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Reevaluating Wilderness Classification and Management in the Face of Climate Change: A Reconsideration of Values and Ecology

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NOTE

Reevaluating Wilderness Classification and Management in the Face of Climate Change: A Reconsideration of Values and Ecology

Katherine Fiedler*

In wildness is the preservation of the world.
– Henry David Thoreau

I. INTRODUCTION

For fifty years, the Wilderness Act (the “Act”) has helped preserve our nation’s untouched lands.¹ Under the Wilderness Act, over 108 million acres of land has been protected, with such designations in forty-five states, spanning ecosystems and agency jurisdictions.² However, the Act was “written in a time when nature was thought to be static, or at least changing at the pace of millennia.”³ Unprecedented climate change is challenging the longstanding interpretation and application of the Act, as well as

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1. Wilderness Act, 16 U.S.C. §§ 1131–1136 (2012).
2. *Wilderness Statistics Reports*, WILDERNESS.NET (May 29, 2015), <http://www.wilderness.net/NWPS/chart> [<http://perma.cc/RV8A-YCN5>] (follow url then click “Create Chart” button) (fifty-two percent of which lie within the state of Alaska and another fourteen percent in California).
3. David Graber, *Climate Change Threatens Wilderness Integrity*, 28 PARK SCI. 39, 39 (2012).

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the values upon which it is based. As wilderness managers begin to face rapid changes to living systems, the interpretation of what wilderness is and how it should be managed is more relevant than it has ever been before.

Wilderness management has skirted the line between active and passive schemes. Wilderness has traditionally been managed under a passive management scheme as dictated by the Act, arguably the country's strictest environmental statute.⁴ The Act lists a number of prohibitions meant to limit human influence and manipulation of wilderness areas, yet also lists exceptions that directly counter passive management practices.⁵ Facing unprecedented ecological disturbances and shifts as the impacts of climate change progress, wilderness managers are faced with the dilemma of how to best manage wilderness areas in order to meet the intent and stated requirements of the Wilderness Act and to maintain the values of wilderness and the health of global ecosystems. Any clarity in our understanding of wilderness designation and management has now been muddied by climate change:

Drawing two-dimensional lines on a map appears insufficient for the multi-dimensional threats of an overheated and overcrowded planet. Federal land managers are struggling with whether to manipulate wilderness areas to save certain plants and animals, while advanced technologies erode the wild's remoteness and isolation. The once-solid certainties about the value of wild nature are melting under the glare of a hot, new sky.⁶

Many practitioners are calling for active management of wilderness areas in order to protect the systems from the rapid

4. "Congressional designation as Wilderness provides an area with the highest level of statutory land protection available in the United States." *What is Wilderness?*, WILDERNESS WATCH, <http://wildernesswatch.org/resources/wilderness.html> [<http://perma.cc/2G8J-TSQB>].

5. See 16 U.S.C. § 4(c), for prohibitions. See *id.* ("... except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act . . ."); *id.* § 4(d)(1) ("In addition, such measures may be taken as may be necessary in the control of fire, insects, and diseases, subject to such conditions as the Secretary deems desirable."), for exceptions.

6. Jason Mark, *Why We Still Need Wilderness in the Era of Climate Change*, THE NATION (Sept. 19, 2014), <http://www.thenation.com/article/181685/why-we-still-need-wilderness-era-climate-change> [<http://perma.cc/3MCW-JAN3>].

impacts of climate change.⁷ However, this course of action will undermine the Wilderness Act and its purpose. Upon reconsidering what it is that wilderness designations are meant to protect, including those values both expressly and implicitly included within our definition of wilderness, it is clear that management objectives must be reconsidered so as to maintain passive management regimes.⁸ Passive management will allow for more stable ecosystems that will be better able to eventually adapt to climate change, as opposed to active management, which will leave ecosystems at risk of collapsing from disturbance, as they will be even more dependent on human maintenance and intervention.

At the same time, however, the definition of wilderness must be loosened, even if only slightly. Rather than forgoing the protection of areas with only minor human incursions, these areas should be considered as potential wilderness areas. The need for setting aside wild places is more important than ever, as it might serve as one of the most important tools for broad climate change adaptation of natural resources and living systems. In recognizing that the very nature of wilderness is a human construct, the values sought to be preserved can and should be reevaluated, considering the importance of wilderness in light of climate change and global ecosystem resilience, as well as how wilderness is designated and managed. Furthermore, the values that wilderness provides us will dramatically increase as climate change proceeds.

Section II describes the basics of wilderness protection, including the evolution of our relationship with wilderness, the history of the Wilderness Act, and what, how, and why wilderness is protected under the Act. Section III explores how wilderness will be impacted by climate change and the debate over how to manage wilderness given these impacts. Section IV argues for

7. E.g., Elisabeth Long & Eric Biber, *The Wilderness Act and Climate Change Adaptation*, 44 ENVTL. L. 623, 645–55 (2014).

8. See, e.g., Mirjam Milad, *How is Adaptation to Climate Change Reflected in Current Practice of Forest Management and Conservation? A Case Study from Germany*, 22 BIODIVERSITY CONSERVATION 1181, 1182 (2013) (“References used for evaluating conservation significance of forests, have to date been based predominantly on aspects of state and time, for example, the ‘nativeness’ or ‘naturalness’ of a forest area. Such references will be challenged by rapidly changing climatic conditions or may even lose their relevance.”).

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passive management of wilderness areas, as it is consistent with the text and purpose of the Act and it best preserves ecological stability. Section V argues for a subtle, yet essential, loosening of the definition of wilderness and the urgent need for increased wilderness preservation to strengthen the resiliency of our global ecosystems.

II. WILDERNESS PROTECTION AND ITS REFLECTION OF HUMAN VALUES

The definition of wilderness continues to evolve alongside our perceptions of nature and our place within it, as well as our understanding of the ecological, economic, and scientific values of wilderness protection. Yet this definition, and the values it carries, dictates which lands are selected for protection and how they are protected. Merriam-Webster defines wilderness as “a tract or region uncultivated and uninhabited by human beings” or “an area essentially undisturbed by human activity together with its naturally developed life community.”⁹ Early American views of wilderness were that such land was something to be dominated and used.¹⁰ The early pioneers looked at wilderness with “repugnance” for two reasons: “[o]n the direct, physical level, it constituted a formidable threat to his very survival In addition civilized man faced the danger of succumbing to the wildness of his surroundings and reverting to savagery himself.”¹¹ In sum, “[w]ilderness was waste; the proper behavior toward it, exploitation.”¹²

However, as development and expansion continued across the country, this perspective began to shift. Eventually, wilderness was seen to have positive spiritual, psychological, and ecological values warranting its preservation. As Wallace Stegner wrote in his famous “Wilderness Letter”: “[f]or [wilderness] can be a means of reassuring ourselves of our sanity as creatures, a part

9. *Wilderness*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/wilderness> [<http://perma.cc/NP4D-NLF5>]. It is also defined as “an empty or pathless area or region.” *Id.*

10. RODERICK FRAZIER NASH, *WILDERNESS & THE AMERICAN MIND* 24 (4th ed. 2001).

11. *Id.* (“The pioneer, in short, lived too close to wilderness for appreciation.”).

12. *Id.* at 31.

of the geography of hope.”¹³ Wilderness, as a distinct land type, is a human-made construct, consistently defined in relation to human beings, therefore its definition has allowed for fluidity over time.

A. The Call for Wilderness Protection

Despite early federal policies of disposing federal land to private parties to encourage development and expansion, this liberal disposition began to stall in the 1930s.¹⁴ Much of the remaining land was not fit for economic development, or it became considerably more expensive for development to occur.¹⁵ Furthermore, as public land became scarcer, there began a push for conservation and preservation through the reservation of lands.¹⁶ As early as 1924, this pro-wilderness ideal was put into action when, through the efforts of Aldo Leopold, the Gila Wilderness was set aside within the Gila National Forest.¹⁷ The United States Forest Service continued to designate parcels of forest land as wilderness, or primitive areas, eventually (in the late 1930s) separating them into four categories: wilderness areas, wild areas, recreation areas, and experimental and natural areas.¹⁸ These distinctions begin to signal the values that we sought to protect by designating wilderness.

The Wilderness Act of 1964 established the National Wilderness Preservation System.¹⁹ The Act was passed partly in response to the rapid expansion and mechanization of American recreation and, perhaps, the fear that this would be the last chance to preserve the remaining untouched lands.²⁰ This

13. Letter from Wallace Stegner, Wilderness Soc’y, to David E. Pesonen, Wildland Research Ctr. (Dec. 3, 1960), <http://wilderness.org/bios/former-council-members/wallace-stegner> [<http://perma.cc/F2K7-4WSU>].

14. Robert L. Glicksman & George Cameron Coggins, *Wilderness in Context*, 76 *DENV. U. L. REV.* 383, 384 (1999).

15. *Id.*

16. *Id.*

17. Peter A. Appel, *Wilderness and the Courts*, 29 *STAN. ENVTL. L.J.* 62, 71–72 (2010).

18. *Id.* at 73.

19. 16 U.S.C. § 1131(a) (2012).

20. Daniel Rohlf & Douglas L. Honnold, *Managing the Balances of Nature: The Legal Framework of Wilderness Management*, 15 *ECOLOGY L.Q.* 249, 249–50 (1988) (“[S]omething will have gone out of us as a people if we ever let the

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precautionary sentiment was echoed by the Tenth Circuit in *Parker v. United States*, which stated that the purpose of the Wilderness Act reflects:

the necessity of preserving one factor of our natural environment from the progressive, destructive and hasty inroads of man, usually commercial in nature, and the enactment of a “proceed slowly” order until it can be determined wherein the balance between proper multiple uses of the wilderness lies and the most desirable and highest use established for the present and future.²¹

The Act passed in the Senate with a vote of seventy-three to twelve, and passed in the House with a vote of 373 to one.²² The Congressional declaration of policy reads:

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it 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.²³

With the passage of the Act, nine million acres of wilderness were set aside,²⁴ and the formal expression of the benefits of wilderness triggered decades of steady wilderness designation across party lines.²⁵ Since the Act was passed in 1964, every president has added wilderness land to the National Wilderness Preservation System.²⁶

The Wilderness Act defines wilderness as an area that is:

remaining wilderness be destroyed, . . . if we pollute the last clean air and dirty the last clean streams and push our paved roads through the last of the silence.” (internal quotations omitted)).

21. *Parker v. United States*, 448 F.2d 793, 795 (10th Cir. 1971).

22. NASH, *supra* note 10, at 226.

23. 16 U.S.C. § 1131(a).

24. NASH, *supra* note 10, at 226.

25. Appel, *supra* note 17, at 65.

26. *Id.*

in contrast with those areas where man and his own works dominate the landscape, is . . . where the earth and its community of life are *untrammelled by man, where man himself is a visitor who does not remain* . . . [and is] an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.²⁷

Much of this definition is open to great subjective interpretation. For example, what size makes an area "sufficient size as to make practicable its preservation?"²⁸ Or, what is the meaning of "untrammelled," and does it apply to past usage or future usage?²⁹ This potential for subjective interpretation has led to decades of litigation over the prohibitions and allowances under the Act, and leads to uncertainty as to how wilderness should be managed with current and imminent climate change impacts.

However, before management decisions can even be made, potential wilderness areas must first meet the requirements that *are* explicit in the Wilderness Act. The U.S. Forest Service has strictly construed certain requirements of the Act, by disallowing wilderness designation for any area that contains a human-built feature, such as a cabin or a road, even if those features are unused and eroded by nature.³⁰ This interpretation is rooted in the language of the Act stating that wilderness must not contain "permanent improvements or human habitation."³¹

However, despite this strong language, this is not a conclusion that must be made from the language of the Act. The

27. 16 U.S.C. § 1131(c) (emphasis added).

28. *Id.*

29. *Id.*

30. Appel, *supra* note 17, at 84.

31. 16 U.S.C. § 1131(c).

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Act also states that these human-made features must not “dominate the landscape.”³² In order to not render this language “inoperative or superfluous, void or insignificant,”³³ the Act must allow limited human-made features. Thus, if these improvements have begun to be deconstructed by the forces of nature, like an overgrown dirt road, so as not to dominate the landscape, then they might not fall within these prohibitions. The language of the Wilderness Act “left unresolved whether ‘wilderness’ can be restored.”³⁴ Otherwise, very few fragmented areas would qualify for protection under the Act, and would often be so small that they would serve limited ecological purposes.

An example of the odd results that stem from a strict construction of the Act is found in the distinct, but neighboring, Gila Wilderness and Aldo Leopold Wilderness areas in New Mexico.³⁵ These areas are only separated by a single Forest Service road.³⁶ Rather than combine the two areas under one mandate, they are subjected to differing management directives because of this single road.³⁷ Historically, the U.S. Forest Service held the position that no land in the eastern United States could ever meet the wilderness designation requirements due to human influence of some kind.³⁸ However, perhaps due to Congressional pressure, the Forest Service now allows for wilderness to include “lightly-roaded public lands that are essentially in their natural state” in this region of the United States.³⁹

Despite these seemingly strict requirements for wilderness designation, there is some flexibility built into the Act, allowing for wilderness designation despite possible preclusive conditions. Procedurally, land is designated as wilderness by an Act of

32. *Id.*

33. *Hibbs v. Winn*, 542 U.S. 88, 101 (2004).

34. John D. Leshy, *Legal Wilderness: Its Past and Some Speculations on Its Future*, 44 ENVTL. L. 549, 577 (2014).

35. Appel, *supra* note 17, at 82 n.65.

36. *Id.*

37. See, for example, FOREST SERV., U.S. DEP'T OF AGRIC., GILA NATIONAL FOREST PLAN (1986), http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5275452.pdf [<https://perma.cc/LQ9P-SCPJK>], for examples of differing management directives for the two wilderness areas.

38. *Id.* at 84.

39. H. Michael Anderson & Aliko Moncrief, *America's Unprotected Wilderness*, 76 DENV. U. L. REV. 413, 445 (1999).

Congress, under the authority of the Property Clause, following the recommendation of such land by the President.⁴⁰ Within these acts, modifications can be made in order to account for the unique circumstances and needs of the wilderness area.⁴¹ For example, the Alaska National Interest Land Conservation Act, which doubled the size of the National Wilderness Preservation System, made allowances for subsistence hunting and farming by rural and native Alaskans within the wilderness areas.⁴² Similarly, the Arizona Desert Wilderness Act allows for military flight routes over wilderness areas for lands located near military property.⁴³

It is important to note that often when land does not satisfy wilderness requirements, it then falls under statutes like the Organic Act and the Multiple Use Sustained Yield Act of the U.S. Forest Service.⁴⁴ These lands are, instead, often subject to active management, resource extraction, and heavy recreation. It is also important to remember that wilderness designation is not immune from political influence. In fact, it might be the very opposite. Wilderness designation is more often “a contest between political ideologies than a debate over the wild character of this vast labyrinth of rugged canyons and soaring sandstone mesas,” as was once said describing the designation of wilderness in Utah.⁴⁵

40. 16 U.S.C. §§ 1131, 1132(c) (2012).

41. Leshy, *supra* note 34, at 576.

42. *Id.*

43. *Id.* at 576 n.169.

44. Anderson & Moncrief, *supra* note 39, at 437. The Organic Act states that the purpose of forest designation was to “improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.” 16 U.S.C. § 475. The Multiple Use Sustained Yield Act expanded the scope of the U.S. Forest Service’s responsibilities in stating that national forests “shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes.” *Id.* § 528.

45. Thomas D. Sisk & David M. Ostergren, Book Review, 7 *CONTEMP. HUM. ECOLOGY* 73, 73 (2000) (reviewing DOUG GOODMAN & DANIEL MCCOOL, *CONTESTED LANDSCAPE: THE POLITICS OF WILDERNESS IN UTAH AND THE WEST* (1999)).

B. The Paradox of Wilderness Management

Wilderness management is inherently paradoxical given the definition of wilderness found in the Act. Wilderness, as defined by the Wilderness Act, must be an area “where the earth and its community of life are untrammelled by man,”⁴⁶ and each agency is “responsible for preserving the wilderness character” of those wilderness areas within their jurisdiction.⁴⁷ Yet, the very actions that are deemed necessary to preserve wilderness might negate its character as such. Roderick Nash explained this paradox in stating: “[a] designated, managed wilderness is, in a very important sense, a contradiction in terms. . . . The problem is that the traditional meaning of *wilderness* is an environment that he does not influence, a place he does *not* control.”⁴⁸ The Wilderness Act is, indeed, one of the strictest and most inflexible environmental regulations, reflecting the fine boundary that defines wilderness.⁴⁹ However, the Act still allows room for active management efforts, which might compromise the wilderness character, but also seem more compelling in the face of climate change.

Wilderness provides a diverse range of benefits, as evidenced by the definition of wilderness in the Wilderness Act.⁵⁰ Wilderness benefits, as with most environmental benefits, can be most easily described as those which benefit our human systems. Yet, wilderness protection also reflects the value of protecting—and our responsibility to protect—the natural world for its inherent value. Much can be learned from observing and studying wilderness areas. It is rare to see how ecosystems naturally respond to and recover from disturbances. Our ecological understanding cannot come from work in a laboratory; rather, natural lands, such as wilderness areas, are essential for

46. 16 U.S.C. § 1131(c).

47. *Id.* § 1133(b).

48. Jordan Fisher Smith, *The Wilderness Paradox*, ORION MAG., <http://www.orionmagazine.org/index.php/articles/article/8273> [<http://perma.cc/63GZ-LTDD>] (emphasis added) (internal quotations omitted).

49. Long & Biber, *supra* note 7, at 628.

50. 16 U.S.C. § 1131(c) (“An area of wilderness. . . which is protected and managed so as to preserve its natural conditions and which. . . may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”).

understanding how to preserve and conserve important land and resources. Wilderness serves as a sort of “natural laborator[y],”⁵¹ for within it “ecologists can study and measure the processes of nature as a check against man’s artificial manipulation of his environment in other places.”⁵² A crucial understanding of how ecosystems recover from fire disturbances has already been garnered by studying wilderness.⁵³ Wilderness will also play a crucial role in studying how ecosystems respond to climate change.⁵⁴ However, this information will only be valuable if these natural systems are allowed to respond on their own, without human intervention. Any action taken to interfere with the natural response to climate change, or any active management employed, will disrupt our understanding of what nature would do if left on its own.

Wilderness can also help improve the health of neighboring ecosystems and human communities, by providing ecosystem services, such as “water filtration, climate regulation, and maintenance of biodiversity.”⁵⁵ This can be accomplished by simply setting aside land that is not subject to multiple uses, which include resource extraction or heavy mechanical recreational use. Wilderness will also prove increasingly vital as species and ecosystems shift due to the changing climate. Many of these species and systems will be unable to shift at all because of surrounding development. However, with protected wild land, these systems can shift and thrive, maintaining overall system resilience.

Wilderness areas also can have great spiritual value. Many people equate these natural areas as those that retain the character in which they were created by a Creator.⁵⁶ Wilderness can provide a place of solace and reflection, as well as a place for recreation. While the ecological and inherent values of wilderness

51. FOREST SERV., USDA, CLIMATE CHANGE AND WILDERNESS 2–5, <http://www.wilderness.net/NWPS/documents/FS/Chiefs-Long-climate.pdf> [<http://perma.cc/7BCZ-33FW>].

52. Rohlf & Honnold, *supra* note 20, at 257.

53. *Id.* at 267.

54. *See generally id.*

55. *Ecological Benefits of Wilderness*, WILDERNESS.NET, <http://www.wilderness.net/NWPS/valuesEcological> [<http://perma.cc/L8E3-ENA9>].

56. John Copeland Nagle, *The Spiritual Values of Wilderness*, 35 ENVTL. L. 955, 958 (2005).

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are significant, it is a reasonable conclusion that the Wilderness Act was meant to protect wilderness primarily for human interests, such as recreational and scientific values.⁵⁷

C. Conflicting Mandates: Passive Management vs. Active Management

Passive management can be described as a “hands-off” approach to management.⁵⁸ This management approach is supported by the prohibitions found in the Wilderness Act. The Act requires that “no permanent road . . . no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation” be allowed in wilderness areas.⁵⁹ Among the prohibitions, there are several exceptions which allow for active management of wilderness areas. The aforementioned prohibitions are allowable “as necessary to meet minimum requirements for the administration of the area for the purpose of this Act.”⁶⁰ The Act also includes special provisions which allow for actions that are deemed necessary in the case of fire, insects, and disease.⁶¹ These allowances all fall within the discretion of the Secretary of Agriculture,⁶² and have often been construed liberally by the agencies and the courts.

For example, the National Park Service recently installed structures within wilderness areas of Denali National Park that would improve telecommunications for Park employees and visitors.⁶³ The National Park Service admitted that these installations were both “not legally necessary and do not insure the preservation of wilderness character,” but they do facilitate “the public purposes of recreation, science, education, . . . conservation, and public safety.”⁶⁴ However, of the challenges

57. Sean Kammer, *Coming to Terms with Wilderness: The Wilderness Act and the Problem of Wildlife Restoration*, 43 ENVTL. L. 83, 102 n.140 (2013).

58. Long & Biber, *supra* note 7, at 643.

59. 16 U.S.C. § 1133(c) (2012).

60. *Id.*

61. *Id.* § 1133(d)(1).

62. *Id.* § 1133(c), (d)(1).

63. John Copeland Nagle, *Wilderness Exceptions*, 44 ENVTL. L. 373, 393 (2014).

64. *Id.* at 394.

brought against agency action that might threaten wilderness protection, the agencies only prevail in forty-four percent of those cases.⁶⁵ Meanwhile, when challenges are brought against agency action for being too strict in their protection of wilderness, the agencies prevail in eighty-eight percent of the challenges.⁶⁶

These differing management techniques must be considered in the context of the purpose of the Wilderness Act, how wilderness is defined, and the actual values that wilderness provides, as each will impact the management decisions that are made. The purpose of the Wilderness Act will determine what is protected and how it is protected. However, the definition of wilderness varies from that of our common usage of the term or in our social consciousness, as compared to the text of the Wilderness Act. Again, this definition is crucial in our management of wilderness. Finally, the values sought to be protected through wilderness preservation should be at the forefront of a reconsideration of management practices. Even without considering unprecedented climate change, the decisions between management objectives are not clear. Climate change requires a reevaluation of how wilderness is defined and how it is protected.

III. THE IMPACTS OF CLIMATE CHANGE ON WILDERNESS AND RESULTING MANAGEMENT IMPLICATIONS

Climate change is an example of the fallacy of the “untrammeled by man” ideal set forth in the Wilderness Act.⁶⁷ Climate change, and other human-caused impacts, will not stop at wilderness boundaries.⁶⁸ This reality can be extended so far to say that there is no natural area that is not “trammed by man” in some way, given the indiscriminating reach of climate change impacts.⁶⁹ If the definition of wilderness is limited to include only those places that trace no impact or change to human actions, then there is, indeed, no wilderness. Climate change will

65. Appel, *supra* note 17, at 66.

66. *Id.* at 67.

67. 16 U.S.C. § 1131(c).

68. Leshy, *supra* note 34, at 613.

69. Mark, *supra* note 6.

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impact wilderness, just as it will other natural systems. However, wilderness might already be better suited to avoid catastrophic disturbance from climate change because it contains systems that are independent on human intervention—in which case, passive management would continue to maintain this relative strength.⁷⁰ While climate change impacts are prompting a focus on active management techniques, at the same time, the requirements for wilderness designation should also be reconsidered to allow for an urgent push towards greater wild land protection.

A. Impacts on Wilderness and the Natural Systems which Depend on Wilderness Areas

Climate change is one of the greatest challenges to the management and preservation of wilderness.⁷¹ There is an overwhelming scientific consensus that human-caused climate change is occurring.⁷² The rate and scale of climate change is resulting in countless ecological changes that cross all social, political, geographical, and ecological boundaries—and wilderness areas are far from immune. As J.B. Ruhl explains, “[a]

70. As Long & Biber, *supra* note 7, at 659, state:

One argument for restraint is that purely passive management in wilderness areas will assist with adaptation to climate change. For instance, roadless areas, including wilderness areas, benefit watershed health. . . . Improved watershed health, in turn, benefits fish species. As climate change affects water temperature and dissolved oxygen levels, fish populations will increasingly depend on high-quality habitat in wilderness areas.

71. Nathan L. Stephenson & Constance I. Millar, *Climate Change: Wilderness's Greatest Challenge*, 28 PARK SCI. 34, 34 (2012).

72. AM. ASSOC'N FOR THE ADVANCEMENT OF SCI., WHAT WE KNOW: THE REALITY, RISKS AND RESPONSE TO CLIMATE CHANGE 3 (2014), http://whatweknow.aaas.org/wp-content/uploads/2014/07/whatweknow_website.pdf [<http://perma.cc/7AWJ-MGFJ>] [hereinafter AAAS]; see also EPA, TECHNICAL SUPPORT DOCUMENT FOR ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(a) OF THE CLEAN AIR ACT ES-2 (2009), http://www.epa.gov/climatechange/Downloads/endangerment/Endangerment_TSD.pdf [<http://perma.cc/37WV-M9VE>] [hereinafter EPA ENDANGERMENT FINDINGS]; U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES 7 (2014), http://s3.amazonaws.com/nca2014/low/NCA3_Climate_Change_Impacts_in_the_United%20States_LowRes.pdf?download=1 [<http://perma.cc/DM64-A3XU>] [hereinafter CLIMATE CHANGE IMPACTS] (“Evidence for climate change abounds. . . . Taken together, this evidence tells an unambiguous story: the planet is warming, and over the last half century, this warming has been driven primarily by human activity.”).

complex array of climate change effects will lead directly to primary and secondary stresses on ecosystems which we have never before seen or even contemplated, not to mention a tertiary wave of stresses caused when humans themselves adapt to climate change.”⁷³

Wilderness areas will be subject to changes in precipitation patterns, and in turn drought and flood conditions, shifts in vegetation, species migration, invasive species, soil composition, among other impacts on the very core of these ecosystems.⁷⁴ These impacts will change the qualities of these wilderness areas that define the ecosystems we seek to protect, and will change our understanding of how these areas should look. For example, temperature changes will influence snow pack and water availability, compounding the stress of drought-intolerant species.⁷⁵ As trees and vegetation become more stressed due to drought conditions, they will be more susceptible to wild fires, and resulting fires will be greater in severity.⁷⁶

Drought conditions will also impact biodiversity, as species are no longer able to survive in changing local climatic conditions.⁷⁷ Climate change is occurring faster than species are able to adapt or migrate, or there might be no neighboring natural area into which species could migrate.⁷⁸ These problems, coupled with the loss of habitat, leave many species facing a huge risk of extinction.⁷⁹ Entire ecosystems may disappear, such as the alpine tundra and certain types of oak woodlands.⁸⁰ Warmer temperatures will also perpetuate the survival of pathogens and invasive species.⁸¹ Meanwhile, plants and animals, which are already under stress from shifting climates, will be even more susceptible to the stronger onslaughts of these pests and

73. J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. Rev. 1, 17 (2008).

74. Sandra Zellmer, *Wilderness, Water, and Climate Change*, 42 ENVTL. L. 313, 326 (2012).

75. Long & Biber, *supra* note 7, at 634–35.

76. *Id.* at 636–37.

77. *Id.* at 638–39.

78. *Id.* at 639.

79. *Id.*

80. *Id.*

81. Long & Biber, *supra* note 7, at 639.

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pathogens.⁸² Finally, human patterns have, and will continue to, shift in response to climate change, threatening wilderness areas. For example, the changing climate will require the expansion of cropland into favorable climates where crops will not be subjected to increased frost events or drought conditions.⁸³ This new cropland, or other human development, may extend into previously wild places.

In sum, wilderness areas will be subjected to human-caused climate change and will experience dramatic shifts in local climate, species composition, and vulnerability to stressors. These climate change impacts will also be experienced by those natural areas which produce and store many important natural resources. Land used for the production of timber or the protection of our water supply will also be greatly impacted. Thus, there is the added urgency to protect and preserve our global ecosystems, as greater protection of our wilderness areas can, in turn, help sustain vital natural resources.

B. The Current Call for Active Management of Wilderness in the Face of Climate Change

In the face of climate change, many environmental advocates urge for more liberal interpretations of the Wilderness Act, allowing for more active management to protect wilderness areas and “to preserve [their] natural conditions.”⁸⁴ Management under the Act already leans towards this preference of “maintaining, restoring, [and] reproducing historical conditions.”⁸⁵ The interagency 2020 Vision for the National Wilderness Preservation System reflects this preference of active management.⁸⁶ The 2020 Vision expresses the agencies’ dedication to assessing the impacts of climate change on

82. *Id.* at 640.

83. *See, e.g.,* Lee Hannah et al., *Climate Change, Wine, and Conservation*, 110 PNAS 6907 (2013).

84. 16 U.S.C. § 1131(c) (2012).

85. Julie Lurman Joly, *Climate Adaptation Strategies are Limited by Outdated Legal Interpretations*, 30 GEO. WRIGHT F. 45, 45 (2013).

86. BLM, USFS, NPS, USGS & USFWS, 2020 VISION: INTERAGENCY STEWARDSHIP PRIORITIES FOR AMERICA’S NATIONAL WILDERNESS PRESERVATION SYSTEM (2014), http://www.wilderness.net/toolboxes/documents/50th/2020_Vision.pdf [<http://perma.cc/A74Z-RWAS>] [hereinafter 2020 VISION].

wilderness areas, but also explicitly states that the agencies will work towards deciding what actions should be taken to address these impacts.⁸⁷ For example, as a part of their “prepare for ecological change” section, the Vision mentions the use of prescribed burns.⁸⁸

Proponents of a shift towards active management do not intend to halt every climate change impact, but instead argue that they hope to act in such a way so that wilderness can be resilient to these changes or that they can give wilderness a head-start in adapting.⁸⁹ For example, one such action is the assisted migration of species, especially if the alternative is possible extinction.⁹⁰ Similarly, the director of the National Park Service has considered moving away from the “hands-off” approach to management in favor of actions such as spraying invasive cheatgrass in Rocky Mountain National Park’s wilderness areas.⁹¹ As one writer explained, “we need to accept our role as reluctant gardeners.”⁹² Yet, climate change presents such immense ecological changes that ecosystems will not “look” the same, or even that many species can be relocated. Passive management better accepts the realities of climate change, and its impacts on these systems.

IV. PASSIVE MANAGEMENT ENSURES MORE RESILIENT SYSTEMS

Despite impending climate change impacts, active management is not the right choice for wilderness management.

87. *Id.* at 3 (“To protect wilderness resources, we will . . . [d]evelop guidance for determining if and when action should be taken in wilderness to address climate change and other ecological disturbances.”).

88. *Id.* at 4.

89. Christopher Solomon, *Rethinking the Wild: The Wilderness Act is Facing a Midlife Crisis*, N.Y. TIMES, July 6, 2014, <http://www.nytimes.com/2014/07/06/opinion/sunday/the-wilderness-act-is-facing-a-midlife-crisis.html> [<http://perma.cc/MLY4-BVA7>].

90. Alejandro E. Camacho, *Assisted Migration: Redefining Nature and Natural Resource Law under Climate Change*, 27 YALE J. ON REG. 171, 173–74 (2010); Stephenson & Millar, *supra* note 71, at 36.

91. Rachel Estabrook, *Climate Change Causing National Park Service to ‘Rethink’ Wilderness Management*, COLO. PUB. RADIO (Sept. 3, 2014), <http://www.cpr.org/news/story/climate-change-causing-national-park-service-rethink-wilderness-management> [<http://perma.cc/E7ZS-WRDU>].

92. Solomon, *supra* note 89.

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We are not trying to simply weather the storm of climate change; rather, we are facing long-term climate shifts that are largely beyond our understanding. Indeed, even those proponents of active management agree that these solutions are only temporary.⁹³ Active management falsely maintains the strength of ecosystems by promulgating accommodations that require, and will continue to require, human intervention. Meanwhile, the climate continues to change, and the need for hands-on human intervention might even increase. Active management perpetuates a natural world that is dictated by our expectations and perceptions. However, accepting a continuation of the passive management regime requires: an acceptance of a more liberal definition of wilderness, the acknowledgment of the value of those nearly-untrammeled lands, and an immediate and aggressive expansion of protected wilderness areas. These shifts must occur within the agencies charged with managing wilderness areas, through regulations or guidance documents, as well as an underlying culture shift.

If it is the ecological stores that are a goal of wilderness protection, rather than just the desire to maintain the historical appearance or “historicity,” then passive management is the more effective management choice.⁹⁴ The Wilderness Act was written at a time when our ecological understanding was limited and nature was viewed as relatively static, or at least that systems would return to a certain equilibrium.⁹⁵ Active management results in systems that will continue to depend on ecological factors that no longer exist. “[G]iven foregone climate change, it is not in the power of anyone to constrain ecosystem change to normal historical rates,” as adaptive management often attempts to do.⁹⁶

Historical ecosystems . . . will, in general, be increasingly poor proxies for ecological integrity As a result, prioritizing historical systems (and elements of those systems) in assisted recovery will be less conducive to realizing ecological integrity . . .

93. *Id.* (“While hardly long-term solutions, “those can help buy us some time”).

94. Ronald L. Sandler, *Climate Change and Ecosystem Management*, 16 *ETHICS, POL’Y & ENV’T* 1, 5 (2013).

95. Graber, *supra* note 3, at 39.

96. Sandler, *supra* note 94, at 5.

too strong a commitment to historicity would be a form of insensitivity to ongoing ecological changes. Rather than functioning as a check on hubris, *it would involve imposing human wants on a space – that is the desire to reestablish the ecological past – over what is more ecologically suitable.*⁹⁷

The theory of panarchy explains that ecosystems actually become less resilient under “command-and-control resource management” because it reduces natural variability that provides strength within these natural systems.⁹⁸

While adaptive management, and the language of the Wilderness Act itself,⁹⁹ tend to aim for one vision of what we believe natural systems should look like, we must acknowledge that “[e]cosystems do not have single equilibria.”¹⁰⁰ We are facing a “no-analog future.”¹⁰¹ Thus, while ecosystems are certainly subject to great change due to climate change impacts, their newly found stable state is not without value. In some cases, it is better to continue passive management approaches and allow an ecosystem to undergo inevitable climate change disturbances.¹⁰² Rather than focusing on maintaining historical species assemblages and ecosystems, the focus of wilderness management should shift to maintaining “adaptive space (and so more adaptive possibilities) for populations and systems.”¹⁰³ Adaptive space describes an ecosystem’s resilience, which can be enhanced by limiting human interference and manipulation.

97. *Id.* at 6 (emphasis added) (citation omitted).

98. Ahjond S. Garmestani, Craig R. Allen & Heriberto Cabezas, *Resilience and Environmental Law Reform Symposium: Panarchy, Adaptive Management and Governance: Policy Options for Building Resilience*, 87 NEB. L. REV. 1036, 1039 (2009).

99. 16 U.S.C. § 1131(c) (2012) (“[R]etaining its primeval character and influence . . .”).

100. Garmestani et al., *supra* note 98, at 1039.

101. Ruhl, *supra* note 74, at 11.

102. See C.S. Holling & Gary K. Meffe, *Command and Control and the Pathology of Natural Resources Management*, 10 CONSERVATION BIOLOGY 328 (1996).

103. Sandler, *supra* note 94, at 10.

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V. URGENT RECONSIDERATION OF WILDERNESS DESIGNATION

In order for passive management to be effective, the area protected as wilderness needs to be increased. Increased wilderness protection and, specifically, protection of land connected to other wilderness areas, will aid necessary species migration in response to climate change.¹⁰⁴ In order to facilitate this migration, agencies “could also work across wilderness boundaries to designate migration corridors that cover a range of elevations and land designations and ownerships.”¹⁰⁵ It is imperative that these neighboring lands are considered for protection, even if they might barely miss the current mark for wilderness designation. Lands ripe for inclusion are the Inventoried Roadless Areas (IRAs) located on U.S. Forest Service lands, for example.¹⁰⁶ These are lands that are frequently located adjacent to wilderness areas and could provide connectivity between different elevation ranges.¹⁰⁷ The Wilderness Society estimated that there are up to 220 million acres of undesignated wilderness.¹⁰⁸ Furthermore, as of 1998, only twelve percent of this undesignated wilderness had been recommended for designation.¹⁰⁹ Much of this potential wilderness lies in roadless forest areas, which are vulnerable to weaker protections and political sway.¹¹⁰ Thus, the potential for continued wilderness designation is huge, even under the current requisites.

Wilderness managers have been encouraged to “increase the number of reserves across the landscape; improve interagency and regional coordination; protect larger areas and reserve size; create and manage buffer zones around reserves; and capture landscape and bioclimatic diversity in protected areas.”¹¹¹ It is imperative that wilderness protection is expanded to “biologically

104. Long & Biber, *supra* note 7, at 659.

105. *Id.*

106. *Id.*

107. *Id.*

108. Anderson & Moncrief, *supra* note 39, at 416.

109. *Id.* at 417.

110. *Roadless Rule Becomes Law of the Land*, WILDERNESS SOC'Y (Mar. 13, 2012), <http://wilderness.org/blog/roadless-rule-becomes-law-land> [<http://perma.cc/XA82-99KF>].

111. Long & Biber, *supra* note 7, at 660.

diverse and rich habitats . . . [and] crucial or productive wildlife corridors and ecological gradients.”¹¹²

Agencies are encouraging the increased preservation of wilderness, not just for the preservation of wilderness itself but also for the protection of natural resources and public lands as a whole. According to the U.S. Forest Service, “[w]ilderness must be an important and integral part of an effective Forest Service climate change strategy.”¹¹³ Wilderness can serve as a tool to mitigate the impacts of climate change beyond its boundaries, as “wilderness lands are disproportionately critical to a climate change adaptation response.”¹¹⁴ Wilderness can provide much needed habitat for those species forced to search for more hospitable homes as the climate shifts.¹¹⁵ Others believe that the continued expansion of wilderness has never been more important than today given our need to reestablish our duties to other beings and our earth, as humans face difficult lifestyle changes in order to mitigate or adapt to climate change.¹¹⁶

As previously discussed, the benefits of wilderness extend beyond wilderness boundaries.¹¹⁷ Thus, increased wilderness protection will allow these benefits to continue to strengthen neighboring ecosystems, and sources of natural resources, as they undergo the stresses of climate change. Wilderness can be a tool for protecting resource extraction industries. Drought conditions, invasive species, and pathogens will impact forest reserves, just as they will impact wilderness areas. The more area that is protected, the more likely that ecosystems as a whole will remain intact. Furthermore, “[t]omorrow’s biodiversity can only come from today’s, and so building resilience into remaining populations is a vital first step in enabling adaptation.”¹¹⁸

112. Sandler, *supra* note 94, at 11.

113. CLIMATE CHANGE AND WILDERNESS, *supra* note 51, at 1.

114. *Id.*

115. Mark, *supra* note 6.

116. *Id.* (“We need the bracing tonic of wilderness to remind us of our obligations to the billions of other critters we share the planet with. It’s time to double-down on wildness as a touchstone for our relationship with the rest of life on Earth.”).

117. Leann Foster, *Wild Lands and System Values: Our Legal Accountability to Wilderness*, 22 VT. L. REV. 917, 947 (1998).

118. Andrew Dodd et al., Commentary, *Protected Areas and Climate Change: Reflections from a Practitioner’s Perspective*, 6 UTRECHT L. REV. 141, 142 (2010).

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Wilderness can serve as refugia and, in fact, should be considered “a high priority for conserving biodiversity under anthropogenic climate change.”¹¹⁹ In sum, protected areas, such as wilderness, are essential for supporting our ecosystems, human health, and natural resources as climate change progresses.

However, two actions must occur in order for this wilderness expansion to take place. First, the definition of wilderness must be reevaluated in the context of both the realities of climate change and the values we seek to protect under its designation. This revised definition need not counter the text of the Wilderness Act, but might require the support of Congress and, certainly, of federal agencies entrusted with the management of such areas. “Untrammled” may also mean “unbound,” “unhampered,” or “unchecked,” lending support to a passive management regime.¹²⁰ “The Wilderness Act could be understood as expressly protecting ‘wildness.’”¹²¹ Roger Kaye, a wilderness specialist for the U.S. Fish and Wildlife Service, has defined this as “the state wherein those processes of an area’s genesis, free from human purpose, utility, or design, are allowed to shape its future.”¹²² This alternative definition, and the passive management regime that would be supported by such an interpretation, also provides for wilderness areas with the most ecological value. Wallace Stegner wrote: “I am not moved by the argument that those wilderness areas which have already been exposed to grazing or mining are already deflowered, and so might as well be ‘harvested’ . . . they are only wounds; they aren’t absolutely mortal. *Better a wounded wilderness than none at all.*”¹²³ This reconsideration will lead to a determination that the reins must be loosened to allow for wilderness designation of lands that were perhaps not considered suitable for designation, yet will require a maintenance of passive management objectives. It is imperative that these public lands gain protection as wilderness, rather than other lighter protections, in order to

119. Gunnar Keppel & Grant W. Wardell-Johnson, *Refugia: Keys to Climate Change Management*, 18 GLOBAL CHANGE BIOLOGY 2389, 2390 (2012).

120. Joly, *supra* note 85, at 46.

121. *Id.*

122. *Id.* (quoting R. Kaye, *What Future for Wilderness within a Climate-Changing National Wildlife Refuge System?*, 18 INT’L J. WILDERNESS 15 (2012)).

123. Letter from Wallace Stegner, *supra* note 13 (emphasis added).

ensure passive management and to avoid multiple-use management schemes, which, ultimately, limit the values that can be gained from areas left untouched.

The second action that must transpire for this necessary wilderness expansion to occur is a legislative acknowledgement of climate change, its likely impacts on human and natural systems, and, most importantly, the importance of wilderness protection as a climate change tool. The legislature must understand the value of wilderness protection for broad ecosystem and regional stability. Wilderness areas are ultimately designated by Congress; thus, the need for this broader understanding is imperative, yet also the largest challenge. As a broader acknowledgement of climate change is pursued among members of Congress, this issue of wilderness protection must follow close behind.

These reconsiderations reflect the reconceptualization that all of our environmental statutes must undergo in the face of climate change. The Clean Air Act has accommodated climate change through the Supreme Court's decision in *Massachusetts v. EPA*.¹²⁴ The Endangered Species Act might also undergo this process in order to remain effective in light of the reality of climate change.¹²⁵ "Like many other phenomenon that comes along after a statute is enacted, if global climate change becomes relevant to the statutory text and policy, it is fair game, if not mandatory fodder, for incorporation into the regulatory program."¹²⁶ The Wilderness Act must not ignore this new reality, rather it should use climate change as an opportunity to reconsider the values we are protecting.

124. See generally *Massachusetts v. EPA*, 549 U.S. 497 (2007).

125. See Ruhl, *supra* note 74; Matthew Gerhart, Comment, *Climate Change and the Endangered Species Act: The Difficulty of Proving Causation*, 36 *ECOLOGY L.Q.* 167 (2009); Maggie Kuhn, Note, *Climate Change and the Polar Bear: Is the Endangered Species Act Up to the Task?*, 27 *ALASKA L. REV.* 125 (2010); Ethan Moorar, Note, *Can Climate Change Constitute a Taking? The Endangered Species Act and Greenhouse Gas Regulation*, 21 *COLO. J. INT'L ENVTL. L. & POL'Y* 399 (2010); Ari N. Sommer, Note, *Taking the Pit Bull Off the Leash: Sic'ing the Endangered Species Act on Climate Change*, 36 *B.C. ENVTL. AFF. L. REV.* 273 (2009); Todd Woody, *Enlisting Endangered Species as a Tool to Combat Warming*, *ENV'T* 360 (July 22, 2010), http://e360.yale.edu/feature/enlisting_endangered_species_as_a_tool_to_combat_warming/2296/ [<http://perma.cc/VJ66-J9R2>].

126. Ruhl, *supra* note 74, at 8.

VI. CONCLUSION

Wilderness areas will become increasingly valuable as climate change challenges existing ecosystem structures and the need for resilient systems becomes urgent. Meanwhile, wild lands are becoming increasingly scarce. Wilderness is more valuable than it has ever been before. As wilderness managers and decision makers cope with climate change, they must reconsider what it is they are preserving and how they should preserve it. If they continue to promote untrammelled wilderness as that which is “historical,” they will find themselves with ecological systems that are ever-dependent on human intervention and more vulnerable to disturbances. Climate change will result in a no-analog future, where those historical systems cannot and will not exist. In fact, the maintenance of untrammelled-as-historical wilderness will contradict the other requirements of wilderness in the prohibitions of the Wilderness Act and the requirement that wilderness not be “where man and his own works dominate the landscape.”¹²⁷ Indeed, if we do not reevaluate what it is we are trying to protect, we might find wilderness managers “forced to ‘actively manage biological communities and landscapes to preserve them as they were before the onset of anthropogenic climate change,’” which will inevitable be a losing battle.¹²⁸ Perhaps signaling a trend towards further wilderness designation, in April of 2015, President Obama recommended to Congress that the Coastal Plain of the Arctic National Wildlife Refuge, an area of 12.28 million acres, be protected as wilderness.¹²⁹

By allowing some historical ecological regimes to change and adapt, as climate change impacts proceed, ecosystems can find new balances, even if they look unlike that which might be described as “primeval.” Active management might be able to

127. 16 U.S.C. § 1131(c) (2012).

128. Joly, *supra* note 85, at 45–46 (quoting Alejandro E. Camacho, *Assisted Migration: Redefining Nature and Natural Resource Law under Climate Change*, 27 YALE J. ON REG. 171 (2010)).

129. *President Obama Transmits Arctic Refuge Wilderness Recommendation to Congress*, AUDUBON ALASKA (Apr. 3, 2015), <http://ak.audubon.org/newsroom/press-releases/2015/president-obama-transmits-arctic-refuge-wilderness-recommendation-congr> [<http://perma.cc/BM93-RPHR>].

maintain the resemblance of historical ecosystems, but it will not protect what is of true value in wilderness areas—stable ecosystems, which are independent of all human influence and intervention. Wilderness designation and passive management are some of the most important tools for the fight to adapt to impending climate change impacts. Not only must we loosen our grip on our definition of wilderness for management purposes; this reconsideration of wilderness is also essential for wilderness designation. Wilderness need not be entirely devoid of human influence, but it must be managed with limited human intervention. If we continue on the current trajectory towards adaptive management, we will not be fulfilling the intentions of the Wilderness Act, nor representing what is best for the ecological world: “At this eleventh hour, with so many ecosystems on the verge of dangerous tipping points, there’s no time for idealism.”¹³⁰

130. Mark, *supra* note 6.