world’s natural wonders and species before they are lost forever.

“Eco-necrotourism” derives from “ecotourism”—travel to experience unique or particularly intact ecosystems—and “necro,” referencing death and transformation. Thus, eco-necrotourism is deliberate travel to visit ecosystems that are dying or transforming, generally as an expression of grief or anticipated loss. Eco-necrotourism, we argue, is one component of an understudied and under-theorized component of climate change adaptation: the role of human psychological reactions. While the importance of public participation and education in climate change adaptation planning is widely acknowledged, especially at the

2. Myrna H.P. Hall & Daniel B. Fagre, *Modeled Climate-Induced Glacier Change in Glacier National Park, 1850-2100*, 53 *BIOSCIENCE* 131, 131 (2003).

3. *Climate Change*, *supra* note 1. For visual evidence of glacier loss from the U.S. Geological Survey’s “Repeat Photography Project,” see *Glacier Repeat Photos*, NAT’L PARK SERV., <https://www.nps.gov/glac/learn/nature/glacier-repeat-photos.htm> [<https://perma.cc/NL8Y-WNCU>] (last updated Sept. 19, 2023).

4. *A Closer Look: Glaciers in Glacier National Park*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/climate-indicators/closer-look-glaciers-glacier-national-park> [<https://perma.cc/BT7C-TA9Y>] (last updated July 21, 2023) [hereinafter *A Closer Look*].

5. Scottie Andrew, *Some of Glacier National Park’s Glaciers Have Lost As Much As 80% of Their Size in the Last 50 Years*, CNN TRAVEL (Sept. 16, 2020, 4:54 PM), <https://www.cnn.com/travel/article/glacier-national-park-melting-scn-trnd/index.html> [<https://perma.cc/PSA7-ZDNQ>]; Michael Wines, *Climate Change Threatens to Strip the Identity of Glacier National Park*, N.Y. TIMES (Nov. 24, 2014), <http://nyti.ms/1xDn60H> [<https://perma.cc/A2UZ-7XT8>].

6. *E.g.*, *A Closer Look*, *supra* note 4.

7. Marcello Rossi, *People Are Flocking to See Melting Glaciers Before They’re Gone—Bringing Both Benefit and Harm*, ENSIA (Apr. 26, 2019), <https://ensia.com/features/melting-glaciers-tourism-impacts/> [<https://perma.cc/7MB4-LN7Y>].

8. Statista Rsch. Dep’t, *Number of Recreational Visitors to Glacier National Park in the United States from 2008 to 2022*, STATISTA (Apr. 12, 2023), <https://www-statista.com/statistics/253875/number-of-visitors-to-us-glacier-national-park/> [<https://perma.cc/94R9-VWLX>]; see also Rossi, *supra* note 7 (“At Glacier National Park in Montana, where the 26 active glaciers that remain of the original 150 or so are poised to vanish in a decade, the volume of visitors grew noticeably over the past five years.”).

local level,<sup>9</sup> the deeper and more emotional human responses to climate change remain an underdeveloped facet of adaptation research, adaptation planning, and adaptation law and policy. As one group of researchers who *are* interested in this facet have observed, “In much of climate and related science there is an implicit assumption that climate change only becomes important to society when it affects material aspects of well-being, those most easily summarized in economic costs.”<sup>10</sup> As a result, “climate change policy underemphasizes, or more often ignores completely, the symbolic and psychological aspects of settlements, places, and risks to them.”<sup>11</sup>

Making this facet of climate change adaptation law and policy even more complex is the fact that psychological responses will vary among individuals, communities, and cultures. Like much of climate change adaptation, therefore, consideration of psychological responses will, in many cases, need to be specifically local or regional.

Nevertheless, explorations of what human psychological responses might mean for adaptation law, policy, and planning need to begin *somewhere*. Eco-necrotourism appears to be both specifically focused enough in terms of subject matter and widely experienced enough geographically to provide a good initial set of workable case studies in ecopsychology, illuminating the many issues that lawmakers and managers everywhere will eventually have to acknowledge to engage in effective climate change adaptation planning. At the same time, careful study of eco-necrotourism could more generally help to build governance capacity to anticipate and manage human psychological reactions to, while also better addressing human mental health needs regarding, ongoing and increasingly profound ecological and social-ecological change.

In the Anthropocene, the world’s protected natural areas—an eclectic group of places that we lump together as the world’s “nature parks”—often function as “early warning systems,” providing “the first tangible evidence of an ecosystem response attributable primarily to climate change.”<sup>12</sup> However, park managers and scientists are not the only ones who respond to these increasingly visible changes. Visitors do, as well, and in ways that could complicate and often should alter how these special places are managed. In other words, visitor psychology is as relevant to climate change adaptation in these parks as the impacts of climate change themselves.

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9. Marc J. Stern, Kristin F. Hurst, Jennifer J. Brousseau, Caleb O'Brien & Lara J. Hansen, *Ten Lessons for Effective Place-Based Climate Adaptation Planning Workshops*, CLIMATE, Feb. 10, 2023, at 4-6.

10. W. Neil Adger, Jon Barnett, F.S. Chapin III & Heidi Ellemore, *This Must Be the Place: Underrepresentation of Identity and Meaning in Climate Change Decision-Making*, GLOB. ENV'T POL., May 2011, at 1.

11. *Id.* at 2.

12. Hall & Fagre, *supra* note 2, at 132.

In the larger tourism literature, as Part I will discuss in more detail, travel to disappearing places is generally referred to as “last chance tourism.”<sup>13</sup> We choose the less catchy moniker “eco-necrotourism” to emphasize that some of the emerging modes of last chance tourism derive from different (or at least additional) motives than just a consumeristic desire to get all one can while one can.<sup>14</sup> Indeed, the emerging literature on ecological grief documents that many people experience a real grieving process as beloved places visibly change under the triple influences of climate change, biodiversity loss, and the cumulative impacts of more traditional anthropogenic stressors such as pollution and development. Eco-necrotourism is one manifestation of this grief over the upcoming loss of a place, akin to a last bedside visit to a dying relative. Importantly for park managers and planners, but as yet unexplored in the legal literature, eco-necrotourism is also a potentially consequential human psychological response to climate change’s impacts that will require changes in how at least some protected places are managed.

This Article offers the first examination of last chance tourism and ecological grief as nature park management issues; it is also one of the first articles to explore the psychological aspects of climate change adaptation more generally. We deliberately limit its focus to public places valued primarily for their natural and ecological features. By “public,” we generally mean government-owned land set aside as a park, preserve, or place of recreation, although in some cases lands technically in private ownership but opened to the public might also qualify. Publicly owned natural wonders often carry a presumption that they are at least nominally open to anyone who can meet the requirements (often minimal, if any) for entrance. In many countries,

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13. Raynald Harvey Lemelin, Emma Stewart & Jackie Dawson, *An Introduction to Last Chance Tourism*, in *LAST CHANCE TOURISM: ADAPTING TOURISM OPPORTUNITIES IN A CHANGING WORLD* 3, 4 (Raynald Harvey Lemelin, Jackie Dawson & Emma J. Stewart eds., 2012) (defining last chance tourism “as when ‘tourists explicitly seek vanishing landscapes or seascapes, and/or disappearing natural and/or social heritage’”). In the foreword, Kenneth Shapiro defines last chance tourism as “[t]he desire on the part of travelers to experience destinations motivated by the knowledge that these places are on the verge of changing, or disappearing, forever.” Kenneth Shapiro, *Foreword*, in *LAST CHANCE TOURISM*, *supra*, at xiv, xiv. Other contributors to the text define it as “a tourism trend whereby tourists travel to endangered natural sites to see them before they vanish or are irrevocably transformed.” Chris Lemieux & Paul Eagles, *Last Chance Tourism in Canada’s Protected Areas: Management Implications and Emerging Ethical Considerations*, in *LAST CHANCE TOURISM*, *supra*, at 195, 197. Other terms used to describe this activity include doom tourism, extinction tourism, catastrophe tourism, climate tourism, climate sightseeing, global warming tourism, and see it before it’s gone tourism. Chris Lemieux et al., “*The End of the Ice Age?: Disappearing World Heritage and the Climate Change Communication Imperative*,” 12 *ENV’T COMM’N* 653, 671 (2018); Jackie Dawson et al., *Ethical Considerations of Last Chance Tourism*, 10 *J. ECOTOURISM* 250, 250 (2011).

14. Some scholars have characterized the last chance tourism market as a “unique interaction between humans and their environment in the context of a kind of ‘limited time offer’ imposed by global environmental change.” Lemieux et al., *supra* note 13, at 665.

they are also often subject to the law and politics of indigenous or local resident claims or impacts, species protection, public preferences, and public financing.

Most importantly for this Article, public park management is an inherently legal activity in most countries. Authorizing legislation generally defines the park's purpose, the agency or other public entity in charge of the park's management, and, at least in broad strokes, acceptable public uses. Decisions about how these places are run, who can access them, and what visitors can do while visiting are usually subject to public accountability requirements, public participation opportunities, and/or legal challenges. Thus, to a degree much greater than for privately owned natural wonders, eco-necrotourism will increasingly require governments to engage in legal decisionmaking to consider (or reconsider) how and for whom they manage these nature parks as part of an adaptation strategy to cope with these places' climate change-driven transformation or loss.

In turn, this Article's focus on nature parks—that is, on places valued primarily for their natural and ecological features—reflects two realities of eco-necrotourism. First, as noted, nature parks are often the places where climate change impacts first become noticeable, and it is the foreseeability of climate change impacts, in combination with committed warming<sup>15</sup> and the relatively long times involved (e.g., decades for Glacier National Park), that both prompts a grief response and allows a robust last chance tourism industry to emerge. Other anthropogenic means of destroying a place generally do not allow for the relatively long-term *anticipatory* loss that gives rise to eco-necrotourism. Intentional short-term destruction, like the Taliban's attack in February 2001 on the two giant Bamiyan Buddhas in Afghanistan,<sup>16</sup> usually occurs too fast for anticipatory tourism. While many grieved that destruction—sometimes figured as an actual death<sup>17</sup>—*after* it occurred, neither the limited ability to anticipate the event nor the violence of its execution allowed for last chance tourism. In contrast,

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15. J.B. Ruhl & Robin Kundis Craig, *4°C*, 106 MINN. L. REV. 191, 214-18 (2021) (“The increasing concentration of carbon dioxide already accumulated in the atmosphere—the planet’s response to which constitutes an important source of uncertainty regarding how fast the planet will warm—represents ‘committed warming,’ a future of global average temperature increases even if all new emissions cease tomorrow (unless technology is developed to actively draw CO<sub>2</sub> back out of the atmosphere on a massive scale).”).

16. Pierre Centlivres, *The Death of the Buddhas of Bamiyan*, MIDDLE E. INST. (Apr. 18, 2012), <https://www.mei.edu/publications/death-buddhas-bamiyan> [<https://perma.cc/A53Y-883P>].

17. *E.g., id.* Notably, twenty years later, mourners commemorated the loss with “A Night with Buddha” event culminating in a virtual projection of one of the Buddha statues (Salsal) into the cave it once occupied. *Afghan Buddha in Virtual Return, 20 Years After Taliban Destroyed*, AL JAZEERA (Mar. 10, 2021), <https://www.aljazeera.com/news/2021/3/10/afghan-buddha-in-virtual-return-20-years-after-taliban-destroyed> [<https://perma.cc/4WZT-AL5W>].

destruction of a natural place through development, pollution, over-use, and climate change often proceeds as a “death by a thousand cuts,” extending the time to anticipate the loss—and to visit one last time.

Second, many nature parks—indeed, probably most—are also subject to more immediately controllable human stressors such as pollution and development. As a result, they are also the places for which climate change is most likely to be a significant cause of multiple interacting changes that eventually cascade into the place’s disappearance or transformation, making that loss less stoppable or reversible. While cultural wonders such as art and ruins can also fall victim to climate change,<sup>18</sup> climate change’s impacts on them are generally less complex and more amenable to technological solutions, or at least life extensions. Moreover, as a practical matter, cultural wonders at risk, as a group, have not (yet) generated the same level of last chance tourism interest as natural places.<sup>19</sup>

This Article argues that both the increasing ability to project climate change’s impacts on the world’s natural wonders and the aspects of individual and cultural grief that eco-necrotourism encompasses should prompt the government agencies who manage these public spaces to anticipate new demands by and needs of both visitors and the larger community. At the very least, park managers should anticipate visitors’ psychological responses to the transformations underway as part of adaptation planning for the park. However, eco-necrotourism could also require nature park managers to reconceptualize use of and access to the park, to confront or anticipate the thorny “last visitor” problem, and to reconsider their duties to manage for the benefit of future generations.

At the same time, we acknowledge that climate change, specific nature parks, and eco-necrotourism will interact in a variety of different ways. For example, in some places, last chance tourism will make little to no difference to the course of how the place disappears or transforms, while in others, eco-necrotourists could become the preventable tipping point stress that induces a transformation that the place might otherwise resist—at least for a few more decades.<sup>20</sup> In still other places,

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18. *E.g.*, Redacción MAPFRE, *How Climate Change Affects World Heritage Monuments*, MAPFRE (Aug. 26, 2021), <https://www.mapfre.com/en/insights/sustainability/climate-change-world-heritage-monuments/> [<https://perma.cc/47DF-FTZB>].

19. For example, *Frommer’s*, in what is perhaps the most extensive guide to last chance tourism, devotes its first eight chapters and roughly 250 pages to natural wonders and species, but only six chapters and roughly 200 pages to the disappearance of cultural objects and places. HOLLY HUGHES & JULIE DUCHAINE, *FROMMER’S 500 PLACES TO SEE BEFORE THEY DISAPPEAR* (2d ed. 2012). *Frommer’s*, moreover, is by far the most even-handed of the guidebooks. Compare INDIANA STANDFIELD, *LAST CHANCE TOURISM: PLACES, LANDMARKS AND ANIMALS TO SEE BEFORE THEY DISAPPEAR* (2017) (devoting one chapter and thirteen pages to humanmade wonders), with DESMOND TUTU & RAJENDRA K. PACHAURI, *100 PLACES TO GO BEFORE THEY DISAPPEAR* (Abrams 2011) (giving twelve of the hundred spots to cities).

20. For example, the Intergovernmental Panel on Climate Change noted that



the impacts of climate change may simply make the desired tourist experience impossible, such as river rafting in a place where the river is drying up.<sup>21</sup> Given this variety, eco-necrotourism will require a spectrum of climate adaptation management responses specifically tailored to the place, the impacts, visitors' actual responses, and the governing legal regime. Therefore, in this Article, we seek merely to identify eco-necrotourism as an emerging consideration for climate change adaptation planning in nature parks, not to exhaustively catalogue the management responses that might be necessary.

This Article proceeds in three parts, exploring several different literatures in the process. Part I delves into the tourism and management literatures to explore last chance tourism and its relationship to climate change. Part II, in turn, looks to psychology to illuminate the recently described phenomenon of ecological grief. Part III examines eco-necrotourism itself and new demands that managers should anticipate as a result of the collective mourning of places that climate change is transforming. The Article concludes with reflections on what lessons eco-necrotourism and ecological grief might provide for climate change adaptation law, policy, and place-based climate adaptation planning more generally.

### I. LAST CHANCE TOURISM IS A REAL PHENOMENON

*Last Chance Tourism*.<sup>22</sup> *500 Places to See Before They Disappear*.<sup>23</sup> *100 Places to Go Before They Disappear*.<sup>24</sup> As these book titles attest, the tourism industry both recognizes and promotes last chance tourism to see disappearing places and species. To date, most scholarly studies of last chance tourism have focused on the phenomenon *as a* tourism—as opposed to a legal or management—phenomenon. This Part reviews that tourism literature both as background and to glean helpful lessons for the future management of disappearing places.

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“interactions between tourism and climate impacts worsen outcomes for [some] coastal and ocean environments,” as is occurring as a result of increased cruise ships in the Arctic Ocean. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022: IMPACTS, ADAPTATION AND VULNERABILITY 480 (2022) [hereinafter 2022 IPCC ADAPTATION REPORT] (citation omitted). Conversely, tourism can also sometimes help, as when tourism pressure at eroding beaches encourages soft beach infrastructure such as beach renourishment and submerged groins rather than a hardened shoreline. *Id.*

21. “Public perception of climate-change connections to tourism can create obstacles such as deterring long-term investment in SIDS [Small Island Developing States] tourism initiatives, or benefits like inclining tourists to participate in conservation projects.” *Id.* at 480-81 (citations omitted).

22. STANDFIELD, *supra* note 19.

23. HUGHES & DUCHAINE, *supra* note 19.

24. TUTU & PACHAURI, *supra* note 19.

A. *Climate Change as a Driver of  
Change in Protected Places*

Anthropogenic climate change is now accepted, both scientifically<sup>25</sup> and legally,<sup>26</sup> to be a real phenomenon caused primarily by emissions of greenhouse gases from humans' burning of fossil fuels such as coal, petroleum, and natural gas. While climate change's trajectory over the next century could still be significantly influenced by stronger global policies to reduce anthropogenic greenhouse gas emissions,<sup>27</sup> scientists increasingly conclude that the accumulation of greenhouse gases in the atmosphere has probably already committed the world to a global average temperature increase of at least 2°C;<sup>28</sup> business-as-usual scenarios could push the increase closer to 4°C by 2100 or shortly thereafter.<sup>29</sup>

Climate change is already affecting many of the natural places that humans have set aside legally as "special"<sup>30</sup> at all levels of government—World Heritage Areas, national parks, state preserves, marine protected areas, county and city parks, and a variety of other designations.<sup>31</sup> Four federally protected parks in the United States aptly illustrate this reality.

In Florida, Everglades National Park is one bad hurricane away from transforming into something else. Rising seas and worsening storm surges are the primary climate change threats to the Everglades' unique low-elevation and subtropical ecosystem, which is "home to many rare and endangered plants such as tropical orchids and herbs, some of which are found only in south Florida."<sup>32</sup> As the National Park Service explains, "Nearly flat and surrounded on three sides by rising seas, Everglades National Park is already feeling the effects of a warming climate. Sea-level rise has brought significant changes that are being observed on the landscape, and more are sure

25. Ruhl & Craig, *supra* note 15, at 203-05.

26. *Id.* at 195-96.

27. *Id.* at 204-10.

28. *Id.* at 211-16.

29. *Id.* at 215-16.

30. *E.g.*, *What We Know About Climate Change*, NAT'L PARK SERV., <https://www.nps.gov/ever/learn/nature/ccintrosknow.htm> [<https://perma.cc/3RZ9-HGDW>] (last updated Aug. 20, 2015) (noting that, in U.S. national parks, "winter ranges of bird species have shifted north in more than 50 parks, small mammals' habitats have shifted upslope in Yosemite, and conifer tree mortality has risen in four parks").

31. *See, e.g.*, *Discover the World's Protected and Conserved Areas*, PROT. PLANET, <https://www.protectedplanet.net/en> [<https://perma.cc/GH44-RLNT>] (last visited Oct. 20, 2023); *WDPA—World Database of Protected Areas*, ARCGIS, <https://www.arcgis.com/home/item.html?id=ae78aeb913a343d69e950b53e29076f7> [<https://perma.cc/2XST-XZ8F>] (Sept. 2, 2023).

32. *Sea-Level Rise in Everglades National Park*, NAT'L PARK SERV., <https://www.nps.gov/ever/learn/nature/cceffectsslrinpark.htm> [<https://perma.cc/9HRX-XGBW>] (last updated Aug. 24, 2015).

to be seen in the years ahead.”<sup>33</sup> Specifically, the global warming-induced increase in the rate of sea-level rise around south Florida “threatens to outpace the ability of plants, animals, and processes of the Everglades, which are already being affected by sea-level rise in many ways, to adapt.”<sup>34</sup> Sea-level rise is already causing groundwater and soils in the park to become salty (salinization), and it is unclear whether the variety of species that live in the park—and that constitute some of the major attractions for tourists—will survive.<sup>35</sup> Canals built in the early twentieth century to drain the “swamps” for farmland and to control flooding now exacerbate the impacts of accelerating sea-level rise, providing “a pathway for salty ocean water and sediments to travel inland, especially during high tides or with the help of strong wind and surge from tropical storms. In recent years, the interior freshwater marsh has disappeared almost entirely, and nearby lakes have filled almost completely with marine sediments.”<sup>36</sup>

As noted, Glacier National Park in Montana is losing its glaciers to the warming climate. It has also been subject to the increasing numbers of wildfires that have burned in the West.<sup>37</sup> “Scientists estimate that climate change has doubled the amount of acres burned in western US wildfires since the 1980s. This trend, including an increase in size, frequency, and severity of wildfires, is expected to continue.”<sup>38</sup> In Glacier, climate change acts as a “threat multiplier,” more often exacerbating or intensifying existing challenges rather than creating entirely new problems.<sup>39</sup> However, the visitor experience is already being affected. The number of days each year with temperatures over 90°F is increasing, posing “dangers for hikers on shadeless trails with limited access to water.”<sup>40</sup> Air quality is deteriorating, affecting visitor health: “Smoke from increasingly frequent and severe wildland fires can intensify respiratory and cardiopulmonary illnesses. Additionally, longer growing seasons, warmer temperatures, and elevated carbon dioxide levels have increased pollen levels, worsening allergies and asthma.”<sup>41</sup> Wildfires and pollution also “diminish the park’s famous views.”<sup>42</sup> Ticks and mosquitoes pose an increasing risk of disease in the

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33. *Climate Change*, NAT'L PARK SERV., <https://www.nps.gov/ever/learn/nature/climatechange.htm> [<https://perma.cc/8R79-JF7J>] (last updated Feb. 26, 2018).

34. *What We Know About Climate Change*, *supra* note 30.

35. *Sea-Level Rise in Everglades National Park*, *supra* note 32.

36. *What's Happening to Cape Sable?*, NAT'L PARK SERV. (citation omitted), <https://www.nps.gov/ever/learn/nature/cceffectscapesable.htm> [<https://perma.cc/YU9F5BZ6>] (last updated Sept. 9, 2015).

37. *Climate Change*, *supra* note 1.

38. *Id.*

39. *Id.*

40. *Id.*

41. *Id.*

42. *Id.*

warmer temperatures.<sup>43</sup> Finally, climate change is impacting multiple species that visitors often hope to see, from mountain goats, wolverines, and pika to wildflowers to bull trout.<sup>44</sup> Thus, while the loss of Glacier's glaciers may be the starkest manifestation of climate-driven change, the entire park is transforming in significant ways.

Just as Glacier is losing its eponymous glaciers, so too are many national seashores facing loss, or significant transformation, of their eponymous seashores. Mapping of lands in Atlantic Coast national seashores that are less than one meter above current sea level suggests that most lands in Fire Island, Assateague Island, Cape Hatteras, Cape Lookout, and Canaveral are low-lying enough to be at great risk of being submerged in this century, creating the possibility that major portions of the seashores, or even entire seashores, could be permanently covered by the ocean.<sup>45</sup> Pacific Coast seashores are not spared. A 2005 assessment of the Point Reyes National Seashore's vulnerability to sea-level rise concluded that twenty-four percent of its mapped shoreline is at very high vulnerability, and twenty-six percent is classified as high vulnerability.<sup>46</sup> Moreover, the storm surge, erosion, and sea-level rise-driven inundation to the seashore itself is just one projected transformation among many, including the destruction of park infrastructure and cultural resources and the degradation of habitat. The Integrated Coastal Climate Change Vulnerability Assessment for Fire Island National Seashore, for example, recognizes that the seashore's rare maritime holly forest is already eroding and has such high vulnerability to climate impacts and such low adaptive capacity that it is time to "[w]ork through questions of how long we can protect the Sunken Forest, and the maritime holly forest more generally, and when ultimately we have to reconsider goals" so as to be "intentional about delaying or documenting loss."<sup>47</sup> The Assessment, prepared in 2020, concludes that the Fire Island National Seashore has "many high vulnerability resources in the near term, and even more by mid-century, only some of which will have effective adaptation options."<sup>48</sup>

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43. *Id.*

44. *Id.*; see also MICHAEL J. YOCHIM, *REQUIEM FOR AMERICA'S BEST IDEA: NATIONAL PARKS IN THE ERA OF CLIMATE CHANGE* 69-105 (2022) (describing in more detail how climate change is affecting Glacier National Park).

45. STEPHEN SAUNDERS ET AL., *ATLANTIC NATIONAL SEASHORES IN PERIL: THE THREATS OF CLIMATE DISRUPTION* (2012), [https://www.nrdc.org/sites/default/files/glo\\_12082901a.pdf](https://www.nrdc.org/sites/default/files/glo_12082901a.pdf) [<https://perma.cc/B2EB-H8RF>].

46. ELIZABETH A. PENDLETON ET AL., U.S. GEOLOGICAL SURV., *COASTAL VULNERABILITY ASSESSMENT OF POINT REYES NATIONAL SEASHORE TO SEA-LEVEL RISE* (2005), <https://pubs.usgs.gov/of/2005/1059/images/pdf/report.pdf> [<https://perma.cc/FA6Z-UKVR>].

47. GLENN RICCI ET AL., NAT'L PARK SERV., *INTEGRATED COASTAL CLIMATE CHANGE VULNERABILITY ASSESSMENT: FIRE ISLAND NATIONAL SEASHORE* 59 (2020).

48. *Id.* at xx.

The authors opined that these vulnerabilities, in turn, constitute “long term changes that mean park management goals will need to change.”<sup>49</sup>

The water woes of the Colorado River have made national headlines over the last few years,<sup>50</sup> and they are as important to Grand Canyon National Park management as they are to water supply in the seven Basin states. Established in 1919, “Grand Canyon National Park is visited by over 6 million visitors each year and is also entirely dependent upon groundwater from springs”; groundwater also supplies resident Tribes left out of the “Law of the River,” including the Havasupai Tribe and the Hualapai Nation.<sup>51</sup> Warming trends in the region are both increasing surface water drought and decreasing groundwater recharge, and “[s]ince 1993, . . . 10-year moving averages of temperature have been warmer than the historical average *and* precipitation has been drier than the historical average. The combined effects of both warmer and drier conditions observed recently in the study area would result in even less available water for groundwater recharge.”<sup>52</sup> As a result, the number one concern for the park itself are the 750 springs within it.<sup>53</sup> While park visitors and its 2500 residents rely almost exclusively on Roaring Springs, the other springs “provide perennial and seasonal flow to myriad desert streams, life-giving water in an otherwise arid environment for wildlife and visitors, and habitat for rare, endemic, and threatened species.”<sup>54</sup> Some springs already go dry on a seasonal basis.<sup>55</sup> Tree ring and dye tracer studies suggest that “that relying exclusively on a single spring for the park’s entire domestic water supply may be overly optimistic with respect to long-term future reliability in water delivery,” and park managers are already considering a switch in the source of the park’s water supply to Bright Angel Creek.<sup>56</sup> Wildfire is also an increasing management concern, given that “[s]ince about 1998, nearly every acre of Ponderosa pine forest in the

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49. *Id.*

50. *E.g.*, Ella Nilsen & Rachel Ramirez, *The Brink of Disaster: 2023 is a Critical Year for the Colorado River as Reservoirs Sink Toward “Dead Pool,”* CNN (Dec. 30, 2022, 7:26 AM), <https://www.cnn.com/2022/12/30/us/colorado-river-lake-mead-drought-2023-climate/index.html> [<https://perma.cc/HS6R-4VSX>]; Joshua Partlow, *Officials Fear ‘Complete Domsday Scenario’ for Drought-Stricken Colorado River,* WASH. POST (Dec. 1, 2022, 6:00 AM), <https://www.washingtonpost.com/climate-environment/2022/12/01/drought-colorado-river-lake-powell/> [<https://perma.cc/M4NH-T7Q3>].

51. Fred D. Tillman, Subhrendu Gangopadhyay & Tom Pruitt, *Recent and Projected Precipitation and Temperature Changes in the Grand Canyon Area with Implications for Groundwater Resources,* SCI. REPS., Nov. 12, 2020, at 1.

52. *Id.* at 5.

53. Wayne Ranney, *The Future Effects of a Variable Climate at Grand Canyon National Park: What Will Tomorrow Bring?*, 27 CANYON VIEWS, no. 1, 2020, at 18, 19.

54. *Id.*

55. *Id.*

56. *Id.*

national park has experienced at least one fire.”<sup>57</sup> Threats to native wildlife, like bighorn sheep encountering mountain lions, and invasive species will likely disrupt the park’s current ecosystems.<sup>58</sup> As in Glacier National Park, these climate change impacts are already affecting visitors’ experiences, including fire-induced closures of roads and trails in 2006 and 2016.<sup>59</sup>

And this is just the beginning. Climate change will likely devastate most established nature parks, which serve as places of recreation, scientific study, and education and generate experiences of relaxation, awe, wonder, sublimity, appreciation—and, yes, also the experiences of mosquito bites, charred cooking over a campfire, and uncomfortable encounters with wildlife that provide the fodder for shared memories and funny tales in the future. For many people, these special public places become part of their lives—with the result that climate change has the potential to induce place-based grief. As naturalist, National Park employee, and nature writer Michael Yochim observed as he himself was dying from ALS, a force “of our own making[] is threatening th[e] noble idea [of National Parks], changing the parks as irrevocably as terminal disease changes me.”<sup>60</sup> The clearest evidence of this grief is eco-necrotourism, a form of last chance tourism.

*B. Last Chance Tourism:  
An Overview of the Literature*

Tourists have long travelled to witness perceived “lasts,” including everything from the final voyage of the *Queen Elizabeth II* to the last game played at the historic Yankee Stadium.<sup>61</sup> This drive to travel to take advantage of last chances is known in the literature, unsurprisingly, as “last chance tourism” (“LCT”). Nevertheless, “[d]espite the historic existence of LCT (i.e. due to ongoing changes in built, socio-cultural, and political environments), the phenomenon has only recently received notoriety and traction because of an increased understanding and observation of environmental change brought about by climate change.”<sup>62</sup>

Last chance tourism motivated specifically by perceptions of global environmental change received media attention before it was the subject of academic inquiry. In the 1990s, media and travel publications highlighted last chances to travel to see places with regularity and, by the early aughts, numerous guidebooks focused on last chance tourism

57. *Id.*

58. *Id.*

59. *Id.*; see also YOCHIM, *supra* note 44, at 39-60 (describing in more detail how climate change is affecting Grand Canyon National Park).

60. YOCHIM, *supra* note 44, at 17.

61. Dawson et al., *supra* note 13, at 254.

62. *Id.*

opportunities.<sup>63</sup> Scholars from diverse fields outside of law<sup>64</sup>—including leisure, tourism, anthropology, geography, and sociology—have since identified, defined, and examined different aspects of last chance tourism.<sup>65</sup> Indeed, Working Group II of the most recent (2021-2023) Intergovernmental Panel on Climate Change (“IPCC”) Sixth Assessment Reports, which focused on Impacts, Adaptation, and Vulnerability, raised last chance tourism in numerous contexts, often when discussing the impacts of climate change on tourism markets.<sup>66</sup> The IPCC report defines last chance tourism as “a niche tourism market of individuals who explicitly seek to visit vanishing landscapes and/or disappearing flora and fauna.”<sup>67</sup> It also asserts that the phenomenon is occurring in numerous locations, observing that “[c]limate-driven damage is motivating ‘last chance’ tourism to see key natural heritage and outdoor attractions, for example, GBR [the Great Barrier Reef in Australia] and Franz Josef and Fox Glaciers [in New Zealand].”<sup>68</sup>

Despite the recent growth in academic attention, basic facts about last chance tourism remain unknown, uncertain, and unexplored. Most fundamentally, the last chance tourism literature lacks a definitive accounting of how prevalent last chance tourism actually is. Nevertheless, the growth of tourism in some climate-threatened areas and studies of traveler motivation indicate that the last chance phenomenon is real and likely growing,<sup>69</sup> and tourism scholars describe last

63. Lemelin et al., *supra* note 13, at 3-4.

64. For legal commentary on last chance tourism, see generally Kristianna Anderson, Note, *Fatal Attraction: Preserving Polar Bear Populations Through Tourist Regulation in Norway's Arctic*, 52 GEO. WASH. INT'L L. REV. 99 (2020) (discussing tourism regulation in Norway's Arctic); Lauren C. Lewis, Comment, *Unicorns of the Sea: Narwhals and Arctic Cruise Ship Tourism*, 20 OR. REV. INT'L L. 583 (2019) (analyzing arctic cruise ship tourism).

65. *E.g.*, LAST CHANCE TOURISM, *supra* note 13; Harvey Lemelin & Paul Whipp, *Last Chance Tourism: A Decade in Review*, in HANDBOOK OF GLOBALISATION AND TOURISM 316, 317 (Dallen J. Timothy ed., 2019). There is also a broader literature that examines the impacts of climate change on tourism, and tourism on climate change, more generally. *See, e.g.*, TOURISM, RECREATION AND CLIMATE CHANGE (C. Michael Hall & James Higham eds., 2005). For an overview of the myriad and complex ways that climate change and tourism intersect, see *id.* at 14 fig.1.1. In 2007, the UN World Tourism Organization, UN Environment Programme, and World Meteorological Organization, with the support of the World Economic Forum and the Swiss Government, convened the Second International Conference on Climate Change and Tourism in Davos, Switzerland. This produced the Davos Declaration, *Climate Change and Tourism: Responding to Global Challenges*, wherein participants underscored the intersections between tourism and climate change and endorsed the need for policies advancing the “quadruple-bottom-line” of environmental, social, economic, and climate responsiveness. James MacGregor, *Combating Climate Change Through Strategic Destination Planning: A Quadruple-Bottom-Line Approach*, in MEETING THE CHALLENGES OF CLIMATE CHANGE TO TOURISM: CASE STUDIES OF BEST PRACTICE 165 (Louis D' Amore & Patrick Kalifungwa eds., 2013).

66. 2022 IPCC ADAPTATION REPORT, *supra* note 20, at 480-81.

67. *Id.* at 1973.

68. *Id.* at 1625 (citation omitted).

69. Jamie D'Souza, Jackie Dawson & Mark Groulx, *Last Chance Tourism: A Decade Review of a Case Study on Churchill, Manitoba's Polar Bear Viewing Industry*, 31 J.

chance tourism as an “evolving niche tourism market.”<sup>70</sup> For example, in a survey administered to visitors to the Athabasca Glacier in Jasper National Park (Alberta, Canada), visitors reported “[t]wo of the top five motivational factors [for visiting] relate to the disappearance of the glacier, suggesting that visitors . . . are aware of the glacier’s accelerating retreat, and are coming to visit the glacier at least in part to see the evidence of this retreat.”<sup>71</sup> Concepts of last chance tourism are also being invoked with respect to an increasingly wide range of geographies. While initially concentrated on the planet’s cold regions,<sup>72</sup> the concept of last chance tourism is now being discussed with respect to myriad other locations, such as coral reefs (as the IPCC notes).<sup>73</sup>

Importantly for managers, however, not all “last chance tourism” is based on reality. Indeed, some of the promoted last chance tourism destinations “may not be disappearing at all,” because last chance tourism “is largely perception-based and not necessarily grounded in actual vulnerability or impending extinction.”<sup>74</sup> Moreover, some scholars caution that the extent of on-the-ground last chance tourism may be overstated by media accounts.<sup>75</sup> Thus, two initial eco-necrotourism tasks for managers of nature parks that the tourism industry promotes as “last chance” destinations will be to assess the extent to which those advertisements are accurate and to engage in public education to

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SUSTAINABLE TOURISM 14, 15-16 (2023); Lemelin & Whipp, *supra* note 65, at 318; Mark Groulx et al., *Motivations to Engage in Last Chance Tourism in the Churchill Wildlife Management Area and Wapusk National Park: The Role of Place Identity and Nature Relatedness*, 24 J. SUSTAINABLE TOURISM 1523, 1535 (2016) (analyzing surveys of polar bear viewing tourists in Churchill, Canada, discerning evidence that tourists were motivated to visit because of last chance tourism and concluding that “[o]verall, these findings reinforce the limited extant LCT literature that suggests a desire to consume vulnerable landscapes is a distinct and identifiable travel motivation. They also support the proposition that LCT visitors seek to use exotic and authentic places to distinguish themselves as elite travellers” (citation omitted)); Z. Abrahams, G. Hoogendoorn & J.M. Fitchett, *Glacier Tourism and Tourist Reviews: An Experiential Engagement with the Concept of “Last Chance Tourism,”* 22 SCANDINAVIAN J. HOSP. & TOURISM 1 (2021) (finding some evidence of last chance motivation among travelers to a subset of glaciers but little evidence that it produces meaningful ambassadorship); Annah E. Piggott-McKellar & Karen E. McNamara, *Last Chance Tourism and the Great Barrier Reef*, 25 J. SUSTAINABLE TOURISM 397 (2017) (documenting a desire in many travelers to see the Great Barrier Reef before it disappears).

70. Jackie Dawson et al., *Last Chance Tourism: A Race to Be Last?*, in *THE PRACTICE OF SUSTAINABLE TOURISM* 133, 133 (Michael Hughes, David Weaver & Christof Pfforr eds., 2015).

71. Lemieux et al., *supra* note 13, at 661; *id.* at 667 (“LCT motivation is a central part of the reason tourists . . . visit the Athabasca Glacier in JNP.”).

72. Lemelin & Whipp, *supra* note 65, at 317; Dawson et al., *supra* note 13, at 251.

73. 2022 IPCC ADAPTATION REPORT, *supra* note 20, at 1605.

74. Dawson et al., *supra* note 70, at 135.

75. *Id.* at 138 (referencing the “disconnection between the extent to which last chance tourism is actually occurring on the ground and the disproportionate amount of attention the idea is attracting in the media”).



correct discrepancies, exaggeration, and false or misleading admonitions regarding the destination's fate. These initial assessments may well identify nature parks for which ecological grief is unwarranted.

Nevertheless, as Section I.A describes, many nature parks are experiencing real loss, so it is worth exploring how managers can benefit from the last chance tourism literature. The literature currently centers on questions oriented toward the tourism industry, such as marketing and economic impact.<sup>76</sup> Nevertheless, some themes and issues emerging from the existing literature on last chance tourism provide useful insights that inform this Article's focus on eco-necrotourism and managing humans' psychological responses to climate change-driven transformations of their favorite places.

As one example, last chance tourism often promotes strategies for dealing with climate change.<sup>77</sup> Early discussion of last chance tourism recognized that, often, "when something disappears, something else appears," such that "LCT (opportunities arising through vulnerability caused by changing conditions) is linked to first chance tourism (opportunities arising through new conditions)."<sup>78</sup> In some nature parks, therefore, managers may be able to manage ecological grief through an adaptation strategy of transitioning visitors to new experiences—for example, new access to places and views previously inaccessible because they were blocked by ice. Managers must remember, however, that the creation of first chance tourism resulting from dynamic environmental conditions can itself present important new questions relating to management of protected places.

Other last chance destinations have sought to highlight the climate change problem, promoting what might be termed "mitigation and adaptation tourism." The Tata Destination Region in Morocco, for example, sought to appeal to tourists by modeling mitigation and adaptation strategies:

Because of the interest in climate change from the major source markets to the region, including France, Germany, Spain and England, it was decided to highlight climate change as a theme.

Two sub-themes were also developed:

(a) *Living with a hotter climate*: the people of the region are familiar with adapting to and coping with 50°C-plus temperatures. Their

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76. *E.g.*, LAST CHANCE TOURISM, *supra* note 13; Lemelin & Whipp, *supra* note 65.

77. See 2022 IPCC ADAPTATION REPORT, *supra* note 20, at 480-81 (noting the same possibility).

78. Margaret Johnston, Arvid Viken & Jackie Dawson, *Firsts and Lasts in Arctic Tourism: Last Chance Tourism and the Dialectic of Change*, in LAST CHANCE TOURISM, *supra* note 13, at 10, 16. Examples of first chance tourism might include "paddling to the North Pole instead of skiing" and "new expedition cruise itineraries throughout the Arctic" because "[w]ith changes in the extent, thickness and distribution of sea ice, coastal sites and communities formerly inaccessible will become more accessible, especially for marine transportation." *Id.*

architecture, lifestyle and customs reflect these conditions and provide important lessons for their western European market.

(b) *Visiting a low-carbon destination*: This implies converting the region from one of relatively high carbon consumption, from both the residents and tourists, to one that conscientiously seeks to reduce carbon emissions.

The tourism development criteria and project proposals were based on these two themes.<sup>79</sup>

Similarly, and most recently in response to one of President Biden's executive orders,<sup>80</sup> most National Parks in the United States have taken steps to reduce their own contributions to climate change—steps that often directly affect the tourist experience (e.g., solar-powered water heaters in campgrounds, biodiesel trams) and that the parks proudly share with visitors.<sup>81</sup>

### C. *The Ethics of Last Chance Tourism*

Last chance tourism in pursuit of nature-at-risk often threatens (directly and indirectly) the last chance destination, and the last chance tourism literature reflects significant unease about, and growing exploration of, ethical concerns associated with last chance tourism. While the ethics of last chance tourism may be of less immediate practical concern to managers who must deal with the nature park visitors who continue to arrive, the ethical dimension is nevertheless worth considering, especially for managers who engage in significant visitor education.

One of the ethical quandaries of last chance tourism is the sustainability “paradox.”<sup>82</sup> The “paradox between sustainability and last chance tourism” reflects the fact that visitation, through transport emissions that exacerbate climate change as well as causing direct local impacts, contributes to the degradation of last chance

79. MacGregor, *supra* note 65, at 165-66; *see also id.* at 172 (“What was initially considered a ‘negative’—the increased regional temperatures due to climate change—became a ‘positive’ feature. It was possible to exhibit to tourists: (a) The impact of carbon emissions and subsequent global warming on the destination (and in particular, a desert environment); and (b) Local, traditional knowledge practices that can demonstrate how to effectively live in a hot environment (i.e., with a warming planet). These two messages are very compelling and, when tested, proved to appeal to the current (and presumably future) visitor market.”).

80. Exec. Order No. 14,008, 86 Fed. Reg. 7619 (2021). E.O. 14,008 gave federal agencies 120 days to submit draft climate adaptation plans “that describe[] steps the agency can take . . . to bolster adaptation and increase resilience to the impacts of climate change.” *Id.* § 211. An agency’s plan must address that agency’s own vulnerabilities to climate change, the agency’s plans to increase water and energy efficiency at federal buildings and facilities, its ability to use its purchasing power to spur innovation, and its efforts to increase the federal government’s resilience to supply chain disruptions. *Id.*

81. *E.g., Mitigating Our Contribution*, NAT’L PARK SERV., <https://www.nps.gov/ever/learn/nature/ccmitigation.htm> [<https://perma.cc/89DP-ADT7>] (last updated Aug. 26, 2015).

82. Piggott-McKellar & McNamara, *supra* note 69, at 398.

destinations.<sup>83</sup> In evaluating last chance tourism from the perspective of the leisure and tourism industry, a question often raised is whether “by rushing to see these fragile destinations, tourists are hastening their demise. In other words, by calling attention to these places, we run the risk of doing further damage—we are loving them to death.”<sup>84</sup> In the words of other scholars, last chance tourists may be “loving an already dying destination to an early death.”<sup>85</sup>

Although tourism contributed an estimated five to fourteen percent to overall warming (predominately as a result of emissions from aviation) in 2005, with significant growth projected,<sup>86</sup> and although last chance tourist destinations have historically been relatively remote (requiring significant transportation emissions to access), studies suggest that the travelers themselves are not concerned about the impact of their travel on destination environments.<sup>87</sup> One researcher, observing “that the carbon impact of participants’ travel behaviours is at

83. Lemelin & Whipp, *supra* note 65, at 317. Notably, the IPCC recognizes that “[t]he ethics of promoting LCT has been questioned considering that more visitation to sensitive sites increases local impacts as well as travel-related emissions.” 2022 IPCC ADAPTATION REPORT, *supra* note 20, at 1973.

84. Shapiro, *supra* note 13, at xv-xvi.

85. Dawson et al., *supra* note 13, at 255.

86. U.N. ENV’T PROGRAMME, CLIMATE CHANGE ADAPTATION AND MITIGATION IN THE TOURISM SECTOR: FRAMEWORKS, TOOLS AND PRACTICES 15 (2008), [https://wedocs.unep.org/bitstream/handle/20.500.11822/9681/Climate\\_Change\\_adaptation\\_mitigation.pdf](https://wedocs.unep.org/bitstream/handle/20.500.11822/9681/Climate_Change_adaptation_mitigation.pdf) [<https://perma.cc/KKY2-UWYS>]. A more recent study expands:

[R]ecent studies have shown that in response to economic development, the demand for travel has increased at a rate much faster than the consumption of other products and services. There has been an increase in tourists travelling longer distances for shorter periods of time, and a preference for energy-intensive forms of transportation and luxury amenities. In 2018, Lenzen et al. estimated tourism emissions to have risen to 8%, with air travel accounting for 20% of total tourism emissions. International tourism is of concern as more people demand air travel to reach their destination. It was estimated that international tourism increased by 65% from 2005 to 2016 with over 730 million people choosing to travel by plane (almost double from 2005). In response, international tourism contributed to 23% of emissions from global tourism. The number of international tourists, especially those travelling by air travel, is expected to rise to 1.1 billion by 2030, with emissions rising accordingly. Importantly, these trends stem from global travel patterns prior to the COVID-19 pandemic, and the UNWTO (2020) estimates that in the first 10 months of 2020, international arrivals were down 900 million over the previous year. With the pandemic ongoing and causing deep disruptions to the air travel industry on a global basis, it is uncertain how demand for air travel will respond in the future.

D’Souza et al., *supra* note 69, at 17 (citations omitted).

87. Machiel Lamers, Eke Eijelaar & Bas Amelung, *Last Chance Tourism in Antarctica: Cruising for Change?*, in LAST CHANCE TOURISM, *supra* note 13, at 25, 34 (“[V]isitors appear to be only marginally aware of their own direct impact on the Antarctic environment and of their indirect impact through the greenhouse gas emissions caused by their trips. They also do not appear too concerned about it . . .”).

clear odds with their self-perception as being concerned about climate change and connected to nature,” refers to it as the last chance tourists’ “penchant for doublethink.”<sup>88</sup>

While the last chance tourism literature often expresses hope about the potential for last chance tourism to yield environmental benefits through education and increased consciousness of environmental concerns in at-risk places,<sup>89</sup> data about whether or to what extent last chance tourism fosters pro-environmental behavior or prompts visitors to become ambassadors<sup>90</sup> for conservation are mixed and uncertain.<sup>91</sup> For example, one study of cruise ship tourism in Antarctica found that the greenhouse gas emissions produced by these trips is approximately eight times higher than that of the average international tourism trip but discerned no beneficial impact on the environmental concern and motivation of travelers.<sup>92</sup>

Nevertheless, LCT researchers do often consider the sustainability paradox when evaluating the propriety of marketing locations as last chance destinations.<sup>93</sup> Some researchers argue that governments, tourism boards, and managers must consider transportation emissions from tourism and global environmental impacts in evaluating ecotourism and last chance tourism as economic development strategies. For example, Eke Eijgelaar argued against ecotourism as a form of economic development in the Solomon Islands—one of the many Pacific

88. Groulx et al., *supra* note 69, at 1536.

89. Lemieux & Eagles, *supra* note 13, at 207 (observing that “[p]arks offer the potential to educate millions of visitors annually on climate change impacts and their implications for natural assets” while conceding that “[t]he role of tourism in environmental education is well known, but how exactly last chance destinations are used for education efforts have only been explored in a nominal way”); Groulx et al., *supra* note 69, at 1535 (“[T]here may be an opportunity to use these concepts to rethink how visitor experiences in parks and protected areas might create places of social connection that can motivate climate action.”).

90. The bylaws of the International Association of Antarctica Tour Operators, a group founded to promote the safe and environmentally responsible private-sector travel to the Antarctic, for example, includes as an objective: “To create a corps of ambassadors for the continued protection of Antarctica through education and the opportunity to experience the continent first hand.” INT’L ASS’N OF ANTARCTICA TOUR OPERATORS, BYLAWS art. II, § H (2021), <https://iaato.org/about-iaato/our-mission/bylaws/> [<https://perma.cc/7QQY-3Z6Z>].

91. Lemelin & Whipp, *supra* note 65, at 320; D’Souza et al., *supra* note 69, at 3 (“Existing research suggests that tourists can create an emotional bond with the environment and may in turn be encouraged to make positive changes to their lifestyles and behaviours at home. However, such changes may be rather dependent on individual context, as LCT studies have also shown an inconsistency between tourists’ values towards environmental issues and behaviours.” (citations omitted)). See generally Lauren B. Miller et al., *On the Edge of the World: Examining Pro-Environmental Outcomes of Last Chance Tourism in Kaktovik, Alaska*, 28 J. SUSTAINABLE TOURISM 1703 (2020) (summarizing studies, concluding that the connection between last chance tourism and pro-environmental outcomes is complex and context-dependent, and suggesting some strategies for structuring the last chance tourism experience to better promote pro-environmental outcomes).

92. Eke Eijgelaar, Carla Thaper & Paul Peeters, *Antarctic Cruise Tourism: The Paradoxes of Ambassadorship, “Last Chance Tourism” and Greenhouse Gas Emissions*, 18 J. SUSTAINABLE TOURISM 337, 337 (2010).

93. Dawson et al., *supra* note 13, at 260.

island nations facing an existential threat from climate change-induced global sea-level rise<sup>94</sup>—because of the associated transportation emissions, observing that it is not “a stable environment where considerable resources should be used to develop a hitherto virtually non-existing activity which probably contributes to the problem” of climate change.<sup>95</sup> On the other hand, last chance tourism can provide badly needed economic benefits, including in places that are highly vulnerable to the impacts of climate change.<sup>96</sup>

Last chance tourists tend to be extremely privileged, wealthy, and well-educated residents of the Global North.<sup>97</sup> This fact provides another ground for questioning the ethics of profiting from last chance tourism. Mick Smith, for example, connects last chance tourism to colonialism, observing:

While the nature of Empire has subtly changed, from colonial power to a boundless global capitalism, the role of ecological sovereignty remains much the same. Today, as we have already noted, another aspect of this process has come to the fore where ecologically oriented travel is concerned. For if the explorer's appointed task was to be the *first to see* and ‘bring home’ some aspect of the natural world, thereby accruing both ‘symbolic’ and ‘material’ capital for themselves and their imperial employers, then the over-exploitation of the natural world that this process directly fuelled has altered the situation considerably. The process of objectification that marks the excision of ethical relations to the world's other (more-than-human) inhabitants is now party to the destruction of the natural world on an unprecedented scale. Today it is the scarcity of species and habitats due to their treatment as nothing more than ‘resources’ for states and corporations that adds urgency to bio-prospecting and to ecologically oriented travel in general.<sup>98</sup>

These ethical considerations are particularly pronounced when last chance tourism destinations are located on lands taken from

94. Michael Oppenheimer et al., *Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT ON THE OCEAN AND CRYOSPHERE IN A CHANGING CLIMATE 321, 326 (Hans-Otto Pörtner et al. eds, 2019) (“We find *robust evidence* of planned relocation taking place worldwide in low-lying zones exposed to the impacts of coastal hazards. . . . In the Pacific, current coastal risks aggravated by rising sea level are driving the government led relocation of the inhabitants of Taro, the provincial capital of Choiseul Province in the Solomon Islands.” (citations omitted)).

95. Eke Eijgelaar, “*Last Chance to See the Solomon Islands?*” *Response to Marlies Haider*, TOURISM DESTINATION MGMT. INSIGHTS, no. 1, 2017, at 8.

96. *E.g.*, PAUL F.J. EAGLES, STEPHEN F. MCCOOL & CHRISTOPHER D. HAYNES, SUSTAINABLE TOURISM IN PROTECTED AREAS: GUIDELINES FOR PLANNING AND MANAGEMENT 23-26 (Adrian Phillips ed., 2002) [hereinafter SUSTAINABLE TOURISM IN PROTECTED AREAS].

97. Groulx et al., *supra* note 69, at 1526 (“The LCT market is composed largely of wealthy, well-educated individuals from industrialized western countries (e.g. Germany, Australia and United States), and includes a higher proportion of females.”).

98. Mick Smith, *Après Moi le Deluge: Ethics, Empire, and the Biopolitics of Last Chance Tourism*, in LAST CHANCE TOURISM, *supra* note 13, at 153, 159.

indigenous peoples only to be “preserved” for today’s public, consisting primarily of settlers. As related by Sarah Krakoff, the Grand Canyon National Park (“GCNP”) provides a powerful example:

Most of today’s GCNP river runners and hikers have no idea that the side canyons they explore, the springs they drink from, and the seemingly uninhabited landscape they treasure were not long ago part of a populated and sacred Paiute homeland. And further, most are unaware that Southern Paiute people live near the Grand Canyon still. Southern Paiute people visit sacred sites like the hanging canyon above Deer Creek falls, where non-Indian tourists stop and wonder who left ghostly handprints in the Tapeats sandstone and why. The Southern Paiute know. It was their ancestors. They left marks for reasons of their own that should make us pause to ask why we ever think we are the first to love a place.<sup>99</sup>

Discussions about eco-necrotourism should acknowledge that this new iteration of ecological grief is not the only, or first, history of grieving for many of these places. As discussed *infra* with respect to the growing recognition and understanding of the psychology of ecological grief, indigenous people have already experienced two losses that provoke ecological grief—physical loss and the loss of knowledge—and to that we now add anticipated loss associated with climate change.<sup>100</sup> Moreover, decisions about access and use must likewise acknowledge the history and the special claims of indigenous peoples, perhaps through a restorative justice lens.<sup>101</sup>

Other scholars raise concerns about the potential harms of suggesting that local populations, particularly indigenous people, are disappearing along with the environments they inhabit. These scholars emphasize the need for education to inform visitors “that while sites may be transformed through climate change, local people are living and adapting to these changes, and will continue to do so in the future.”<sup>102</sup> Focusing on the “social, cultural and political dimensions of last chance tourism and its impact on local populations,” they urge recognition that local populations are not disappearing; instead, they are adapting:

[I]f people are coming to visit the Arctic because they believe it is disappearing, they can through experiential tourism and interpretation be

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99. Sarah Krakoff, *Not Yet America’s Best Idea: Law, Inequality, and Grand Canyon National Park*, 91 U. COLO. L. REV. 559, 582 (2020).

100. See *infra* notes 129-46 and accompanying text (discussing the three types of ecological grief).

101. See generally D. Kapua‘ala Sproat, *An Indigenous People’s Right to Environmental Self-Determination: Native Hawaiians and the Struggle Against Climate Change Devastation*, 35 STAN. ENV’T L.J. 157, 183 (2016) (providing concrete examples of how to implement restorative justice approaches for indigenous peoples in the context of climate change impacts).

102. Lemelin et al., *supra* note 13, at 171.

challenged on these opinions. They can also be shown how the communities are dealing with, and adapting to climate changes. Therefore, the experience does not have to be all about doom and gloom, it can also be about strength and resilience.<sup>103</sup>

Multiplying the voices considered also deepens the ethical questions about last chance tourism. As one group of last chance tourism scholars recognized, these questions need to be explored:

The ethical dimensions of LCT management (e.g. what species or other valued resources should be saved and what are the obligations to future generations who will have to live with, and possibly bear the costs associated with, management decisions made today) clearly require further deliberation in public policy on biodiversity conservation throughout the world. Whose ethical beliefs and standards will determine the management approach pursued? What role does the local voice have compared with national or international interests, especially when the vulnerability extends to the interaction of local people with their resources that happen also to be tourism resources?<sup>104</sup>

#### D. Managers' Responses to Last Chance Tourism

Finally, and perhaps most relevantly to this Article, the last chance tourism literature reveals that natural resource managers<sup>105</sup> attitudes about last chance tourism are complex and conflicted. Managers are often uncomfortable when the lands they manage are treated as last chance tourist destinations. One survey, for example, found that managers were "quite concerned with their destination being listed" as a last chance tourist destination "due to the negative connotations that last chance tourism has with their mandates of sustainability and protecting natural resources for future generations."<sup>106</sup> The researchers explained:

[P]rotected area management mandates revolve around research, protection and education of the public, and to assist in managing natural areas for their evolution over time, so that no one ever "will be facing the last chance" to experience these destinations. As such, last chance

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103. Raynald Harvey Lemelin & Gary Baikie, *Bringing the Gaze to the Masses, Taking the Gaze to the People: The Socio-Cultural Dimensions of Last Chance Tourism*, in *LAST CHANCE TOURISM*, *supra* note 13, at 168, 168-69.

104. Dawson et al., *supra* note 13, at 260.

105. Tour operators likewise appear resistant toward "last chance" framing; researchers suggest that media may play the largest role in focusing on last chance tourism. D'Souza et al., *supra* note 69, at 16 ("[S]tudies to date show little to no evidence that tour operators themselves are supporting the concept of LCT, nor are they marketing their industry as such. Promoting the vulnerability and potential disappearance of their attractions would seem contradictory for these industries. Instead, visual, written, and verbal communications carrying messages about LCT destinations tend to be transmitted by media sources like news outlets, travel writers, social media, and television programs." (citations omitted)).

106. Daniel H. Olsen, Rhonda L. Koster & Nicki Youroukos, *Last Chance Tourism? Public Sector Views of Marketing Endangered Tourism Destinations in North America*, in *LAST CHANCE TOURISM*, *supra* note 13, at 105, 109.

tourism, in the minds of many of the respondents, but especially protected area personnel, is a term that is at odds with sustainable management strategies and ideals.<sup>107</sup>

As explained by one manager, “Our mission . . . is to preserve and protect this unique place for today and *future generations*. A designation like last chance leaves little hope for those future generations.”<sup>108</sup> Managers resisted the characterization of areas that they managed as “disappearing” or “dying”; instead, “[w]hile acknowledging that they are preparing for and studying the effects of climate change on the protected area ecosystem, this group of respondents did not see their destination as being under threat of disappearance, but rather evolution and change.”<sup>109</sup>

Despite the reticence of natural resource managers to embrace last chance tourism, the last chance tourism literature recognizes a key role for managers with respect to both direct and indirect (emissions) impacts from last chance tourism:

LCT in protected areas has the potential to generate a host of impacts on local environments, economies, social networks and on visitors themselves. Some will be positive (e.g. revenue reinvestment in conservation initiatives) while others will be negative (e.g. biophysical impacts from infrastructure). As both gatekeepers and stewards, park agencies and tour operators have a key role to play in monitoring and mitigating such impacts. Clearly, this includes impacts related to the production of greenhouse gases from visitors willing to overlook the externalities of their travel choice . . . .<sup>110</sup>

Researchers also emphasize the importance of last chance tourism for natural resource managers, observing that, “given the realities of climate change and the fact that many media actors are already shaping motivations within the LCT marketplace, it is dangerous for managers to simply ignore the existence of this motivation and its implications for meeting the mandate of parks and protected areas.”<sup>111</sup>

Beyond this point, however, the last chance tourism literature does not directly engage with central questions relating to management of and access to the disappearing environments most likely to become last chance tourism destinations. Nevertheless, it does suggest that nature park managers worldwide focus far more on what a “last chance” label suggests about the status of the nature park ecologically

107. *Id.* at 109-10; *see also id.* at 111 (“The messages we want to convey are clearly laid out in our legal mandate and supporting legislations, and are along the lines of ‘these things are here for you and your children.’ The concept of ‘you’d better come now because your kids won’t get to’ isn’t really part of our culture.”).

108. *Id.* (alteration in original).

109. *Id.* at 110.

110. Groulx et al., *supra* note 69, at 1536.

111. Lemieux et al., *supra* note 13, at 668.



than what that label might mean for visitation and visitor psychology. The impulse of managers to emphasize climate change-driven *transformation* of the park may in many senses be understandable, laudable, and factually more accurate than characterizing the ongoing changes as “dying” or “disappearing.” Glacier National Park is not, after all, being erased from U.S. maps, and it will (perhaps with increasing help) both support robust ecosystems and serve as a corridor for species range shifts for the foreseeable future.

Even so, the glaciers *are* disappearing, and climate change transformation is still a form of loss—the substitution of new ecosystems and species for those that may be old and familiar.<sup>112</sup> The human response to that loss is still important to nature park management and adaptation planning, as the emerging psychological studies of ecological grief increasingly document.

## II. ECOLOGICAL GRIEF IS A REAL PHENOMENON

The late Michael Yochim’s exploration of climate change’s impacts on U.S. national parks is entitled *Requiem for America’s Best Idea*, and he consciously and explicitly links climate change impacts to terminal disease as similar experiences of loss.<sup>113</sup> Relatedly, the Extinction Rebellion protest group “frequently uses funeral symbolism—such as coffins, silent processions, black veils, and white roses—to create a space where ecological grief can be openly acknowledged and expressed.”<sup>114</sup> These are two specific expressions of what the psychological literature now refers to as *ecological grief*: the very real mourning humans experience over the loss of natural places and wild species. One manifestation of ecological grief is eco-necrotourism.

### A. *An Introduction to Ecological Grief*

While some argue that “psychological scholarship has been slow to address environmental issues,”<sup>115</sup> the links between human psychological well-being and experiences of nature have been discussed for decades.<sup>116</sup> Similarly, the links between both traditional pollution and

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112. Notably, in 2019, Marybeth Holleman published a poem entitled *How to Grieve a Glacier*, Lacy Johnson published a *New Yorker* article entitled *How to Mourn a Glacier*, Iceland conducted a memorial/funeral to mark the disappearance of the Okjökull glacier at the top of the Ok volcano, and the Swiss declared the Pizol glacier dead in a memorial ceremony, which one scientist compared to the dying of a “good friend.” Stef Craps, *Introduction: Ecological Grief*, 77 *AM. IMAGO* 1, 1-2 (2020). In *The End of Ice*, author Dahr Jamail compares the loss of ice to climate change to sitting at his friend’s deathbed. *Id.* at 2.

113. YOCHIM, *supra* note 44, at 16-17.

114. Craps, *supra* note 112, at 4.

115. *Id.*

116. Ashlee Cunsolo & Neville R. Ellis, *Ecological Grief as a Mental Health Response to Climate Change-Related Loss*, 8 *NATURE CLIMATE CHANGE* 275, 278 (2018).

climate change and threats to human health are also well-documented, including mental health effects.<sup>117</sup> As one group of researchers summarized:

The mental health effects of climate change-related environmental changes may occur directly due to natural disasters and extreme weather events (e.g., as traumatic stress reactions due to floods or wildfires) or indirectly through long-term, mostly secondary stressors that foster mental disorders (e.g., less secure food supply, problematic process of reconstruction of housing or infrastructure, forced migration due to increasing temperatures). Moreover, the impacts of climate change on mental health range from acute (e.g., distress during or after floods or heatwaves) to chronic (e.g., distress due to permanent landscape changes after tornados or mountains' loss of snow cover).<sup>118</sup>

Increasing numbers of people globally are consciously living with climate change impacts—and the fear of worse to come.<sup>119</sup> Indeed:

Anxiety around climate disruption in particular is now so pervasive that in November 2019 the leaders of more than 40 psychological associations from around the world signed a resolution at a conference in Lisbon acknowledging that climate change poses a serious threat to mental health and signaling a desire to deal with the problem.<sup>120</sup>

As part of this assault on mental health, ecological grief, which is “the mourning of the loss of ecosystems, landscapes, species and ways of life[,] is likely to become a more frequent experience around the world.”<sup>121</sup> Ecological grief is the emotional response to climate change-induced actual *or anticipated* losses, such as “disappearance of fauna and flora, loss of cropland and living spaces for animals, loss of ways of life, [and] loss of personal identity constructed in relation to the physical environment.”<sup>122</sup> “As such, ecological grief is a natural response to ecological loss, which is supposedly particularly pronounced in people who retain close relationships with the natural environment such as foresters, farmers, mountaineers, divers or indigenous peoples, but may well be universal.”<sup>123</sup>

117. Hannah Comtesse et al., *Ecological Grief as a Response to Environmental Change: A Mental Health Risk or Functional Response?*, 18 INT'L J. ENV'T RSCH. & PUB. HEALTH, no. 2, 2021, at 1.

118. *Id.*

119. *Id.* at 1-2; see also Cunsolo & Ellis, *supra* note 116, at 275 (“[G]lobal environmental change and regional ecological decline are increasingly embedded within everyday experience, evoking strong mental and emotional responses.” (citation omitted)).

120. Craps, *supra* note 112, at 3.

121. Comtesse et al., *supra* note 117, at 2. Cunsolo and Ellis similarly define “ecological grief” as “the grief felt in relation to experienced or anticipated ecological losses, including the loss of species, ecosystems and meaningful landscapes due to acute or chronic environmental change.” Cunsolo & Ellis, *supra* note 116, at 275.

122. Comtesse et al., *supra* note 117, at 2.

123. *Id.* (citation omitted); accord Cunsolo & Ellis, *supra* note 116, at 275.

Nevertheless, while “processes of grief and mourning are well understood in the psychological literature (for example, within the context of the loss of a loved person), these concepts are rarely applied to losses encountered in the natural world.”<sup>124</sup> Empirical research into ecological grief remains nascent and largely qualitative,<sup>125</sup> “although the terms ‘grief’ and ‘mourning’ are finding increased application in the description of people’s lived experiences and personal responses to environmental change.”<sup>126</sup> Nevertheless, both a theory of and terminology for ecological grief and associated mental health issues are developing rapidly. For example, on the theory side, the concept of place attachment has become critical:

Place attachment has been invoked as the theoretical foundation of ecological grief. In this sense, the concept of place refers to a space that has acquired personal meaning and can be applied to aspects of the social and physical environment such as a house, neighborhood, landscape or natural environment (e.g., forests). Many people form an attachment to places, constructing part of their identity around it.<sup>127</sup>

As a result, “[p]eople who retain close working, living or cultural relations with their natural environment are more likely to develop ecological grief.”<sup>128</sup> More complicated, ecological grief theorists predict, will be the emergence of ecological grief among those who are simply more often exposed to climate change impacts or who generally may be “more vulnerable to the negative mental health effects of climate change, including those who have pre-existing disabilities, communities of color, older people, women, and children.”<sup>129</sup>

Researchers generally focus on three types of loss that provoke ecological grief: physical, knowledge, and anticipated.<sup>130</sup> Physical loss refers to the “disappearance, degradation or extinction of species, landscapes and ecosystems,” whether through acute events such as

124. Nadine Marshall et al., *Reef Grief: Investigating the Relationship Between Place Meanings and Place Change on the Great Barrier Reef, Australia*, 14 SUSTAINABILITY SCI. 579, 580 (2019).

125. Comtesse et al., *supra* note 117, at 5; Cunsolo & Ellis, *supra* note 116, at 278. Ecopsychologists, as these researchers are beginning to name themselves, are still developing appropriate questionnaires for consistent and comparable investigations. *See generally*, e.g., Csilla Ágoston et al., *The Psychological Consequences of the Ecological Crisis: Three New Questionnaires to Assess Eco-Anxiety, Eco-Guilt, and Ecological Grief*, 37 CLIMATE RISK MGMT., 2022, at 1.

126. Cunsolo & Ellis, *supra* note 116, at 275; *see also* Marshall et al., *supra* note 124, at 580 (“[E]cological grief remains an undeveloped area of research despite the unrelenting and anticipated impacts of global environmental change.”).

127. Comtesse et al., *supra* note 117, at 3 (citations omitted).

128. *Id.* at 5.

129. *Id.*

130. Cunsolo & Ellis, *supra* note 116, at 276-78.

hurricanes or as a result of gradually changing conditions.<sup>131</sup> “[L]oss of environmental knowledge refers to the disruption of personal and cultural identities that are constructed in relation to features and knowledge of the physical environment.”<sup>132</sup> Finally, anticipated future loss results from anticipating losses of either the physical environment or environmental knowledge, or both, as well as losses of lifeways or livelihoods that have not yet occurred.<sup>133</sup> Anticipated future loss is thus the facet of ecological grief most relevant to eco-necrotourism.

“Ecological grief” is one of multiple terms emerging from the psychological and public health literatures to describe the mental health effects of climate change. For example, “solastalgia” “occurs when people are confronted with irrevocable changes to landscapes that they feel connected to,” resulting in grief and further feelings of desolation and detachment similar to homesickness or nostalgia.<sup>134</sup> “Eco-anxiety” or “climate anxiety” results from the anticipating of climate impacts and, like all anxiety, “is an adaptive response to future-oriented, possible threats.”<sup>135</sup> Like most forms of anxiety, moreover, eco-anxiety can prompt both productive responses, such as “pro-environmental behavioral engagement,” and the severe and debilitating worrying that becomes an anxiety disorder.<sup>136</sup> “Global mourning,” in turn, emerges from a broader and more diffuse sense of loss than ecological grief, the result of “[t]he pervasive narrative and accumulating personal experiences of declines in ecological condition” more generally.<sup>137</sup>

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131. Comtesse et al., *supra* note 117, at 2; *see also* Cunsolo & Ellis, *supra* note 116, at 276 (noting that “[t]his form of ecological grief is associated with the physical disappearance, degradation and/or death of species, ecosystems and landscapes,” whether from acute weather events or from “slow, gradual and ongoing ecological changes”).

132. Comtesse et al., *supra* note 117, at 2; *see also* Cunsolo & Ellis, *supra* note 116, at 277 (“[L]oss of local knowledge, or traditional ecological knowledge, may be a key trigger for ecological grief.”).

133. Comtesse et al., *supra* note 117, at 2, 6; *see also* Cunsolo & Ellis, *supra* note 116, at 278 (noting that many of the individuals studied “identified feeling anticipatory grief for ecological changes that had not yet happened. . . . A similar form of anticipatory grieving has also been documented amongst Sami reindeer herders in Northern Sweden fearful of the disappearance of their valued way of life”).

134. Comtesse et al., *supra* note 117, at 3 (citations omitted); *see also* Edward P. Richards, *The Societal Impacts of Climate Anomalies During the Past 50,000 Years and Their Implications for Solastalgia and Adaptation to Future Climate Change*, 18 *HOUS. J. HEALTH L. & POL’Y* 131, 166 (2018) (“While coined in the context of traditional environmental fights over coal mining and a power plant, solastalgia is a powerful concept for thinking about the mental health consequences of climate change.”).

135. Comtesse et al., *supra* note 117, at 4. Other terms in this vocabulary include “environmental melancholia,” “petromelancholia,” “ecosickness,” and “Anthropocene disorder.” Craps, *supra* note 112, at 5.

136. Comtesse et al., *supra* note 117, at 4.

137. Marshall et al., *supra* note 124, at 580.

Ecological grief, then, is the emotional response to the anticipated or actual loss of a specific place to which the mourner feels a particular attachment.<sup>138</sup> Grief, of course, is:

[A] universal and natural response to separation or loss and encompasses a range of emotional (e.g., yearning, bitterness), cognitive (e.g., preoccupation with the loss, diminished identity) and behavioral reactions (e.g., withdrawal from social and recreational activities). A feeling of yearning is paramount, which is focused on a desire for a place, thing or person that was highly treasured.<sup>139</sup>

The grief response comes as a result of attachment—place attachment, for ecological grief—and generally is considered a mental health *problem* only when it deepens into prolonged grief disorder.<sup>140</sup>

Like everything else about the intersection of climate change, nature parks, and eco-necrotourism, it is virtually certain that the ecological grief response will differ between places and among visitors, because “the personal and cultural value attributed to ecological loss is likely to modulate the experience of ecological grief.”<sup>141</sup> Specifically, “[t]here might be differences between persons from more individualistic or collectivistic cultures,” given that there are already “stark cross-cultural differences in the experience and expression of grief due to bereavement.”<sup>142</sup> People also inherently form different types of attachment to environments “that influence the amount and duration of ecological grief.”<sup>143</sup>

To date, discussions of the potential *legal* significance of ecological grief are few, brief, and focus primarily on valuing climate change losses, whether for traditional torts-like damage assessments, for conceptualization purposes under the Warsaw International Mechanism of the United Nations Framework Convention on Climate Change, or, in one notable case, in the context of a landmark decision upholding the denial of permits for a new coal-fired facility.<sup>144</sup> This focus most likely reflects the initial analogizing of ecological grief to loss of “home.”<sup>145</sup> However, a growing body of research acknowledges that ecological grief can extend beyond home, and especially to treasured nature parks, making ecological grief relevant to park managers.

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138. *Id.*

139. Comtesse et al., *supra* note 117, at 4.

140. *Id.*

141. *Id.* at 5.

142. *Id.*

143. *Id.*

144. Cunsolo & Ellis, *supra* note 116, at 279; *Gloucester Res Ltd v Minister for Plan* (2019) NSWLEC 7, ¶¶113, 114 (citing to psychological evaluations of the impacts of a proposed coal mine).

145. Cunsolo & Ellis, *supra* note 116, at 278-79.

### B. *Research Examples of Ecological Grief*

While the terminology and “official” recognition may be new, ecological grief is not. Indeed, researchers have detected it in the writings of Aldo Leopold and early climate researchers,<sup>146</sup> and indigenous people have long experienced impacts from colonization and the loss of land, traditional environmental conditions, and related cultural practices.<sup>147</sup>

As noted, researchers repeatedly connect ecological grief to loss of home and to homesickness. As a result, loss of the landscape one inhabits appears to be a clear occasion for the emergence of ecological grief, and early field studies have focused on these “home landscapes.” For example, Inuit from Nunatsiavut, northern Canada, find the loss of their traditional ecosystems and lifeways as a result of melting ice and tundra “depressing” and “hurting in a lot of ways,” observing that “we can’t dwell on it[;] . . . we would be all suicidal. You just have to do the best you can with what change is coming.”<sup>148</sup> Inuit in the middle-aged and senior generations in particular “identified feeling deep sadness and distress that much of their environmental knowledge gained from generations of knowledge sharing and on-the-land observation and learning were suddenly shifting and eroding.”<sup>149</sup>

Similarly, farmers in the Australian wheatbelt have been subjected to drought and severe loss of topsoil. They note, “There’s nothing [that] makes me more depressed than to see . . . dust lifting off the place,” and that losing their farms “would be like a death[;] . . . it would be like losing a person . . . but it would be sadder than losing a person.”<sup>150</sup> “Amongst Australian family farmers, wind erosion and chronic dryness have been shown to undermine ‘responsible land steward’ and ‘good farmer’ identities. In turn, feelings of guilt accompany experiences of ecological grief as farmers blame themselves for the desolation of their land.”<sup>151</sup>

Nevertheless, despite this initial focus on “home landscapes,” ecological grief is also increasingly associated with environmental change in nature parks. Much of the ecological grief work to date has come from researchers in Australia, one of the nations most visibly affected

146. *Id.* at 276.

147. Rebecca Tsosie, *Indigenous People and Environmental Justice: The Impact of Climate Change*, 78 U. COLO. L. REV. 1625, 1645 (2007) (“History has demonstrated time and again that the forcible removal of indigenous communities from their traditional lands, resources, and lifeways results in immeasurable harm.”).

148. Cunsolo & Ellis, *supra* note 116, at 276-77 tbl.1.

149. *Id.* at 277.

150. *Id.* at 276-77 tbl.1 (first alteration in original).

151. *Id.* at 278.

by climate change. Moreover, if the Australian “home landscape” is the nation’s wheatbelt, the nature park that makes international news is the Great Barrier Reef Marine Park.

Australia established the Great Barrier Reef Marine Park in 1975 “to save the reef from oil drilling and mineral extraction with permitting other activities like fishing and tourism in specified areas.”<sup>152</sup> As “the world’s largest coral reef ecosystem,” the Great Barrier Reef stretches 2300 kilometers (almost 1430 miles) along Australia’s east coast and encompasses 344,400 square kilometers<sup>153</sup> (almost 133,000 square miles, comparable to Montana or New Mexico). It consists of about 600 islands and 3000 coral reefs and constitutes the ancestral territory of more than 70 groups of Aborigines and Torres Strait Islanders.<sup>154</sup> The Great Barrier Reef Marine Park encompasses almost all of the reef system’s area, but coral reefs themselves make up only seven percent of the Park.<sup>155</sup> In 1981, the Great Barrier Reef was added to the list of World Heritage Sites.<sup>156</sup>

As is true for most of the world’s tropical coral reefs, climate change is hitting the Great Barrier Reef hard. Warming ocean waters cause coral polyps to expel their colorful symbiotic zooxanthellae, turning the coral white.<sup>157</sup> Prolonged bleaching leads to coral death.<sup>158</sup> “Mass bleaching events on the Great Barrier Reef have been documented with full-scale surveys in 1998, 2002, 2016, 2017, 2020 and 2022.”<sup>159</sup> The 2022 mass bleaching event was the first to occur in a La Niña year, when the reef usually benefits from cooler water.<sup>160</sup> It also coincided with the latest World Heritage Committee scientific inspection of the Reef, resulting in a 100-page report that concluded that this World Heritage Site is “in danger” from both climate change and farm runoff that carries sediment and nutrients to the reef.<sup>161</sup> Four consequences flow from an “in danger” finding under the World Heritage

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152. *Great Barrier Reef Marine Park*, NAT’L MUSEUM AUSTL., <https://www.nma.gov.au/defining-moments/resources/barrier-reef-marine-park> [<https://perma.cc/M8XR-R3YF>] (last updated Sept. 6, 2023).

153. *Id.*

154. *Id.*

155. *Id.*

156. *Id.*

157. *What Is Coral Bleaching?*, NAT’L OCEAN SERV., [https://oceanservice.noaa.gov/facts/coral\\_bleach.html](https://oceanservice.noaa.gov/facts/coral_bleach.html) [<https://perma.cc/9NKQ-6K3E>] (last updated Oct. 4, 2023).

158. *Coral Bleaching Events*, AUSTL. INST. MARINE SCI., <https://www.aims.gov.au/research-topics/environmental-issues/coral-bleaching/coral-bleaching-events> [<https://perma.cc/W3Y7-Y385>] (last visited Oct. 20, 2023).

159. *Id.*

160. Graham Readfearn, *Great Barrier Reef Flagged as ‘In Danger’ World Heritage Site. What Does This Mean?*, GUARDIAN (Nov. 28, 2022, 9:48 PM), <https://www.theguardian.com/environment/2022/nov/29/explainer-great-barrier-reef-flagged-as-in-danger-world-heritage-site-what-does-this-mean> [<https://perma.cc/EUT6-LL42>].

161. *Id.*

Convention: (1) the World Heritage Committee can allocate money from the World Heritage Fund to the property; (2) the world is alerted to the danger in the hopes of increased conservation cooperation; (3) the World Heritage Committee works with the State Party to develop a program of corrective measures; and (4) if the degradation continues to the point where the site loses the characteristics that made it a World Heritage Site, it can be removed from the list.<sup>162</sup> Formal voting on the Great Barrier Reef's status did not occur until July 2023.<sup>163</sup> Australia vigorously resisted a similar conclusion in 2021-2022,<sup>164</sup> and in 2023 it again successfully resisted the reef's categorization as being "in danger."<sup>165</sup>

Nevertheless, the news that the various stressors acting on the reef have reached the point where the World Heritage Commission is willing to change the reef's international law status have made global news since at least 2020. The result is Reef Grief.<sup>166</sup> In 2019, a team of researchers published the results of their "face-to-face surveys of 1870 local residents, 1804 tourists, and telephone surveys of 91 fishers and 94 tourism operators" connected with the Great Barrier Reef.<sup>167</sup> While the World Heritage Commission's doubts were just starting to become public, by 2019 the reef's decline had become clearly visible:

[Ninety percent] of local residents in the region felt that the GBR had outstanding beauty, were satisfied with their experience of it, and were proud of its World Heritage Area status. However, following a spate of severe and cumulative regional-scale impacts, from tropical cyclones, mass coral bleaching (in both 2016 and 2017), and an ongoing outbreak of coral-eating crown of thorns starfish, recent ecological monitoring suggests that the proportion of live coral coverage across all regions of the World Heritage Area have undergone a steep decline, to an extent not observed in the historical record.<sup>168</sup>

These researchers also extended the theory of place attachment to more granular understandings of "place meaning."<sup>169</sup> "Sense of place" is "the emotional connection that people develop with a certain place that can include unique personal experiences, specific or meaningful objects . . . within the place, and the formal and informal networks that

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162. *World Heritage in Danger*, UNESCO WORLD HERITAGE CONVENTION, <https://whc.unesco.org/en/158/> [<https://perma.cc/655X-Y9CJ>] (last visited Oct. 20, 2023).

163. Graham Readfearn, *UNESCO Recommends Against Great Barrier Reef 'In Danger' Listing but Australia Warned More Action Needed*, *GUARDIAN* (July 31, 2023, 11:00 AM), <https://www.theguardian.com/environment/2023/aug/01/climate-crisis-great-barrier-reef-unesco-australia> [<https://perma.cc/U6DD-4QR3>].

164. Readfearn, *supra* note 160.

165. Readfearn, *supra* note 163.

166. Marshall et al., *supra* note 124, at 579.

167. *Id.*

168. *Id.* at 581.

169. *Id.* at 580.



exist.”<sup>170</sup> In turn, “place attachment” refers to “the self-assessed strength of the connection,” while “place identity” or “place-based identity” indicates “the distinctive character of the place and the resulting identity that people create about themselves as a result of living within it.”<sup>171</sup> The Australian wheat farmers quoted above have a place-based identity, but any visitor to the Great Barrier Reef can develop a sense of place for it and perhaps even place attachment to it. This spectrum of place meanings “provide[s] an opportunity to capture deeper insights into the relationships that people have with a declining natural resource more broadly” than place attachment alone.<sup>172</sup>

The study sought both to assess the current level of Reef Grief among key stakeholders and “to explore how a range of seven different place meanings are related to Reef Grief.”<sup>173</sup> The cultural values assessed were identity, pride in resource status, attachment to place, aesthetic appreciation, appreciation of biodiversity, value for economy, and lifestyle.<sup>174</sup> The four stakeholder groups were tourists, residents, tourism operators, and commercial fishers.<sup>175</sup> Ranking their answers to “Thinking about coral bleaching makes me feel depressed” on a scale of 1 to 10 (10 being most affected), residents reported the highest levels of Reef Grief (mean of 7.14), followed most closely by tourists (mean of 6.9); tourism operators reported a mean level of Reef Grief of 6.3, while fishers reported significantly lower levels of Reef Grief (mean of 4.66).<sup>176</sup> Moreover, “53.5% of residents, 48.4% of tourists, 42.2% of tourism operators but only 22.9% of fishers reported significant Reef Grief” by reporting scores of 8, 9, or 10.<sup>177</sup>

The stakeholder groups also varied in how their Reef Grief correlated to the values that they felt for the Great Barrier Reef—and again, tourists and residents aligned most closely. For all four groups, recognition that coral bleaching was a primary threat to the Great Barrier Reef was significantly and positively correlated with Reef Grief.<sup>178</sup> However, for residents and tourists only, age and gender also made a statistically significant difference, with females and younger people reporting more Reef Grief within these groups than males and older

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170. *Id.*

171. *Id.*

172. *Id.*

173. *Id.* at 581.

174. *Id.* at 582 tbl.1.

175. *Id.* at 584 fig.1.

176. *Id.* at 583-84.

177. *Id.* at 583. Notably, another study conducted in 2019 found significant levels of Reef Grief among the scientists who conduct research on the Great Barrier Reef. Gemma Conroy, “Ecological Grief” Grips Scientists Witnessing Great Barrier Reef’s Decline, 573 NATURE 318, 318-19 (2019).

178. Marshall et al., *supra* note 124, at 584 fig.2.

people.<sup>179</sup> Finally, among residents and tourists alike, values of place identity, biodiversity, and place attachment were significantly and positively correlated with Reef Grief, while aesthetic appreciation of the reef significantly and negatively correlated with Reef Grief.<sup>180</sup> Among fishers and tourism operators, in contrast, “the only significant relationship with Reef Grief [was] aesthetic appreciation for tourism operators; the relationship was negative (that is, the more that the tourism operators appreciated the aesthetic qualities of the GBR, the less likely they were to report Reef Grief).”<sup>181</sup>

While of course far more work remains to be done, these results nevertheless suggest that local residents and visitors suffer (or at least *can* suffer) significant ecological grief over the loss or degradation of a nature park that is comparable to the loss of a “home landscape.”<sup>182</sup> Moreover, people apparently experience ecological grief well in advance of the nature park’s demise<sup>183</sup>—although the issue of whether that grief response comes despite an accurate understanding of the reef’s current health (i.e., it truly is anticipatory grief), or whether instead it comes from a distorted sense of the current damage driven by, *inter alia*, obsessive media focus on bad news is a question worth further research.<sup>184</sup> Regardless, the similar responses of residents and tourists support this Article’s hypothesis that, increasingly, much climate change-induced last chance tourism to imperiled nature parks can be classified as eco-necrotourism.

### III. IMPLICATIONS OF ECO-NECROTURISM FOR NATURE PARK MANAGEMENT

Human psychological reactions to climate change-induced losses at nature parks and the emotionality of climate change adaptation will become increasingly important to many managers. As the Reef Grief

179. *Id.* at 584 fig.1.

180. *Id.*

181. *Id.* at 584.

182. *Id.* at 585 (“Reef Grief, an emotional response to the well-documented and publicized degradation of the Great Barrier Reef (GBR) through coral bleaching and mortality, is reportedly experienced by a significant proportion of local residents as well as national and international tourists.”).

183. *Id.* (“With around half of all residents, tourists and tourism operators, and around a quarter of fishers scoring their grief as an eight, nine or ten on a ten point survey-scale, it appears that people have already entered a period of grieving and mourning for the iconic landscape even though as much as 50% of the GBR is reportedly undamaged.”).

184. Another result worth exploring more deeply and in other places is that the stakeholders who value a nature park primarily for economic gain from resource exploitation (here, the fishers) experience less ecological grief as that place transforms. Notably, the Reef Grief researchers themselves found this result counterintuitive. *See id.* (“These results suggest that these industry members may either be in denial of climate change and its impacts on the GBR, or have accepted climate change and its impacts, and have, rather pragmatically, decided to adapt. Many of these operators do not personally interact with coral reefs and may be unaware of the ecological health of their own sites, or operate at sites that have been unaffected by recent coral bleaching events.”).

researchers argued in 2019, “[i]f climate change continues to impact upon places that people care about, then acknowledging, understanding and managing ecological grief will become critical, as will the need for conceptual and theoretical foundations that enhance our understanding of it.”<sup>185</sup>

Eco-necrotourism introduces at least four novel considerations, not explicitly cognized in existing management approaches, for managing nature parks in the Anthropocene. As already discussed, visitation will become intertwined with grief, either because visitors come to experience a place to say goodbye or because they become aware during their visit that the place is irrevocably changing. As a result, managers should, first, consider that human psychology in their adaptation planning, and they may also, second, need to reconceptualize access to the park. Third, many managers will also face the last visitor conundrum: When a place is irrevocably changing and direct physical access must be limited to protect it, who will be allowed in and why? Finally, managers will need to confront the impossibility of access for future generations. This Part explores each of these issues in turn.

#### A. *Consider Visitor Psychology in Adaptation Planning*

The most basic point of this Article is that nature park managers need to be aware of ecological grief and eco-necrotourism. As discussed above, psychologists acknowledge that people are experiencing grief at the prospect of climate change-driven natural transformations and loss. The last chance tourism literature documents both that a growing number of travelers are seeking out natural places to experience them before they are gone and that public lands are highly vulnerable to climate impacts.<sup>186</sup> Many studies confirm that people place significant value simply on knowing that public natural spaces exist (existence

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185. *Id.* at 580.

186. A 2021 study of the climate vulnerability of national parks to climate change aimed at identifying parks with relatively high potential vulnerability scores as priorities for the preparation of detailed vulnerability assessments identified seventy percent of parks as priorities and found that few had comprehensive climate change vulnerability assessments that “identify key climate-change threats, synthesize existing information about those threats based on multiple lines of evidence, and evaluate their potential impact on priority park resources.” JULIA L. MICHALAK ET AL., NAT’L PARK SERV., A STRATEGIC ANALYSIS OF CLIMATE VULNERABILITY OF NATIONAL PARK RESOURCES AND VALUES 46 (2021).

value) and will continue to exist for future generations (bequest value), even if they have no intention to visit personally.<sup>187</sup> Moreover, visitor experience is often a core goal of public land management.

To date, however, policies focused on visitor experience and communication in light of climate change in large measure do not cognize or grapple with loss and grief—although they are starting to improve. As one example, the National Park Service’s original 2010 Climate Change Response Strategy only briefly acknowledges the potential loss of resources in a section focused on legal and policy considerations, listing “How does the NPS respond in cases where climate change results in the loss of resources specifically listed in a park’s enabling legislation? Should the NPS change a park’s purpose as a result?” as an “overarching question” to be addressed.<sup>188</sup> In 2023, however, the National Park Service published a new strategy, acknowledging from the beginning that:

Rising temperatures, droughts, wildfires, sea-level rise, species extinctions, and extreme weather are but a few of the notable threats transforming once-familiar places in complex and novel ways. Changes that formerly occurred on geological timescales now occur within human lifetimes.

The American public increasingly recognizes climate change as a challenge to the mission and work of the NPS.<sup>189</sup>

Similarly, the Service increasingly highlights the incorporation of indigenous knowledge and perspectives, and it notes that “[s]ocial science needs include understanding the effects of climate change on park visitation, as well as how to make better adaptation decisions.”<sup>190</sup> Climate education is also an important goal, and the Service acknowledges that its parks have varying meanings for different visitors and users:

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187. Michelle Haefele et al., *Total Economic Valuation of the National Park Service Lands and Programs: Results of a Survey of The American Public* 15 tbl.5 (Harvard Kennedy Sch. Fac. Rsch. Working Paper, Paper No. RWP16-024, 2016), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2821124](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2821124) [<https://perma.cc/NK8G-ZF7M>] (presenting the results of a survey in which 94.8% of respondents agreed that “[i]t is important to me that National Parks are preserved for current and future generations whether I visit them or not”); see also *id.* at 5 (“Existence value is the utility or benefit that accrues to an individual from simply *knowing* that a resource (such as a National Park) exists, even if the individual never expects to visit or see or otherwise use the resource. Bequest value measures the benefit or utility an individual enjoys from knowing that a resource will be preserved for future generations.”).

188. NAT’L PARK SERV., CLIMATE CHANGE RESPONSE STRATEGY 23 (2010), [https://www.nps.gov/subjects/climatechange/upload/Climate-Change-Response-Strategy\\_508.pdf](https://www.nps.gov/subjects/climatechange/upload/Climate-Change-Response-Strategy_508.pdf) [<https://perma.cc/EGB9-VG5K>] [hereinafter 2010 NPS STRATEGY].

189. NAT’L PARK SERV., CLIMATE CHANGE RESPONSE STRATEGY: 2023 UPDATE 5 (2023), <https://www.nps.gov/subjects/climatechange/upload/NPSClimateChangeResponseStrategy2023.pdf> [<https://perma.cc/L6BK-MKSV>] [hereinafter 2023 UPDATED NPS STRATEGY].

190. *Id.* at 10, 13.

Because park resources and facilities may have different significance for various communities, engagement with Indigenous Peoples, underrepresented groups, and other stakeholders is critical. Adaptation actions should consider diverse values and perspectives and—where appropriate—be informed by Indigenous Knowledges. Consultation with Indigenous Peoples on adaptation actions that may directly or indirectly affect their interests, practices, or traditional use areas will advance our shared interests in stewarding park natural and cultural resources under changing environmental conditions.<sup>191</sup>

Nevertheless, the Service's adaptation strategy remains focused on adapting to the physical changes within National Parks. To the extent that irretrievable loss is recognized in National Park Service guidance regarding climate change, the focus is on loss of cultural, as opposed to natural, resources.<sup>192</sup> The National Park Service's Climate Change Action Plan, in a section on how to strengthen communication with the public, somewhat Pollyannishly observes that "opportunities exist to communicate with and engage citizens of all ages in experiencing the wonders of national parks and witnessing the changes that are taking

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191. *Id.* at 15.

192. In 2010, for example, the National Park Service does recognize and discuss loss with respect to cultural resources. Another question posted in the 2010 Response Strategy focuses on threatened cultural resources, asking: "How does the NPS comply with mandates and policies for protection of cultural resources as climate change threatens the integrity and even existence of some resources?" 2010 NPS STRATEGY, *supra* note 188, at 23. Its Policy Memorandum 14-02, providing guidance on stewardship of cultural resources in light of climate change, includes the following:

Recognize Loss: We will ensure that our management options recognize the potential for loss. Responsible stewardship requires making choices that promote resilience and taking sustainable management actions. Funding temporary repairs for resources that cannot, because of their location or fragility, be saved for the long term, demands careful thought. Managers should consider choices such as documenting some resources and allowing them to fall into ruin rather than rebuilding after major storms. Such decisions for loss cannot be made lightly nor without appropriate consultation and compliance. They must incorporate interdisciplinary research and should be coordinated on a consistent and Service-wide basis.

Memorandum from Jonathon B. Jarvis, Dir., Nat'l Park Serv., to the Employees of the Nat'l Park Serv. (Policy Memorandum 14-02) (Feb. 10, 2014) (on file with author). The 2023 Strategy continues this theme, noting that the Service

must consider the tangible and intangible aspects of cultural resources and the array of values associated with them. As such, adaptation approaches should be developed and implemented in close consultation with local communities, Indigenous Peoples and other traditional communities, and underrepresented groups and emphasize environmental justice considerations and perspectives.

2023 UPDATED NPS STRATEGY, *supra* note 189, at 20. It plans to "[i]nventory the condition of cultural resources routinely to inform adaptation and, where necessary, document and interpret the loss of integrity or the resource itself." *Id.* at 21.

place.”<sup>193</sup> With respect to communicating with the public and climate change, the Park Service typically focuses on explaining how climate change is affecting lands under management as a means to promote climate knowledge.<sup>194</sup> Finally, the Service’s updated 2023 adaptation strategy does acknowledge that climate change will affect both why visitors go to National Parks and what they experience when they arrive:

Climate change influences the timing and spatial distribution of visitation to parks, *as well as visitor motivations*. Changing visitation patterns have implications for the operation of NPS units, concessioners, gateway communities, and other partners. And shifts in visitation can harm natural and cultural resources and park infrastructure.

Climate change also affects the quality of the visitor experience. *Impacts include changes to fundamental resources, facilities, and values visitors hope to enjoy*, and related shifts in visitor activities as previous experiences become unavailable.<sup>195</sup>

Nevertheless, the Service’s focus remains on visitor and park *safety* and appropriate educational responses and communication, not on visitors’ psychological responses.<sup>196</sup>

We are not qualified to and do not offer advice on *how* managers should address the sense of loss visitors may feel upon experiencing sublime but disappearing natural places; we merely point out that they *should*. A variety of responses will likely be appropriate. For example, managers may want to consider whether their staff are trained to deal effectively with grieving visitors or whether an on-site grief counselor is warranted. We do, however, recommend that managers

193. The communication recommendation provides:

Many opportunities exist to communicate with and engage citizens of all ages in experiencing the wonders of national parks and witnessing the changes that are taking place. Through direct experience in natural classrooms or via a wide range of interpretative and educational media, the public can come to understand how climate change is affecting the planet’s resources and how they may adapt their behavior to mitigate the cause of climate change and promote resource stewardship.

NAT’L PARK SERV., CLIMATE CHANGE ACTION PLAN 2012-2014, at 19 (2012), <https://www.nps.gov/subjects/climatechange/upload/CCAActionPlan-508compliant.pdf> [<https://perma.cc/4N34-434N>].

194. *E.g.*, *Share the Story*, NAT’L PARK SERV., <https://www.nps.gov/subjects/climatechange/communication.htm> [<https://perma.cc/GNW7-C582>] (last updated Apr. 7, 2023) (“Seeing climate impacts first-hand, and developing an understanding about how climate change directly impacts nearby or beloved resources, are essential to develop a public that is engaged with national parks, supportive of climate change response, and motivated to take practical action to become climate friendly.”).

195. 2023 UPDATED NPS STRATEGY, *supra* note 189, at 22 (emphases added); *see also id.* at 32 (identifying the need to “[u]nderstand the beliefs, motivations, and expectations of our audiences in relation to climate change”).

196. *Id.* at 22-23, 31-34.

recognize that eco-necrotourism and ecological grief exist and consider them when thinking about how to cognize visitor experience in the context of climate change.

In addition, eco-necrotourism and transforming nature parks will likely require more traditional forms of adaptation planning. For example, as the normal consequence of eco-necrotourism, many parks will experience increased numbers of last chance and eco-necrotourists. If the numbers are sizable, basic visitor management issues may multiply, from housing to amenities to water supply to ensuring minimal damage to the park itself.

Conversely, some nature parks may see the number of visitors plummet, particularly after a critical transformation (one that changes the meaning and values of the place) occurs. The fate of unvisited nature parks will vary, we suspect, and the options could run the gamut from reversion to wilderness to sale for private development. Planning for expected visitor drop-offs in advance could increase the park's ability to continue to contribute meaningfully to climate change adaptation, whether in terms of providing increasing protections to remnant populations of endangered species, providing an undisturbed corridor for species who are shifting ranges, or offering much needed housing to climate change migrants of the human variety.

### *B. Reconceptualize Use and Access*

Should managers at Glacier National Park begin planning for the Grinnell glacier's funeral? Eco-necrotourism is already inspiring new use demands in public places. For example, as one means of coping with ecological grief, glacier funerals and other place-based mourning ceremonies are becoming less unusual. "As glacier deaths—the technical term adopted by glaciologists to refer to a glacier that no longer fits the criteria—increase, glacier funerals have emerged as one way that communities are commemorating their loss."<sup>197</sup> For example, at the 2019 Ok glacier funeral in Iceland, "a group of about 100 people hiked to the glacier and conducted a ceremony that included poetry readings and speeches."<sup>198</sup> The funeral made international news, with Icelandic naming practices underscoring the narrative of loss:

Icelandic naming practices meant that along with the glacier's death, it also lost its former name—"Okjokull," meaning "Ok's glacier"—and became "Ok." In emphasizing the glacier's name, journalists were able

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197. Sasha Starovoirov, *Glacier Funerals Offer a Way of Coping with Ecological Grief*, COLUM. CLIMATE SCH.: STATE PLANET (Sept. 24, 2021), <https://news.climate.columbia.edu/2021/09/24/glacier-funerals-offer-a-way-of-coping-with-ecological-grief/> [<https://perma.cc/5GZ5-U344>].

198. *Id.*

to intentionally emphasize that Ok wasn't just a glacier; Ok was treated as a lost life, an environmental body that required a grieving process mirroring those conducted for human lives.<sup>199</sup>

In 2020, the Oregon Glacier Institute held a funeral and vigil for Clark glacier when it was declared dead, and “[m]ore recently, the Swiss Climate Alliance held a funeral for the Basodino glacier, organizing a free shuttle for people to reach the ceremony itself.”<sup>200</sup> In 2021, a funeral occurred in Mexico for the Ayoloco glacier.<sup>201</sup>

Whatever one might think of glacier funerals, the practical point for nature park managers is that people attached to a particular natural feature already feel a need to commemorate its loss en masse *in situ*. Nature park managers may thus want to consider whether their parks or any features within them are likely to inspire similar requests for ceremonies, what level of participation the park can accept, and potential logistical issues for participants (like the Swiss free shuttle).

Other uses of nature parks may expand or be altered. As another example, some nature parks are already partners in mental health programs, such as wilderness therapy programs for veterans.<sup>202</sup> If ecological grief and related problems become more common occasions for mental health counseling or therapy, psychiatrists and psychologists may increasingly want to incorporate the places provoking the mental health issue into the patient's treatment. In many cases, such visits will be indistinguishable from any other. However, there may be situations where such therapeutic visits require special accommodation, such as an opportunity for the patient to be alone in a certain place. Managers may find it beneficial to anticipate such requests.

More generally, an increase in visitors as a result of eco-necrotourism will likely often require nature park managers to rethink park access. If the issue is simply managing visitors and the visitor experience, increased numbers of eco-necrotourists fall squarely within nature park managers' existing experience and training. Public land managers routinely manage visitor access to fragile and dynamic natural places. They are accustomed to dealing with challenges arising from visitor volume and footprint, environmental change, and the imperative to enable equitable access.<sup>203</sup> With respect to the impact of

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199. *Id.*

200. *Id.*

201. Sofia Quaglia, *Glacier Grief: How Funerals and Rituals Can Help Us Mourn the Loss of Nature*, GUARDIAN (Oct. 10, 2022, 2:45 AM), <https://www.theguardian.com/environment/2022/oct/10/glacier-grief-how-funerals-and-rituals-can-help-us-mourn-the-loss-of-nature-aoe> [<https://perma.cc/B6AZ-SQ2K>].

202. *E.g.*, *A Guide to Outdoor & Wilderness Therapy for Veterans & Active Military*, STANLEY, <https://www.stanley1913.com/blogs/how-to-guides/veterans-and-active-military-outdoor-wilderness-therapy-guide> [<https://perma.cc/EY2P-G4TJ>] (last visited Oct. 20, 2023).

203. *E.g.*, EAGLES ET AL., *supra* note 96, at 75-86. The Interagency Visitor Use Management Council coordinates visitor use management efforts across the federal government and



visitors on a resource, managers recognize that “all recreational use causes some impact”<sup>204</sup> and minimize or manage those impacts using a variety of approaches:

1. *Managing the supply* of tourism or visitor opportunities, e.g. by increasing the space available or the time available to accommodate more use;
2. *Managing the demand* for visitation, e.g. through restrictions of length of stay, the total numbers, or type of use;
3. *Managing the resource* capabilities to handle use, e.g. through hardening the site or specific locations, or developing facilities; and
4. *Managing the impact* of use, e.g. reducing the negative impact of use by modifying the type of use, or dispersing or concentrating use.<sup>205</sup>

Nevertheless, eco-necrotourism may intensify the need for and broaden the scope of the management measures. For example, measures designed to lessen the impact of visitors have become common in polar regions. Canadian management agencies responded to concerns about caribou herd declines in the circumpolar region by banning “tourist sport-hunting, while permitting either reduced or stable levels of aboriginal and non-aboriginal resident hunting.”<sup>206</sup> Similarly, the International Association of Antarctica Tour Operators has decided that ships carrying more than 500 passengers to Antarctica cannot land people onshore.<sup>207</sup> Otherwise, no more than 100 people are allowed onshore at one time, and there must be at least one guide per twenty tourists.<sup>208</sup> A host of other damage-limiting requirements govern an Antarctic visitor’s experience, including boot-washing practices for onshore visits and compulsory lectures prior to onshore activities regarding restrictions on taking stones, cautions about trampling flora, and other visitor protocols necessary to protect fragile Antarctic ecosystems.<sup>209</sup>

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provides significant guidance for identifying and managing visitor impact, including a Visitor Use Management Framework and Visitor Capacity Guidebook. See *Announcements, INTERAGENCY VISITOR USE MGMT. COUNCIL*, <https://visitorusemanagement.nps.gov/> [<https://perma.cc/8435-AJQY>] (last updated Jan. 1, 2022).

204. EAGLES ET AL., *supra* note 96, at 77.

205. *Id.* at 88.

206. Johnston et al., *supra* note 78, at 19.

207. SECRETARIAT OF THE ANTARCTIC TREATY, FINAL REPORT OF THE THIRTIETH ANTARCTIC TREATY CONSULTATIVE MEETING 179 (2007), [https://documents.ats.aq/atcm30/fr/atcm30\\_fr001\\_e.pdf](https://documents.ats.aq/atcm30/fr/atcm30_fr001_e.pdf) [<https://perma.cc/R32P-2VV3>].

208. *Id.*

209. *Id.*

Public land managers are also accustomed to responding to increased demand for access. For example, one commonly documented evolution is from specialist visitors (e.g., wildlife biologists) to more general visitors (e.g., tourists who want to see iconic wildlife):

Specialists are generally visitors who require minimal infrastructure, interpretive facilities, and on the whole their presence is absorbed by the existing social and ecological systems already in place. . . . At this stage the actual number of tourists is low therefore requiring little management intervention. However, an increasing awareness of the site through publicity, even media hype, or word of mouth results in increased numbers of visitors leading to a greater demand for facilities and increased pressure on ecological and social conditions. This latter kind of tourist, who increasingly patronises the site, can be classified as generalist.<sup>210</sup>

The evolution from specialist to generalist travelers results in greater impacts and requires more management. “When this type of change takes place, the management response is often to develop the site to rectify an impact situation or address increasing visitor numbers.”<sup>211</sup>

Nature park visitation frequently evolves to the point where active visitor management, which can include limitations on access, becomes necessary. Indeed, the phenomenon of nature parks being “loved to death” has become common, especially for places that are unusually vulnerable to visitor impacts.<sup>212</sup> Thus, for example, some National Antarctic Programs have a quota for the number of ships allowed to visit research stations annually, including the U.S. Palmer Station.<sup>213</sup> Grand Canyon National Park in the United States limits the number of boating trips—both rafting and motorized craft, both commercial and noncommercial—that can travel the river each year.<sup>214</sup> New York has embarked on a process to manage overcrowding and associated impacts in the Adirondacks.<sup>215</sup> Eco-necrotourism will likely increase the need for such measures in many nature parks.

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210. David Newsom & Kate Rodger, *Vanishing Fauna of Tourism Interest*, in *LAST CHANCE TOURISM*, *supra* note 13, at 55, 59.

211. *Id.*

212. JOHN D. LESHY, *OUR COMMON GROUND: A HISTORY OF AMERICA'S PUBLIC LANDS* 597-98 (2021).

213. Lamers et al., *supra* note 87, at 35.

214. *River Trips and Permits*, NAT'L PARK SERV., <https://www.nps.gov/grca/planyourvisit/whitewater-rafting.htm> [<https://perma.cc/53JM-Q83D>] (last updated Nov. 5, 2020).

215. HIGH PEAKS STRATEGIC PLAN. ADVISORY GRP., FINAL REPORT 7 (2021), [https://www.dec.ny.gov/images/lands\\_forests\\_images/hpacfinalreport.pdf](https://www.dec.ny.gov/images/lands_forests_images/hpacfinalreport.pdf) [<https://perma.cc/4X2M-A3ZX>].

### C. Address the Last Visitor Problem

As this Article has detailed, some of our most treasured natural places are disappearing (national seashores) or losing salient natural features (Glacier's glaciers). Moreover, for some subset of these treasured natural places, visitor impacts could further imperil the resource and even hasten their demise, particularly if last chance tourism and eco-necrotourism prompt high volumes of visitors. Managers in some of these nature parks will have to make high stakes decisions about end-of-life access that will often involve tradeoffs between visitor access and the nature park's relative health and longevity. To navigate this last visitor conundrum, managers of the relevant nature parks should acknowledge the impending loss and balance that loss and visitors' potential need to grieve against the potential need for access restrictions. Most importantly, managers should center equity in their access decisions, especially by rejecting most pay-to-play approaches to access.

Managers may be reticent to accept inevitable and irretrievable resource loss and adopt access restrictions. As noted in the review of the last chance tourism literature, managers often appear uncomfortable with the idea that the places that they steward—often with the explicit legal charge to protect them for future generations—are irrevocably and inevitably transforming in ways that will cause permanent loss of salient features,<sup>216</sup> or perhaps even the place itself. In the words of one:

The messages we want to convey are clearly laid out in our legal mandate and supporting legislations, and are along the lines of 'these things are here for you and your children.' The concept of 'you'd better come now because your kids won't get to' isn't really part of our culture.<sup>217</sup>

Unfortunately, maintaining a pretense of recovery and/or longevity could obscure the true contours and stakes of decisions governing access and stymie transparency and public participation in associated decisionmaking processes. Such a pretense will also likely deny the ecological grief that visitors are experiencing and hence stymie creative but limited-access approaches to addressing that grief.

Managers may also be reticent to adopt access restrictions. Overcrowding is now a "first-order management problem," and "[a]t least for the most famous national parks, it appears that promotion of human recreation may be overwhelming . . . environmental preservation."<sup>218</sup> Use limits, or "direct restrictions on the number of people that

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216. RANDALL K. WILSON, *AMERICA'S PUBLIC LANDS: FROM YELLOWSTONE TO SMOKEY BEAR AND BEYOND* 102-03 (2d ed. 2020) ("Though [Glacier National Park] was not created to preserve the glaciers per se (the name refers to the work of past glaciers in sculpting the dramatic mountain peaks and ridges), their presence has come to be synonymous with the park itself.").

217. Olsen et al., *supra* note 106, at 111.

218. WILSON, *supra* note 216, at 110.

may enter,” are generally recognized as controversial and costly to implement and enforce.<sup>219</sup> Managers are often reluctant to limit access even in the face of increasing demand, because a “use-limit policy is . . . one of the most intrusive actions that protected area managers can employ” and requires difficult value judgments, “such as choosing appropriate allocation or rationing techniques” that “can have major political problems because of the necessary decision of who does not get access, and how access is allocated.”<sup>220</sup> That this reluctance exists even without the heightened emotion and scrutiny of the “last chance” context raises the specter that managers may not act promptly to limit access even where it becomes necessary to prevent visitor impacts, thereby hastening resource decline.

Because decisions about how to apportion access will be complicated and fraught, it seems wise to leave a long runway to engage them with fulsome process—transparency, full stakeholder participation, discussions of values and priorities—before those decisions become infused with even more emotion. As an example of the thorniness of access decisions and the last visitor conundrum, consider the fact that international tourism to U.S. national parks has increased, while urban residents and ethnic and racial minorities within the United States are persistently underrepresented among national park visitors.<sup>221</sup> It is not hard to imagine clamor to limit access to U.S. citizens. Nor is it hard to imagine access approaches that exacerbate existing access inequalities. For example, managers may be tempted to auction off last chance experiences because the sums generated to support nature parks would be enormous<sup>222</sup>—imagine how high the bidding would go for the last permitted hike into Glacier National Park’s glaciers, especially when fueled by ecological grief.

Managers currently often justify entrance, permit, and other user fees as means to relieve access pressure while raising revenue to support park management and maintenance, despite their potential to discourage access by the poor.<sup>223</sup> In the last chance context, however,

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219. EAGLES ET AL., *supra* note 96, at 89.

220. *Id.* at 79 tbl.6.1.

221. WILSON, *supra* note 216, at 107-10.

222. Endangered species auctions support this conclusion. For example, although only about 5000 black rhinoceros still existed in the wild a decade ago, the Dallas Safari Club in Texas held a closed auction in 2014 for a permit—*just* the permit—to hunt one of them in Namibia; the winning bid was \$350,000.00. Katie Drummond, *Permit to Hunt an Endangered Black Rhino Is Auctioned Off for \$350,000*, VERGE (Jan. 13, 2014, 10:30 AM), <https://www.theverge.com/2014/1/13/5303860/dallas-safari-club-black-rhino-auction-350000> [<https://perma.cc/4CMH-9MQA>]. At the time, Namibia allowed five such permits per year. *Id.*

223. In the words of one established public lands scholar, “[t]he era of free and unregulated access to the public lands for recreation purposes has ended. The tragedy of the commons has once again played out on the public domain, this time in the case of outdoor recreation.” Robert B. Keiter, *The Emerging Law of Outdoor Recreation on the Public Lands*, 51

particularly when nature park managers are contemplating limitations on access, equity considerations should be paramount and will generally compel the conclusion in most places that visitors should not be allowed to pay for exclusive “last chance” access. Even if it is acceptable to trade off access by the poor for revenue generation and easing of crowding in pre-last chance contexts, the tradeoffs become increasingly unacceptable as the prospect of being able to visit in the future becomes increasingly tenuous and experiences of ecological grief increase. While we acknowledge that a variety of equity considerations will emerge in different places, no millionaire should be able to buy a last chance experience in a nature park *at the expense of others who also want to visit*. Managers of some nature parks might go even further and consider waiving existing entry fees to disappearing places, while in others it may be more equitable to charge based on ability to pay, to allow limited and non-exclusive last-chance auctions if they pay for many others to visit, or to establish fee breaks or privileged access for certain groups, such as indigenous communities. The meaning of “equitable access” will vary by nature park, and what is equitable in one place will be discrimination or colonialization in another—which is why a “values and priorities” elucidation process with all relevant stakeholders *before* the “last visitor” problem emerges could aid managers considerably.

Considering access through the lens of eco-necrotourism, ecological grief, and the last visitor conundrum thus offers some important insights to augment existing (often well-developed and extensive)<sup>224</sup> processes for making management and access decisions. Recognition of and clear communication by managers about how a nature park is changing and that those changes cannot be prevented may be uncomfortable, but it is important. Moreover, as the Reef Grief study suggests, eco-necrotourists will often be a critical group of stakeholders whose values, attachments to the park, and mental health needs should be considered in the decisionmaking process.

#### *D. Make Culture-Appropriate Decisions About Intergenerational Equity*

Laws governing the management of most nature parks often require that they be managed for the benefit of current and future

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ENV'T L. 89, 144 (2021). The Federal Lands Recreation Enhancement Act authorizes the imposition of entrance, recreation, and other fees, including by the National Park Service, albeit with constraints on the circumstances in which fees can be imposed and the process for setting fees, including requiring that the “recreation fee shall be commensurate with the benefits and services provided to the visitor.” 16 U.S.C. § 6802. For an overview of the use of fees in protected areas, see EAGLES ET AL., *supra* note 96, at 130-37.

224. 36 C.F.R. § 1.5 (2023) (setting forth publication and decisionmaking requirements for restricting access in national parks).

generations.<sup>225</sup> For example, the “fundamental thrust” of the National Park Service Act is that “national parks are not places where resources should be extracted, but rather places where people go to be inspired and learn and recreate, and where safeguarding those opportunities for future generations [is] at least as important as providing them to current generations.”<sup>226</sup> However, notably, in one study to identify adaptation barriers in public lands management, one National Park Service employee commented that “[m]anaging NPS land as a national treasure for future generations becomes increasingly complicated if climate change makes maintaining the original characteristics unsustainable.”<sup>227</sup> What does it mean to manage for the benefit of future generations that will never have the possibility of experiencing a place? And when managers know that future generations will not be able to experience a place, does or should that fact change how they think about access now?

We posit that managers should often continue to manage nature parks for future generations, although it is hard to know precisely how. A starting default in many places will likely be to prioritize putting off an inevitable or foreseeable transformation for as long as possible. For many parks, present day decisions about access and physical use could extend the park’s physical existence in its current ecological state by severely limiting current access and uses that pose any risk of impacts that could hasten the park’s demise or transformation—a sort of management precautionary principle that maximizes the possibility of intergenerational *continuity* of the nature park. Moreover, if application of that principle means that only a sliver of the current generation can see Glacier National Park’s glaciers, and even that sliver can see the

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225. *E.g.*, 16 U.S.C. § 1, *repealed by* Pub. L. No. 113-287, § 7, 128 Stat. 3272 (2014) (“[The National Park Service] shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified . . . by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”); 16 U.S.C. § 1131 (“[I]t is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.”); 16 U.S.C. § 668dd (“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”); 36 C.F.R. § 1.1 (2023) (“These regulations will be utilized to fulfill the statutory purposes of units of the National Park System: to conserve scenery, natural and historic objects, and wildlife, and to provide for the enjoyment of those resources in a manner that will leave them unimpaired for the enjoyment of future generations.”).

226. LESHY, *supra* note 212, at 331.

227. Kelli M. Archie, Lisa Dilling, Jana B. Milford & Fred C. Pampel, *Climate Change and Western Public Lands: A Survey of U.S. Federal Land Managers on the Status of Adaptation Efforts*, 17 *ECOLOGY & SOC’Y*, no. 4, 2012, at 9.

glaciers only from a viewing platform instead of hiking them, so be it. At least a sliver of multiple successive generations will also be able to have the same experience.

However, nature park life extension is not the only way to think about intergenerational equity, and managers might legitimately conceptualize future generations' interests in the nature park differently. For example, instead of elevating continued physical existence above all else, societies could value current intergenerational experiences in the nature park (such as families hiking together), scientific expeditions to capture knowledge that might otherwise be lost forever, or documentation of the place to try to preserve at least a good representation of it for future generations.

Somewhat perversely, however, consideration of ecological grief is likely to be less necessary as generations turn over, a result of generational environmental amnesia. This amnesia, also known as the shifting baseline syndrome, is the documented phenomenon that children born into a degraded environment do not know the difference and do not "see" the despoliation; it is "all the more difficult for people to construct accurate understandings about their loss of positive affiliations with nature."<sup>228</sup> This phenomenon might counsel for extending the physical life of a nature park as long as possible or to find ways to encourage "dialogue with children about what has been lost and to use such dialogue to help shape the future."<sup>229</sup> It also, however, suggests that (at least from the perspective of members of future generations themselves) we are in some sense making much ado about nothing. Future generations will not experience ecological grief over a loss that occurred before they were born. Consider this stunningly frank observation in a report on climate change and tourism prepared by the World Tourism Organization and the United Nations Environment Program:

The perception of some contemporary visitors that the landscape would be degraded from a former state if the specified environmental changes occurred, may not be shared by a visitor born in the 2040s who has no experience with the former condition. It therefore remains uncertain if the stated behavioural intentions of contemporary visitors would translate similarly to visitors a generation from now, who may have never experienced the attributes that current visitors used to define the quality of these mountain landscapes for their tourism experience. Arguably

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228. Peter H. Kahn, Jr., *Children's Affiliations with Nature: Structure, Development, and the Problem of Environmental Generational Amnesia*, in *CHILDREN AND NATURE: PSYCHOLOGICAL, SOCIOCULTURAL, AND EVOLUTIONARY INVESTIGATIONS* 101, 109 (Peter H. Kahn, Jr. & Stephen R. Kellert eds., 2002); see also *id.* at 106 ("[W]e all take the natural environment we encounter during childhood as the norm against which we measure environmental degradation later in our lives. With each ensuing generation, the amount of environmental degradation increases, but each generation in its youth takes that degraded condition as the nondegraded condition—as the normal experience.").

229. *Id.* at 111.

the 20th century offers some historical analogues for visitor perceptions of changing mountain landscapes. For example, ice caves in Glacier National Park, the US portion of Waterton-Glacier International Peace Park, were an important tourist attraction in the 1930s, but melted decades ago so that contemporary tourists have no experience with these ice caves or any perception that the park landscape is less attractive than that of a previous more pristine state. More generally, glaciers have been melting and vegetation responding to warmer temperatures throughout the European Alps and North American Rocky Mountains over the last half of the 20th century and these environmental changes have had no known impact on visitation levels to these regions. Contemporary visitors still value these mountain landscapes and the recreation opportunities they provide, even though they are different than in previous decades.<sup>230</sup>

From this perspective, current and near-term generations able to visit the nature park may lament its loss for future generations, but future generations will be largely oblivious—at least to the losses that the *current* generation is experiencing.

At the same time, however, climate change itself will unfold over several generations; indeed, climate change adaptation will be the planet's continual state of being until global average temperatures re-stabilize sometime in the future. Thus, while future generations may not care about current losses, they *will* care about—and experience ecological grief over—their own losses. As such, the last visitor problem will likely be a recurring problem for many nature park managers as parks continue to transform into the future. Part of climate change adaptation planning over the longer term, therefore, may well be adapting to evolving levels and foci of ecological grief and eco-necrotourism.

We do not attempt to resolve how managers should think about evolving ecological grief, eco-necrotourism, and “last visitor” issues—and, indeed, we suspect different cultures and stakeholders will reach radically different decisions about what exactly constitutes intergenerational equity in the context of managing a disappearing or transforming nature park. Instead, we offer them up to illustrate the important conversations that nature park managers—and the public—must have, repeatedly, into the future. The prime directive and chief insight of this Article is for managers to recognize that eco-necrotourism is upon us and to shepherd these conversations.

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230. WORLD TOURISM ORG. & U.N. ENV'T PROGRAMME, CLIMATE CHANGE AND TOURISM: RESPONDING TO GLOBAL CHALLENGES 115 (2008), <https://www.e-unwto.org/doi/pdf/10.18111/9789284412341> [<https://perma.cc/95X3-2CXS>].



CONCLUSION: ECOLOGICAL GRIEF AND THE LARGER ISSUE  
OF HUMAN PSYCHOLOGY IN CLIMATE CHANGE ADAPTATION

Eco-necrotourism to the world's nature parks is among the most readily identifiable ways in which ecological grief will increasingly affect adaptation law, policy, planning, and management—and, as noted in the Introduction, these intensely place-centric nodes of legal regimes provide manageable foci for ecological grief and adaptation case studies, as in the Reef Grief study. As legal case studies, moreover, nature parks often enjoy the comparative advantage of being governed through a single, or at least dominant, legal regime, often implemented through a singular or primary government agency. These agencies will thus often enjoy the luxury of responding to eco-necrotourism and other manifestations of ecological grief within the boundaries of primary governance missions.

Thus, because nature parks provide relatively self-contained specific examples, and because nature parks are likely to be frontrunners in acknowledging and dealing with ecological grief, they can also potentially generate clearer management experience and lessons for climate change adaptation governance more generally. Specifically, more general climate change adaptation efforts often adopt a place-based approach,<sup>231</sup> reflecting the reality that “[c]limate change will affect different places in different ways.”<sup>232</sup> As the Government of Victoria, Australia, summarized, “Broadly, the term ‘place-based’ implies a spatially distinctive ‘ensemble’ of human and biophysical conditions or coupled human-environment systems.”<sup>233</sup>

These place-based approaches, however, will also increasingly have to deal with ecological grief. For example, the Government of Victoria also noted that “[p]laces are also spaces that have been given meaning by people associated with them (though not necessarily residents), and places and their constitutive elements are valued in various ways by various groups.”<sup>234</sup> Climate change impacts to all of these valued places, like climate change impacts to nature parks, are likely to generate psychological responses.

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231. Ahmed Khan, Anthony Charles & Derek Armitage, *Place-Based or Sector-Based Adaptation? A Case Study of Municipal and Fishery Policy Integration*, 18 CLIMATE POL’Y 14, 14 (2018) (“Place-based adaptation planning is an approach to address cross-sectoral and multi-level governance concerns as well as to build local adaptive capacity in vulnerable resource-dependent communities facing the adverse impacts of climate change. In contrast, sector-based adaptation planning focuses on addressing climate change impacts on individual economic sectors (e.g. fisheries or forestry) or sub-sectors (such as lobsters or timber).”).

232. STATE OF VICT. DEPT OF ENV’T, LAND, WATER & PLAN., PLACE-BASED ADAPTATION CONCEPTS AND APPROACHES 2 (2020), [https://www.climatechange.vic.gov.au/\\_\\_data/assets/pdf\\_file/0037/489682/RAS-GN1\\_Place-based-adaptation-concepts-and-approaches.pdf](https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0037/489682/RAS-GN1_Place-based-adaptation-concepts-and-approaches.pdf) [<https://perma.cc/46DT-YX3Y>].

233. *Id.*

234. *Id.*

Psychologists, sociologists, and anthropologists have already recognized that human psychological responses to the Anthropocene create two new issues for place-based management. First, managers must acknowledge that places have meanings, because “[t]he failure of the resource planning and management process to include the range of meanings of places, and its singular focus on environment as a set of biophysical characteristics, can lead to conflict.”<sup>235</sup> Second, managers must acknowledge that the Anthropocene can change those meanings:

Recognizing that social processes and relations define place does not mean that the physical characteristics of an area are unimportant. Just as the meanings attached to a place may be transformed through changes in the social and political context, proposed changes to the physical environment may lead to the articulation of new meanings, and actual changes to the physical environment may contribute to the renegotiation of meanings. . . . Thus, it is not just changing social relations and context that change the meaning of places; changing environments—as is occurring due to climate change—can also change meanings.<sup>236</sup>

In this Article, we have added a third issue: during the transition, those who attributed meaning to a place and hence are attached to it will often mourn the place’s transformation and loss of psychologically and culturally important values in ways that can affect ongoing management and adaptation planning. To date, the acknowledgement of this mourning period—of ecological grief—is often absent from the mainstream adaptation governance literature.<sup>237</sup> Eco-necrotourism studies thus would offer the larger world of climate change governance potentially valuable insights about how to build capacity and appropriate responses to the increasingly acknowledged phenomenon of ecological grief into adaptation planning more generally.

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235. Adger et al., *supra* note 10, at 3.

236. *Id.*

237. See, e.g., Stern et al., *supra* note 9, at 5 (noting only that “[t]he magnitude of the challenges presented by climate change can cause feelings of hopelessness or being overwhelmed”).

