

# Planning for Adaptation and Restoration in Wilderness

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Planning on public lands faces huge challenges in the near future. In particular, global climate change presents a unique problem for global natural resources.<sup>1</sup> While the face of that onslaught poses huge problems for the global community generally, the challenges are particularly pronounced for federally owned lands in the United States.<sup>2</sup> They include increased risk of wildfire, stresses on ecosystems from drought, and threats to marine resources from increased acidification.<sup>3</sup> For lands designated by Congress under the Wilderness Act of 1964 and subsequent acts, planning problems will likely continue to compound as time goes on.

The Wilderness Act imposes several important limitations on agency discretion in planning for federal lands.<sup>4</sup> The most crucial in this context are the following: (1) the substantive limitations on the discretion of the agencies that manage wilderness, and (2) the particular restrictions on the management techniques that the agencies can use.<sup>5</sup>

This Article will recommend some paths forward on these two critical issues. After giving a short background on the Wilderness Act and emphasizing the restrictions on management techniques in Part I, this Article will then review in Part II the general problems posed by restoration and adaptation activities, with a special focus on how those general problems become pronounced in the context of lands man-

aged under the Wilderness Act. Part III lays forth some proposals for how agencies should address the unique problems of restoration and adaptation activities within wilderness, the paths they might follow, and how they should engage in decisionmaking, both in terms of substance and procedure. The Article concludes with some suggestions to aid the agencies in this difficult endeavor.

## I. Background to the Wilderness Act

President Lyndon Johnson signed the Wilderness Act into law on September 3, 1964.<sup>6</sup> The Act created the National Wilderness Preservation System (“NWPS”),<sup>7</sup> which has grown from 9.1 million acres of federally-owned lands at the outset to almost 110 million acres as of 2014.<sup>8</sup> There are over 750 designated wilderness areas in the United States.<sup>9</sup> They range from about 6 acres (Pelican Island in Florida) to almost 9.1 million acres (Wrangell-St. Elias in Alaska).<sup>10</sup> Although the balance of acreage tips towards the western states, especially Alaska, and the most number of NWPS areas is also in the West, Congress has protected wilderness in all but six states, as well as Puerto Rico.<sup>11</sup>

Four agencies manage the NWPS: the U.S. Forest Service (“USFS”), the National Park Service (“NPS”), the U.S. Fish and Wildlife Service (“FWS”), and the U.S. Bureau of Land Management (“BLM”).<sup>12</sup> Each agency has a different regulatory culture and, therefore, different ways of approaching its land management responsibilities.<sup>13</sup> Nevertheless, there is

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1. See Kelli M. Archie et al., *Climate Change and Western Public Lands: A Survey of U.S. Federal Land Managers on the Status of Adaptation Efforts*, 17(4) J. ECOLOGY & SOC’Y 20, 20 (2012), available at <http://www.ecologyandsociety.org/vol17/iss4/art20/>.
2. See *id.*
3. See, e.g., Philip E. Denison et al., *Large Wildfire Trends in the Western United States, 1984–2011*, 41 GEOPHYSICAL RES. LETTERS 2928 (2014). Many of these effects have been seen. See generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013 THE PHYSICAL SCIENCE BASIS: CONTRIBUTION OF WORKING GROUP I TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 4 (2013).
4. See Wilderness Act of 1964, Pub. L. No. 88-577, 78 Stat. 890 (1964).
5. *Id.*

6. See Lyndon B. Johnson, U.S. President, Remarks Upon Signing the Wilderness Bill and the Land and Water Conservation Fund Bill in Washington D.C. (Sept. 3, 1964), available at <http://www.presidency.ucsb.edu/ws/?pid=26481>.
7. Wilderness Act of 1964, 78 Stat. at 890.
8. See *Fast Facts*, WILDERNESS.NET, <http://www.wilderness.net/NWPS/fastfacts> (last visited May 12, 2015).
9. *Id.*
10. *Id.*
11. *Id.*
12. *The Wilderness Idea*, BUREAU LAND MGMT., [http://www.blm.gov/wo/st/en/prog/blm\\_special\\_areas/NLCS/wilderness2/Wilderness\\_FAQ.html](http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS/wilderness2/Wilderness_FAQ.html) (last visited Oct. 10, 2014).
13. See, e.g., U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-99-227, LAND MANAGEMENT: THE FOREST SERVICE AND THE BLM’S ORGANIZATIONAL STRUCTURES AND RESPONSIBILITIES (1999).

only one Wilderness Act that governs all of the agencies with responsibility over these areas.<sup>14</sup>

Several provisions of the Wilderness Act directly affect the planning processes of the federal agencies in terms of substantive outcomes. The first three provisions come from section 2(a) of the Wilderness Act. First, it establishes as a matter of policy that “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.”<sup>15</sup> Second, it provides that

[f]or this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as “wilderness areas”, and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness.<sup>16</sup>

Third, the Act mandates that “no Federal lands shall be designated as ‘wilderness areas’ except as provided for in this Act or by a subsequent Act,”<sup>17</sup> meaning that only Congress can designate an area as wilderness. Although not directly related to restoration and adaptation activities specifically related to wilderness areas, as described below, this subsection will nevertheless factor into the analysis.

The second relevant subsection is section 2(c) of the Act, which defines “wilderness” for purposes of the Act.<sup>18</sup> As Doug Scott has posited,<sup>19</sup> this definition contains two components: (1) an ideal vision for wilderness and (2) a more practical definition. The first part of the definition, contained in the first phrase of section 2(c), states that a wilderness area is “an area untrammeled by man, where man himself is a visitor that does not remain.”<sup>20</sup> This language is probably the most poetic in the U.S. Code, and certainly the most poetic in a section defining a term in the Code. The second part of the definition is the practical one.<sup>21</sup> In that part, Congress declared that:

An area of wilderness is further defined to mean in this Act 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) gener-

ally 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.<sup>22</sup>

As Scott notes, the choice of the word “untrammeled” is unusual but deliberate.<sup>23</sup> With these two components, Congress not only set forth its vision for how wilderness areas would eventually look, but also provided general guidelines for what kinds of areas of federal lands it would designate as wilderness.<sup>24</sup>

Like section 2(a), section 4(b) of the Wilderness Act dictates:

Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the *wilderness character* of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its *wilderness character*. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.<sup>25</sup>

Nowhere, however, does the Wilderness Act define the term “wilderness character.”

Nevertheless, the agencies, led by personnel from the Aldo Leopold Wilderness Research Institute and the Arthur Carhart National Wilderness Training Center, attempted to define “wilderness character” in a report entitled *Keeping It Wild*.<sup>26</sup> This report identified four qualities of wilderness, each of which came from the language of the Wilderness Act, and attempted to attach some additional content and definition to these terms. The qualities of wilderness that the

14. *Wilderness Stewardship: Concepts and Principles*, WILDERNESS.NET (Sept. 28, 2014), <http://www.wildernesswatch.org/issues/stewardship.html>.

15. 16 U.S.C. § 1131(a) (2012).

16. *Id.*

17. *Id.*

18. 16 U.S.C. § 1131(c).

19. Douglas W. Scott, “Untrammeled,” “Wilderness Character,” and the Challenges of Wilderness Preservation, 2001 WILD EARTH 72, 72 (Fall/Winter 2001–2002).

20. 16 U.S.C. § 1131(c).

21. Scott, *supra* note 19, at 75.

22. 16 U.S.C. § 1131(c) (emphasis added).

23. As Scott comments: “Current dictionary descriptions of the word *untrammeled* include ‘unrestrained,’ ‘unrestricted,’ ‘unimpeded,’ ‘unencumbered,’ ‘unconfined,’ ‘unlimited.’ At the command of the Wilderness Act, we preserve wilderness character—by definition—by leaving ‘the earth and its community of life untrammeled by man.’” Scott, *supra* note 19, at 74–75.

24. *Id.* at 74. In particular, Scott notes that Congress has consistently what he dubs as the “purity” concept, which he claims would “have distorted the intent of the Wilderness Act, perverted its definition, and threatened—had it become accepted—to circumscribe the end of lands deemed qualified for designation.” *Id.* Of course, under section 2(a), Congress can designate any area of federal lands it wishes to. For example, although the more practical part of the definition states that a wilderness area should generally consist of 5000 acres, Congress has designated many areas of federal lands, especially in the East, that have fewer than 5000 acres.

25. 16 U.S.C. § 1133(b) (2012) (emphasis added); *see also id.* § 1131(a) (establishing “wilderness character” as a national policy goal).

26. *See generally* PETER LANDRES ET AL., KEEPING IT WILD: AN INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM (2008).

team identified are the following: (1) untrammeled, (2) natural, (3) undeveloped, and (4) ones that provide for solitude or a primitive or unconfined type of recreation.<sup>27</sup> More recently, the agencies have added a fifth consideration: other features of value.<sup>28</sup>

In addition to providing four additional qualities of wilderness of which the agencies should be mindful, *Keeping It Wild* intended to provide metrics for the agencies to measure how they performed against each of these criteria.<sup>29</sup> Despite the report's systematic approach, the authors recognized that the agencies would face tradeoffs between the different qualities of wilderness in their attempt to preserve overall wilderness character.<sup>30</sup> For example, the elimination of non-native invasive plant species might advance the quality of naturalness but could constitute a trammeling of the land because it would be a human manipulation of the area.<sup>31</sup> "Because of this complexity, preserving wilderness character requires that managers approach wilderness stewardship with humility, respect, and restraint."<sup>32</sup>

As a result, the agencies have tried to adhere to this approach to evaluate their actions within wilderness.<sup>33</sup> Nevertheless, courts have not reviewed any agency decision evaluated under this particular decision matrix. It remains to be seen, therefore, how the legal system will ultimately greet this means of evaluating whether the land managers have met their obligation to preserve wilderness character.<sup>34</sup> As will be seen below, the tradeoffs inherent in the *Keeping It Wild* approach will have impacts on approaches to planning for restoration and adaptation activities within wilderness.

The Wilderness Act additionally establishes restrictions on the methods that the agencies can use within wilderness areas.<sup>35</sup> Section 4(c) provides the following:

Except as specifically provided for in this chapter, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this chapter and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this chapter (including measures required in emergencies involving the health and safety of persons

within the area), there shall be 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 within any such area.<sup>36</sup>

Specifically, the agencies must not allow commercial enterprises or permanent roads (except as provided specifically by law or for existing private rights) in wilderness areas.<sup>37</sup> The Act also limits other management techniques—such as the use of motor vehicles and motorized equipment—unless those techniques are the minimum requirement necessary for the administration of the wilderness area.<sup>38</sup>

Courts have often struggled defining "necessary" for purposes of the Wilderness Act. Notwithstanding the appearance of "necessary" seven times in the Wilderness Act,<sup>39</sup> only three of those uses directly affect the argument in this Article. The first is in the above language of section 4(c) regarding minimum necessary requirements. The second relevant use is in section 4(d)(1) with respect to restoration and adaptation activities, which provides that "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."<sup>40</sup> Section 4(d)(5) of the Act establishes the final relevant use, providing that "[c]ommercial services may be performed within the wilderness areas designated by this [Act] to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas."<sup>41</sup>

Although courts have interpreted the term "necessary" in each of these contexts, these decisions may not provide much direction going forward regarding land planning projects in these areas. For example, in *Wilderness Watch v. Mainella*,<sup>42</sup> the U.S. Court of Appeals for the Eleventh Circuit held that an NPS program, which provided motorized transportation through wilderness to day visitors, did not meet the minimum necessary requirements for the administration of Cumberland Island.<sup>43</sup> This case involved providing motorized transportation for visitors but not the use of motorized equipment or motor vehicles to advance more direct NPS management decisions.<sup>44</sup> Indeed, the court held that the use of the fifteen passenger vans would impair the wilderness experience "for visitors they happen[ed] to pass (more so than would be the case upon meeting a lone park ranger in a jeep)."<sup>45</sup>

Courts have similarly narrowly construed "necessary" to mean necessary within the confines of the wilderness area

27. *Id.* at 7–8.

28. BLM adopted this as policy in its manual, using slightly different language. See BLM MANUAL, RELEASE 6-136, § 6340, ¶ 1.6(A)(2)(c)(v) (July 13, 2012). A research paper from NPS also discusses this quality. Peter Landres et al., *Using Wilderness Character to Improve Wilderness Stewardship*, 28 PARK SCI. 44, 45 (Winter 2011–12), available at <http://www.nature.nps.gov/ParkScience/index.cfm?ArticleID=540&Page=1>; see also NAT'L PARK SERV., U.S. DEPT OF THE INTERIOR, KEEPING IT WILD IN THE NATIONAL PARK SERVICE: A USER GUIDE TO INTEGRATING WILDERNESS CHARACTER INTO PARK PLANNING, MANAGEMENT, AND MONITORING 31–64 (2014).

29. NAT'L PARK SERV., *supra* note 28, at 16.

30. *Id.* at 46.

31. *Id.*

32. LANDRES ET AL., *supra* note 26, at 9.

33. *Id.* at 1.

34. For my own views on the jurisprudence that the courts have established interpreting the Wilderness Act, see Peter A. Appel, *Wilderness, the Courts, and the Effect of Politics on Judicial Decisionmaking*, 35 HARV. ENVTL. L. REV. 276 (2011) [hereinafter Appel, *Wilderness and Judicial Politics*]. See also Peter A. Appel, *Wilderness and the Courts*, 29 STAN. ENVTL. L.J. 62 (2010) [hereinafter Appel, *Wilderness and the Courts*].

35. 16 U.S.C. § 1133(c) (2012).

36. *Id.*

37. *Id.*

38. *Id.*

39. *Id.* §§ 1132(b), 1133(c), (d)(1), (d)(3)–(5), 1134(a) (2012).

40. *Id.* § 1133(d)(1). The full language of this subsection suggests that it applies only to lands managed by the Secretary of Agriculture, i.e., land that the USFS oversees. As Congress has expanded the NWPS and added more lands that the Secretary of the Interior runs—through NPS, FWS, and BLM—it has typically added language extending those provisions specifically referencing the Secretary of Agriculture to include the Secretary of the Interior.

41. *Id.* § 1133(d)(5).

42. *Wilderness Watch v. Mainella*, 375 F.3d 1085 (11th Cir. 2004).

43. *Id.* at 1086.

44. *Id.* at 1087.

45. *Id.* at 1093.

and judicially reviewable. In *Sierra Club v. Lyng*,<sup>46</sup> USFS initiated an insect control program, thus implicating an exception embodied in section 4(d)(1).<sup>47</sup> Specifically under consideration by the district court in a series of cases was a program regarding an infestation of the Southern pine beetle.<sup>48</sup> In the first decision, the court rejected the USFS's argument that the "as may be necessary" language was so expansive that it provided unreviewable discretion within the agency.<sup>49</sup> Rather, the court held that "[a] fair reading of the Wilderness Act places a burden on the Secretary affirmatively to justify his action under the[] circumstances."<sup>50</sup> The court expressed concern that USFS designed its beetle control program to benefit lands outside of the wilderness areas, not the wilderness areas themselves.<sup>51</sup> As the court stated:

The destruction of many acres of pine trees by chain sawing and chemical spraying accompanied by noise and personnel in a continuing process unlimited in scope, is hardly consonant with preservation and protection of these areas in their natural state. These are delicate, sensitive places where the often mysterious and unpredictable process of nature were to be preserved for the study and enjoyment of mankind. Congress directed that man must treat lightly in these areas, in awe and with respect. Ruthless intrusion in disregard for these values was condemned as a matter of national policy.<sup>52</sup>

In the next case, however, the court upheld the beetle control program because USFS had reconsidered its approach to insect eradication *within* wilderness.<sup>53</sup> Specifically, USFS had adopted a spot control philosophy "confining cutting in the Wilderness Areas to edges contiguous to neighboring property."<sup>54</sup> Contrary to its earlier decision, in which it appeared to hold that USFS had little to no discretion about what techniques it could use within wilderness, the court held that

The pertinent section of the statute is therefore most reasonably construed as allowing to the Secretary to use measures that fall short of full effectiveness so long as they are reasonably designed to restrain or limit the threatened spread of beetle infestations from wilderness land onto the neighboring property, to its detriment.<sup>55</sup>

Thus, provided that an agency's program focuses primarily on benefits to the wilderness area, the decisions in *Sierra Club v. Lyng* will not pose an impediment.

The exception for "commercial services" in section 4(d)<sup>56</sup> constitutes the third most relevant exception for restoration and adaptation activities within wilderness. Two cases provide a sense of what this exception means. The first involves a fish stocking program for Tustumena Lake in the Kenai Wilderness, which is a part of the Kenai National Wildlife Refuge in Alaska.<sup>57</sup> In that case, the U.S. Court of Appeals for the Ninth Circuit ("Ninth Circuit") faced a challenge to a project in which a volunteer organization undertook to continue a program originally started as a research project by the State of Alaska.<sup>58</sup> As the project matured, the nonprofit organization acquired a special use permit from FWS allowing it to establish a temporary camp in the wilderness area and return native fish that had been raised in a hatchery outside of the wilderness area.<sup>59</sup> The Ninth Circuit noted that it faced a challenge to

an activity with a benign aim to enhance the catch of fishermen, with little visible detriment to wilderness, under the cooperative banner of a non-profit trade association and state regulators. Surely this fish-stocking program, whose antecedents were a state run research project, is nothing like building a McDonald's restaurant or a Wal-Mart on the shores of Tustumena Lake.<sup>60</sup>

Nevertheless, the Ninth Circuit concluded that this program constituted a forbidden commercial enterprise banned by the Wilderness Act.<sup>61</sup>

The second case (or, more precisely, series of cases) more succinctly interprets the definition of the term "commercial services" in section 4(d) of the Wilderness Act. In *High Sierra Hikers Ass'n v. Blackwell*,<sup>62</sup> the Ninth Circuit reviewed a multi-year special use permit plan in the Ansel Adams and John Muir wilderness areas in California, which allowed commercial guides to use pack animals for the benefit of guests.<sup>63</sup> The Ninth Circuit held that the determination by USFS to allow this commercial enterprise did not, among other defects, comport with the Wilderness Act.<sup>64</sup> Specifically, the Ninth Circuit held that USFS had not examined why the level of the allowed guide services was "necessary" under the term of the Wilderness Act.<sup>65</sup> On remand, the district court found that this management plan still exceeded the terms of the Wilderness Act.<sup>66</sup>

The next section of this Article will consider the problems of restoration and adaptation generally and specifically in the

46. *Sierra Club v. Lyng (Lyng II)*, 663 F. Supp. 556 (D.D.C. 1987); *Sierra Club v. Lyng (Lyng I)*, 662 F. Supp. 40 (D.D.C. 1987).

47. *Lyng I*, 662 F. Supp. at 41.

48. *Lyng II*, 663 F. Supp. at 556.

49. *Lyng I*, 662 F. Supp. at 42–43.

50. *Id.* at 43.

51. *Id.* ("[T]he Secretary must, when challenged, justify [these actions] by demonstrating they are necessary to effectively control the threatened outside harm that prompts the action being taken.")

52. *Id.* It is worth noting that the court's language that wilderness areas are ones in which humans "must treat lightly . . . in awe and with respect," *id.*, is echoed in the *Keeping It Wild* report. See LANDRES ET AL., *supra* note 26, at 9 ("[P]reserving wilderness character requires that managers approach wilderness stewardship with humility, respect, and restraint.")

53. *Lyng II*, 663 F. Supp. at 557.

54. *Id.* at 558.

55. *Id.* at 560.

56. 16 U.S.C. § 1133(d)(5) (2012).

57. *Wilderness Soc'y v. U.S. Fish & Wildlife Serv.*, 353 F.3d 1051 (9th Cir. 2003) (en banc). For a longer discussion of this case, see John Copeland Nagle, *The Spiritual Values of Wilderness*, 35 ENVTL. L. 955 (2005).

58. *Wilderness Soc'y*, 353 F.3d at 1056–57.

59. *Id.* at 1058.

60. *Id.* at 1062.

61. *Id.* at 1064–65 ("The primary effect of the [project] is to aid commercial enterprise of fishermen."). The Ninth Circuit did not reach the argument that the project restored a natural resource within the wilderness area, having found that the project violated the ban on commercial enterprises. *Id.* at n.18.

62. *High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630 (9th Cir. 2004).

63. *Id.* at 636.

64. *Id.* at 648.

65. *Id.* at 647.

66. *High Sierra Hikers Ass'n v. Weingardt*, 521 F. Supp. 2d 1065, 1090–91 (N.D. Cal. 2007).

context of wilderness. It will evaluate the challenges that the agencies face in the general context of land management and in the particular context of wilderness. Although the above court decisions provide the agencies with some direction and guidance, they may not prove instructive about more proactive and more pro-wilderness decisions in the future. In particular, the agencies will face trade-offs with the different qualities of wilderness as they have outlined them, and, as has been shown above, courts may ultimately disagree with their assessments.

## II. Restoration and Adaptation: Generally and Within Wilderness

The challenges of restoration and adaptation for natural lands are ones that have bedeviled land managers for decades. These challenges become more pronounced in the context of wilderness because of the statutory and judicial management restrictions but also because of the congressional demand that the agencies maintain “wilderness character.” Although the *Keeping It Wild* report constructs a means for the agencies to evaluate their actions, it does not by any means solve all problems for all wilderness areas. Case law will provide information, if not direction, for what precisely the agencies must do in wilderness areas in the future.

### A. Restoration and Adaptation Generally

Regardless of where restoration or adaptation activities proceed, these activities raise several questions for the federal agencies. These include (1) the scale of the restoration/adaptation activity, (2) the baseline against which to measure success (or failure) of the project, (3) the purpose of the restoration/adaptation activity, (4) how the program will incorporate future risks and uncertainty to the area, (5) the risks the particular area faces from the proposed program, and (6) how the agency will monitor success (or failure) of the proposed program.

A recent forest recovery plan, which will be explored in further detail below, serves as a good example of these considerations in the wilderness context. USFS created the Four Forest Recovery Initiative (“4FRI”) for forests in the Southwest. As discussed in its Draft Environmental Impact Statement (“DEIS”),<sup>67</sup> USFS recognized that the current balance of vegetation in these southwestern forests does not represent the historical balance. Specifically, USFS noted that the ponderosa pine forests under its management did not have the age diversity that a more natural forest would have; it also laid out in detail the desired condition for the forest based on historical patterns. Essentially, small clumps of older ponderosa pines represent the more natural pattern for these forests.<sup>68</sup> USFS proposes using primarily prescribed

fire and mechanical treatment to achieve this goal.<sup>69</sup> Those means may well help USFS to meet its overall goal of reaching natural health for these forests, but they also illustrate a degree of human intervention. Another example from the eastern United States also helps illustrate the problems faced by the agencies. For centuries, the American chestnut formed a central part of the forest canopy and one of the principal hardwood trees found in those forests.<sup>70</sup> Unfortunately, a human-introduced fungus killed most of those trees.<sup>71</sup> Through breeding programs, experts have developed American chestnuts that resist the chestnut blight.<sup>72</sup> Allowing these trees to thrive in eastern forests will return those woodlands to a more historically natural state, but this ultimately shows the effects of human intervention.

As the impacts of global climate change become more pronounced, examination of restoration and adaptation activities will rise to a higher level of consideration.<sup>73</sup> For example, the 4FRI DEIS includes a discussion of the impacts of climate change on the project.<sup>74</sup> The rapidly moving dynamic that climate change will have on various ecosystems will necessarily also affect planning for wilderness areas, as discussed in the next subsection.

### B. Restoration and Adaptation in Wilderness

The Wilderness Act itself does not contemplate restoration activities, let alone adaptation activities. The Wilderness Act turned fifty in 2014, and the drafters and promoters of the original Wilderness Act did not contemplate some of the simplest problems now facing wilderness. For example, these leaders had no idea that bicyclists would want to take advantage of the wilderness experience. Every agency has since defined bicycles as mechanical transport, and therefore banned by the Act; but in 1964 mountain bikes did not exist, so the idea that someone would want to take a bicycle into a wilderness area would seem preposterous.<sup>75</sup> Similarly, the drafters and supporters of the Wilderness Act had no position on whether the law would allow wheelchairs in wilderness areas or not, probably because they did not think that people who needed wheelchairs could enter wilderness areas.<sup>76</sup> Congress subsequently clarified its position on the wheelchair issue,<sup>77</sup> but it

figure the forests toward their natural spatial pattern.”)

69. *Id.* at 80–87.

70. *History of the American Chestnut Foundation*, AM. CHESTNUT FOUND., <http://www.acf.org/history.php> (last visited Nov. 3, 2014).

71. *Id.*

72. *Id.*

73. Brian Lavendel, *Ecological Restoration in the Face of Global Climate Change: Obstacles and Initiatives*, 21 *ECOLOGICAL RESTORATION* 199 (Nov. 3, 2003), available at <http://www.globalrestorationnetwork.org/wp-content/uploads/2007/05/ecological-restoration-in-the-face-of-global-climate-change.pdf>. Lavendel referenced a particular study that noted “while many species of plants and animals remained stable in terms of the phenology, distribution, and abundance, many others experienced dramatic changes.” *Id.* For example, some species showed advanced spring events, while others showed delayed spring events. *Id.*

74. 4FRI DEIS, *supra* note 67, at 321–22.

75. For a lengthy discussion about the issue of bicycles in wilderness area, see Appel, *Wilderness and the Courts*, *supra* note 34, at 87 n.85.

76. *Id.* at 86–87.

77. 42 U.S.C. § 12207(c)(1) (2012); see also Appel, *Wilderness and the Courts*, *supra* note 34, at 87 n.84.

67. U.S. FOREST SERV., DEP’T OF AGRIC., DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE FOUR FOREST RESTORATION INITIATIVE (2013), available at [https://fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5410988.pdf](https://fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5410988.pdf) [hereinafter 4FRI DEIS].

68. *Id.* at 11 (“Overall, the desired condition is to reestablish non-forested openings that have been invaded by ponderosa pine since fire exclusion and recon-

illustrates that the Wilderness Act does not anticipate every possible—indeed, simple—problem that could arise within wilderness areas.

If the Wilderness Act does not contemplate seemingly straightforward issues like these, it stretches the imagination to think that it accommodates complicated problems like restoration and adaptation. In fact, the drafters of the Wilderness Act probably did not actually think about restoration activities.<sup>78</sup> Indeed, most of the agencies (and some wilderness advocates) believed that areas showing extensive past human impacts did not qualify for inclusion in the NWPS; some other form of protection might be appropriate, but not the full force of the Wilderness Act itself.<sup>79</sup> Those holding this view did not necessarily operate in bad faith; they simply debated different views of what wilderness designation means.

With the adoption of the Eastern Wilderness Areas Act,<sup>80</sup> Congress made clear its determination that the same provisions will govern wilderness areas in the East as they do in the West. These newly designated areas, nevertheless, pose difficult and myriad management and planning problems for the agencies because they contain more evidence of human impact. The considerations discussed above—e.g., determining the baseline—have been more pronounced in newer wilderness areas.<sup>81</sup> Some restoration activities, whether they occur in older or newer areas, pose similar planning problems to those discussed in the previous subsection.<sup>82</sup> Again, for example, determining a baseline against which to measure a newer wilderness area requires the agency to determine the end state it seeks to achieve.<sup>83</sup>

For many restoration activities that the agencies undertake, this question is relatively simple, although it still requires heightened consideration in wilderness areas. Routine, low-level restoration might include reseeding a pre-existing road; removal of non-native, invasive plant species and replacing them with native species; and the removal of pre-existing human structures. In the wilderness context, the means of achieving these management ends also fall under scrutiny. These questions include, for example, whether the agency may use motorized equipment or motor vehicles (which would have to constitute the minimum necessary requirements for the administration of the wilderness area).

Monitoring these activities under the framework established in *Keeping It Wild* presents a means of measuring impact, but, as mentioned above, that matrix does not dictate results and has not yet been tested before courts.

In addition to the *Keeping It Wild* framework, the modules that the interagency institutes have created to evaluate actions within wilderness have ultimately proven effective for smaller restoration projects.<sup>84</sup> In fact, the interagency institutes have assembled specific toolboxes for how to handle restoration activities within wilderness.<sup>85</sup> Nevertheless, that set of tools make explicit that it does not function as guidelines for large-scale restoration projects. As one report included in the agency toolbox puts it:

Large-scale ecosystem restoration is a complex topic. Philosophical questions could be raised about such large-scale restoration in wilderness, where it might be regarded as a form of manipulation or “trammeling.” Many large-scale applications need to be designed to meet regulations and engineering specifications that this guide does not address.<sup>86</sup>

Obviously, this question affects one of the important questions about restoration laid out above, namely the scale of the project.

The wilderness setting thus constricts how agencies approach restoration questions, with indeterminate results. Take, for example, the 4FRI case study discussed above. The preferred program (indeed, all of the alternatives under consideration), excluded all wilderness areas from treatment.<sup>87</sup> The DEIS never gives reasons for this particular decision. One reason might be that the wilderness areas within the overall area targeted by the DEIS did not contain the mix of vegetation subject to treatment.<sup>88</sup> If this is not the case, however, an educated guess would be that USFS simply did not want to deal with the problems attendant with large-scale restoration projects within wilderness, from the philosophical considerations set forth above to the more ground-level management decisions (e.g., whether USFS could use motorized equipment as a minimum necessary requirement or whether the activities fell under the exclusions of section 4(d)(1)). USFS ultimately remains silent in the DEIS why it excluded the wilderness areas within the overall scope of the project.

Assuming that the latter reason—the educated guess—explains USFS’s decision, an important conclusion follows. USFS has determined that the desired state for this ecosystem is a ponderosa pine forest with adequate spacing, fewer

78. See DENNIS M. ROTH, *THE WILDERNESS MOVEMENT AND THE NATIONAL FORESTS: 1964–1980* 39 (1988).

79. *Id.* at 40–45; DOUG SCOTT, *THE ENDURING WILDERNESS: PROTECTING OUR NATURAL HERITAGE THROUGH THE WILDERNESS ACT* 68–72 (Kristen Foehner et al. eds., 2004); JAMES MORTON TURNER, *THE PROMISE OF WILDERNESS: AMERICAN ENVIRONMENTAL POLITICS SINCE 1964* 54–65, 84–92 (2012).

80. Act of Jan. 3, 1975, Pub. L. No. 93-622, 88 Stat. 2096. This Act is referred to colloquially as the Eastern Wilderness Areas Act, although, as Roth notes it has sometimes “erroneously been called the ‘Eastern Wilderness Act . . . .’” Roth, *supra* note 78, at 45. The congressionally assigned title of that act appears to have been stripped at some point, which probably explains why the act begins with a section 2, rather than a section 1. See Act of Jan. 3, 1975, Pub. L. No. 93-622, 88 Stat. 2096, 2096.

81. NAT’L PARK SERV., U.S. DEP’T OF THE INTERIOR, *WILDERNESS STEWARDSHIP PLAN HANDBOOK: PLANNING TO PRESERVE WILDERNESS CHARACTER* 9 (2014), available at [http://wilderness.nps.gov/RM41/6\\_WildernessStewardship/WildernessStewardshipPlanHandbook\\_2014.pdf](http://wilderness.nps.gov/RM41/6_WildernessStewardship/WildernessStewardshipPlanHandbook_2014.pdf).

82. *Id.* at 60.

83. *Id.* at 10.

84. See, e.g., *Minimum Requirements Analysis*, WILDERNESS.NET, <http://www.wilderness.net/MRA> (last visited Sept. 30, 2014).

85. See *Restoration Toolbox*, WILDERNESS.NET, <http://www.wilderness.net/restoration> (last visited Sept. 30, 2014).

86. LISA FERRELL ET AL., *WILDERNESS AND BACKCOUNTRY SITE RESTORATION GUIDE 2* (2006), available at [http://www.fs.fed.us/rm/pubs\\_other/rmfs\\_2006\\_therrell\\_1001.pdf](http://www.fs.fed.us/rm/pubs_other/rmfs_2006_therrell_1001.pdf); see also David N. Cole, *Wilderness Restoration: From Philosophical Questions About Naturalness to Tests of Practical Techniques*, 14 INT’L J. WILDERNESS 32, 42 (2008) (“[T]his important issue cannot be ignored but . . . it is not clear what path to take. It is time for society to reconsider and/or better articulate the purposes and values of wilderness now that we know more than we did in 1964 about the world and how it is changing.”).

87. See 4FRI DEIS, *supra* note 67, at 11, 285.

88. See, e.g., *id.* at 2, 77.

trees overall, less underbrush, and more acceptance of fire within the management regime.<sup>89</sup> Should the USFS omit all wilderness areas from consideration for treatment, the results would possibly run against the intent of the Wilderness Act and the definition of wilderness. The Act specifies a desire for the creation of “an enduring resource of wilderness”<sup>90</sup> and defines wilderness as areas “untrammelled by man, where man himself is a visitor who does not remain.”<sup>91</sup> In *Keeping It Wild*, the interagency team of authors examined the possible trade-offs of wilderness being untrammelled versus it being natural.<sup>92</sup> They devised no conclusions for how a particular agency facing a particular problem in wilderness should resolve that difficulty.

Another example of planning within wilderness involves the chestnut tree problem in the Eastern United States. For centuries, the American chestnut was a dominant hardwood tree in these forests.<sup>93</sup> A human-introduced blight killed off these trees.<sup>94</sup> Through grafting and other programs, foresters have tried to reintroduce this species—part of the historical mix of trees—to recreate the historical mix of forest coverage.<sup>95</sup> What if the agencies proposed to do that in wilderness areas? Would that be trammeling? Would that be unnatural? Would it violate any of the other qualities of wilderness?

Stephenson and Millar have offered a means to put different projects within the wilderness context as a means of evaluating these types of projects. Specifically, they suggest that restoration and adaptation activities fall into one of four types:

1. Restraint (leave it alone—perhaps the default in wilderness);
2. Resilience (maintain/enhance ecosystem’s resilience, e.g., remove nonnative invasive species);
3. Resistance (e.g., create a fire break); and
4. Realignment (facilitate changes, e.g., assisted migration of species that will not succeed in newly-changed environments).<sup>96</sup>

This approach presents a thoughtful way of addressing the changes that face wilderness management in the future. Humans manage wilderness areas, and the choices that humans make will determine what those areas will look like. Nevertheless, the trade-off between human interaction and allowing an area to simply proceed without human intervention, given a large-scale impact like global climate change, will present difficult questions for the agencies. In the end, it may require choices among wilderness areas and different values.

89. See *id.* at 15.

90. 16 U.S.C. § 1131(a) (2012).

91. *Id.* § 1131(c).

92. LANDRES ET AL., *supra* note 26, at 3, 76.

93. See *History of The American Chestnut Foundation*, *supra* note 70.

94. *Id.*

95. *Id.*

96. Nathan L. Stephenson & Constance I. Millar, *Climate Change: Wilderness’s Greatest Challenge*, 28 PARK SCI. 34, 35–36 (2012).

One lingering question, even after all of this consideration, is whether courts will approve of this differentiated approach. Despite what the agencies may conclude about the best way to manage wilderness areas under their respective jurisdictions, court decisions have made major impacts on the scope of wilderness management. As speculated above, courts have taken a purist view of wilderness, perhaps inspired by the poetic language of the Wilderness Act itself. That view may not work in the future as we begin to see more and more of the effects of global climate change.

### III. Suggestions for the Future of Planning

Through reliance on *Keeping It Wild*, agency representatives have made admirable progress in creating a system to monitor their activities within wilderness. *Keeping It Wild* does not, however, create a system for determining whether a wilderness area is wild or actually wilderness. The agencies also have different regulatory regimes, which decide what they will allow and what they will not within wilderness areas. Nevertheless, there is only one Wilderness Act. The agencies need a coordinated means to meet the terms of the Act as we begin to see the effects of global climate change impacting wilderness areas.

Two options suggest themselves. The first is for the agencies—working through the Leopold Institute and the Carhart Center—to define “wilderness character,” especially in the context of restoration and adaptation. *Keeping It Wild* and the modules prepared by the Carhart Center present a good beginning.

The second way for the government to act to have an overarching policy is to create unified regulations defining what is allowed within wilderness, what wilderness character is, what violates the act, and what the agencies may or may not do. In some sense, this approach would follow as guidance for the minimum necessary requirements analysis that the agencies undertake now. This would also resemble the regulations, issued by the President’s Council on Environmental Quality pursuant to the National Environmental Policy Act, that all federal agencies must face.<sup>97</sup> Such uniform regulations would not only provide agencies with clearer direction for their actions within wilderness, but also they would overcome the lack of unity between the two cabinet agencies that oversee wilderness areas and the tension among the agencies about specific issues.

### IV. Conclusion

Congress identified wilderness as an enduring resource for the American people. Although the system has expanded since the Wilderness Act was enacted in 1964, the challenges for how to manage and protect wilderness have increased as well, especially considering the advent of global climate change. With the current political climate, it is unlikely that Congress will address these issues directly.

97. See 40 C.F.R. §§ 1500.1–1517.8 (2014).

Nevertheless, the agencies can and must coordinate on a variety of levels to ensure that this enduring resource lasts for as long as possible. It is one of the best legacies we can devote to future generations.