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The National Park System and NEPA: Non-Impairment in an Age of Disruption

Jamison E. Colburn

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THE NATIONAL PARK SYSTEM AND NEPA: NON-IMPAIRMENT IN AN AGE OF DISRUPTION

*Jamison E. Colburn**

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We live in an age of disruption. For technologists and venture capitalists, these are happy days. “Disruptive innovations,” typically digital in nature, create new markets and value chains that grow and overthrow market leaders and other incumbents. Think personal computing, cell phones, Über, or, in the era our park system was founded, the mass production automobile.¹ Disruption has become so sexy lately that capital and culture essentially flow away from anything not promising to disrupt something. The founders of our National Park System and National Park Service (NPS) had little sense of such disruption and, judging by how our park ideals have fared in recent decades, too little sense of how disruption works in nature, either. This is not to attribute (anachronistically) some single, comprehensive view of

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1. See, e.g., CLAYTON M. CHRISTENSEN, *THE INNOVATOR’S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL* (1997).

nature to the Park System's creators.² It is rather to suggest that the parks embody a set of ideals and, as one of the most noted inventions of America's democracy, sit in uneasy tension with the constant disruption of nature's composition and function. That should snap our centennial into a perspective—one which this essay urges NPS leaders to internalize as fully and quickly as possible.

We have long suspected that climate disruption will mean even more risk to the park system's "crown jewels."³ This essay introduces the legal and technical challenge that disruption of the parks is bringing NPS, and suggests some paths along which NPS may find a renewed approach to park system governance and transparency. Part I introduces the legislation undergirding NPS management of the park system. Part II explains the key mandate: that the parks be maintained unimpaired for future generations. Part III describes a new normal in this non-impairment work: the predominance of the National Environmental Policy Act (NEPA). Finally, Part IV makes some suggestions about NPS priorities and adaptation to its second century, especially in light of its resource constraints. Ultimately, it may be the disruptive innovator's strategy of avoiding an incumbent's advantages, rather than out-competing them, that NPS must adopt.

I. THE PARK SYSTEM AND NEPA: A FUSION

NPS is obliged by its Organic Act of 1916 to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."⁴ In 1970, Congress added to that mandate with what it

2. The famed creation myth of our park ideal—where it supposedly materialized one night, in a campfire debate in 1870 just up-slope from the Firehole River (as now memorialized throughout Yellowstone)—has been more heroic metaphor than historical fact. See PAUL SCHULLERY & LEE WHITTLESEY, MYTH AND HISTORY IN THE CREATION OF YELLOWSTONE NATIONAL PARK (2003).

3. See, e.g., STEPHEN SAUNDERS ET AL., NATIONAL PARKS IN PERIL: THE THREATS OF CLIMATE DISRUPTION (2009).

4. National Parks Service and Related Programs Enactment, Pub. L. No. 113-287, 128 Stat. 3094 (repealing and re-enacting An Act to Establish a National Park Service and for Other Purposes, 39 Stat. 535 (1916), *codified at* 54 U.S.C. § 100101 (2014)). The full passage (from the original Organic Act) is as follows:

The Secretary, acting through the Director of the National Park Service, shall promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose of the System units, which purpose is to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild

styled a “General Authorities Act,” announcing that all of the parks:

though distinct in character, are united through their inter-related purposes and resources into one national park system as cumulative expressions of a single national heritage . . . and that it is the purpose of this Act to include all such areas in the System and to clarify the authorities applicable to the system.⁵

A 1978 statute enacted in connection with amendments to Redwood National Park’s organizing texts, provided that the parks’:

administration . . . shall be conducted in light of the high public value and integrity of the National Park System and not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.⁶

Finally, in 1998 an omnibus reform bill overhauled concessions in the parks and, at the same time, nudged NPS to cultivate the science culture it had to that point lacked.⁷

But to what extent did these mandates actually unite the parks legally, culturally, or practically? The centennial year 2016, after all, marked the occasion the Supreme Court held that a hovercraft-piloting moose hunter in Yukon-Charley Rivers National Preserve could ignore the NPS’s regulations banning hovercraft from national preserves on account of a unit-establishing statute, the Alaska National Interest Lands Conservation Act (ANILCA), vesting the State of Alaska with jurisdiction over rivers within NPS units therein.⁸ In short, the legal, cultural, and practical obstacles to the system being a true *system* remain, and they are formidable.

One influence that has grown steadily over the last four decades

life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

Id. Embedded within the “non-impairment” mandate, is NPS’s correlative duty to “promote” the use of the park system, a correlate some have argued qualifies the non-impairment mandate substantially. *See, e.g.,* William C. Tweed, *An Idea in Trouble: Thoughts About the Future of Traditional National Parks in the United States*, 27 GEO. WRIGHT F. 6, 12 (2010).

5. Pub. L. No. 91-383, 84 Stat. 825 (1970), *codified at* 54 U.S.C. § 100101(b)(1)(B) (2014).

6. Pub. L. No. 92-250, § 101(b), 92 Stat. 163, 166 (1978), *codified at* 54 U.S.C. § 100101. Congress enacted these amendments (known as the “Redwood Amendment”) in response to a series of NPS policy determinations purporting to categorize the park system into different tiers of access/enjoyment and preservation emphases. *See* *NRA v. Potter*, 628 F. Supp. 903, 905-07 (D.D.C. 1986); *Michigan United Conservation Clubs v. Lujan*, 949 F.2d 202, 204-05 (6th Cir. 1991).

7. On the missing science culture of NPS, *see* RICHARD WEST SELLARS, *PRESERVING NATURE IN THE NATIONAL PARKS: A HISTORY* (1997).

8. *See* *Sturgeon v. Frost*, 136 S. Ct. 1061 (2016).

which promises to continue growing is the National Environmental Policy Act (NEPA). This national “charter” for the environment has become the go-to tool of anyone opposing governmental action. Indeed, NPS has found itself the target of such efforts routinely. NPS is a repeat-play NEPA agency, though, generating significant percentages of the three kinds of NEPA analyses produced annually: environmental impact statements (EIS);⁹ environmental assessments with findings of no significant impact (EA/FONSI); and categorical exclusion determinations (CATX).¹⁰ Consequently, it is very much in the agency’s interest to strategize and optimize its NEPA compliance routines. This essay on the centennial traces the non-impairment standard’s growth toward and into alignment with NEPA, a statute that shifted NPS governance both substantively and procedurally and which, in an increasingly climate-disrupted future, promises to become even more of an influence on NPS’s authority and operations.

II. NON-IMPAIRMENT: A LEGAL MANDATE SUBMERGED IN DISCRETION?

What does it mean to *impair* a national park for future generations contrary to the Organic Act? What did it mean to the legislators of the 63rd Congress?¹¹ Given the need for the Administrative Procedure Act’s (APA) jurisdictional help when challenging NPS actions as contrary to the non-impairment standard,¹² the ideal itself is often juxtaposed with unimpeachable “discretion.”¹³ As the Tenth Circuit once noted,

9. An EIS is required if the proposed major federal action may “significantly” affect the quality of the human environment. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1501.4(a)(1), 1502.3.

10. From 1998-2010, according to data collected by the Council on Environmental Quality (CEQ), NPS’s share of all EISs completed (the only type of NEPA document subject to any nationwide inventory/collection requirement) averaged over 6%. Author calculations from data released by CEQ, *available at* NEPA, https://ceq.doe.gov/current_developments/eis_filings.html. Though no agency tallies its EA/FONSIs or CATX determinations, a stock estimate that has long been in circulation is roughly ten EA/FONSIs for every one EIS. *See* Kern v. Bureau of Land Management, 284 F.3d 1062, 1076 (9th Cir. 2002).

11. *Cf.* S. Utah Wilderness All. v. Dabney, 222 F.3d 819, 826 (10th Cir. 2000) (“It is unclear from the statute itself what constitutes impairment, and how both the duration and severity of the impairment are to be evaluated or weighed against the other value of public use of the park.”). If the focus remains on the legislative currents leading to the Organic Act’s passage in 1916, impairment is tied tightly to the *scenic* integrity of the parks. *See* Robin Winks, *The National Park Service Act of 1916: “A Contradictory Mandate”?*, 74 Denv. U.L. Rev. 575 (1997).

12. Neither NEPA, the Organic Act, nor any of the 1970’s amendments include their own cause of action. The APA’s waiver of sovereign immunity and right of review do so in tandem with the general federal question jurisdiction, 28 U.S.C. § 1331. *See* Califano v. Sanders, 430 U.S. 99, 105-07 (1977).

13. For example, in an otherwise exhaustively considered opinion scrutinizing NPS’s

[n]either the word “unimpaired” nor the phrase “unimpaired for the enjoyment of future generations” is defined in the Act. It is unclear from the statute itself what constitutes impairment, and how both the duration and severity of the impairment are to be evaluated or weighed against the other value of public use of the park.¹⁴

The APA’s orthodox division of legal issues into questions of law, fact, and discretion is amply communicated by the structure of its scope of review provision, 5 U.S.C. § 706, with each issue-type paired to its own standard(s) of review.¹⁵ That means that as challenges to an agency’s legal conclusions, factual findings, or discretionary judgments pursuant to its enabling legislation mount, the precedential records thereof mount as well. Indeed, our whole system of administrative law is oriented against official discretion in this fashion. Most directly, it exposes exercises of discretionary judgment to judicial scrutiny and the risk of reversal either as a matter of decision-making procedure(s) or as a matter of substantive rationality.¹⁶ A bit more indirectly, the system of judicial review, coupled with certain “action forcing” duties under NEPA § 102(2)(C),¹⁷ prompts agencies like NPS to separate out the various “factors” informing their decision-making, whether as a function of their authorizing statutes or of their own expertise in implementing them.¹⁸

compliance with NEPA in the reconstruction of access roads and bridges to Yosemite, one court confronted the plaintiffs’ non-impairment claims with the following (unproductive) logic:

The Organic Act itself does not mandate that the balance in any particular decision reflect one value over the other. For that reason, the Organic Act does not serve as basis for a cause of action when the issue is confined to the Agency’s exercise of discretion in attempting to balance valid competing values. The Organic Act would serve as a basis for a cause of action were the NPS to allow use of a national park in a way that was not in the interests of either conservation or public enjoyment or in a way that was clearly against the interests of future generations.

Sierra Club v. Babbitt, 69 F. Supp. 2d 1202, 1247 (E.D. Cal. 1999).

14. *S. Utah Wilderness Alliance v. Dabney*, 222 F.3d 819, 826 (10th Cir. 2000). See also Molly N. Ross, *The Requirement to Leave Park Resources And Values “Unimpaired,”* 30 GEO. WRIGHT F. 67 (2013).

15. See PETER L. STRAUSS, *ADMINISTRATIVE JUSTICE IN THE UNITED STATES* 335-86 (2d ed. 2002).

16. See *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 415-20 (1971) (holding that Administrative Procedure Act exception to reviewability in 5 U.S.C. § 701(a)(2) for actions “committed to agency discretion by law” is a narrow exemption); *Motor Vehicles Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 41-57 (1983).

17. NEPA’s “action-forcing” mandate is, principally, the preparation of a “detailed statement” whenever a proposal of a “major Federal action[]” that may “significantly affect the quality of the human environment” on the alternatives thereto and the impacts thereof. 42 U.S.C. § 4332(2)(C).

18. See Jamison E. Colburn, *The Risk in Discretion: Substantive NEPA’s Significance*, 41 COLUM. J. ENVTL. L. 1, 6-13 (2016); see also Jamison E. Colburn, *Administering the National Environmental Policy Act*, 45 ENVTL. L. RPT. 10287, 10307 (2015).

When they do so in rules or guidance, those tools then become a focal point in contests over administrative discretion and its ramifications in the environment.

For decades now, NPS has held fast to an official “interpretation” of the non-impairment mandate that analyzes impairment in the following terms:

The impairment that is prohibited . . . is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.¹⁹

This interpretation may accentuate the “professional judgment” of the responsible official,²⁰ but it must be grounded in whatever may compromise the “integrity” of some park element or its enjoyment. For the document further decomposes the standard by defining “resources” as “scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them,” and park “values” as “appropriate opportunities to experience enjoyment” thereof, “to the extent that can be done without impairing them.”²¹ And the list of influences that could fit that bill is vast.

To be sure, the *2006 Management Policies* and later guidance make clear that *impairment* as a threshold is often problematic—that impairments are frequently uncertain and contestable. Subsequent guidance on non-impairment determinations and their relationship to NEPA routines observed that “[a]n impact would be less likely to constitute an impairment if it is an unavoidable result of an action

19. U.S. DEPT. OF THE INTERIOR, NATIONAL PARK SERV., MANAGEMENT POLICIES 2006 § 1.4.5 (2006) (hereafter “2006 MANAGEMENT POLICIES”).

20. The 2006 policies’ *glossary* defines “professional judgment,” a term that appears in several key places in the manual, as:

a decision or opinion that is shaped by study and analysis and full consideration of all the relevant facts, and that takes into account the decision-makers education, training, and experience; advice or insights offered by subject matter experts and others who have relevant knowledge and experience; good science and scholarship; and, whenever appropriate, the results of civic engagement and public involvement activities relating to the decision.

Id. at 159.

21. *Id.* at § 1.4.6.

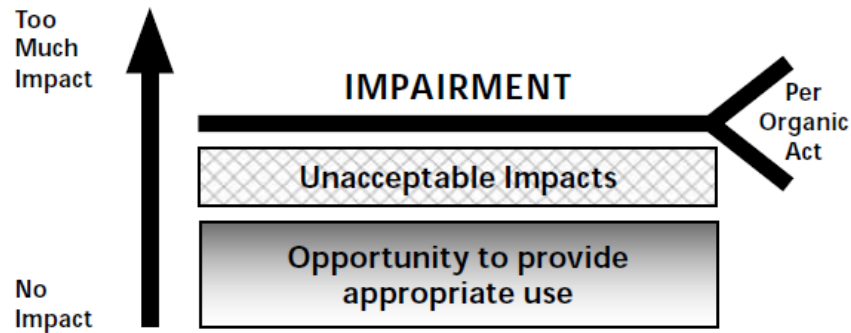
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necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.”²² Note that it is the *purpose* of an action there which would remove it from the impairment ledger and that, given the definition of park “values,” a purpose of maintaining or enhancing *access* can count as a consideration against an impairment finding. Interestingly, a transition zone, which NPS calls “unacceptable impacts,”²³ now further segments the field of impact/integrity fact finding. While these impacts are not “impairments,” *per se*, they are today prohibited by NPS rule. They include such things as impeding the “attainment of a park’s desired future conditions,” the creation of an “unsafe or unhealthful environment,” and the *unreasonable* interference with “the atmosphere of peace and tranquility, or the natural soundscape” of parks.²⁴ In NPS’s telling, beyond these impacts deemed “unacceptable” lay actual *impairment*, *i.e.*, beyond a discernible frontier dividing the two.

Managing for Resource Conservation



Of course, this statutory standard has now weathered decades of change—when conservation goals have been ascendant and when they have been in retreat.²⁵ Thus, today’s non-impairment mandate is not just a reflection of the 1916 ideal, the hard-fought bureaucratic and political

22. See National Park Serv., *Guidance for Non-Impairment Determinations and the NPS NEPA Process*, 2 (Sept. 2011).

23. 2006 MANAGEMENT POLICIES, *supra* note 19 at § 1.4.7.1.

24. *Id.*, As the Tenth Circuit has concluded, this is at once both a legal and a factual conclusion—worthy of judicial scrutiny under either set of standards. See *S. Utah Wilderness Alliance v. Dabney*, 222 F.3d 819, 829 (10th Cir. 2000).

25. See ROBERT B. KEITER, *TO CONSERVE UNIMPAIRED: THE EVOLUTION OF THE NATIONAL PARK IDEA* 264-67 (2013).

lessons learned from the General Authorities Act, the Redwood Amendment, and other, more recent congressional attention to the park system.²⁶ It was forged most recently out of political fires set within the Department of Interior in 2005.

Several Bush Administration appointees tried—unsuccessfully—to insinuate the notion of “irreversible” change into the meaning of impairment,²⁷ a move the *New York Times* editorial board quickly denounced as a “frontal attack on the idea of impairment.”²⁸ A core driver of that dispute, one that made trips to federal court before (and which have continued since),²⁹ was the place of motorized vehicle access vis-à-vis the non-impairment mandate.³⁰ What quantity or quality of disruption within a park’s ecosystem would motorized vehicles have to create to rise to the level of “irreversible” impairment of that park? Would it be coextensive with jeopardizing the *integrity* of park resources? After the Bush Administration changed course, no answer ever emerged.

Of course, virtually any choice NPS personnel make in balancing access and enjoyment of the parks against their longer-term compositional or functional “integrity” can intersect with the regulative notion of non-impairment. Human use and enjoyment of nature, after all, are under most interpretations synonymous with its disruption: the consumption, disturbance, modification—or at least *interruption*—of nature.³¹ To be clear, some access controls within the park system have less to do with non-impairment than with minimizing conflicts among user groups.³² But a growing share of access controls stem from the

26. *Id.* at 261-70 (detailing the Organic Act’s arc from leading conservation mandate to passive restraint on over-development of the parks to secondary protection after enactment of the Wilderness Act, Wild and Scenic Rivers Act, Endangered Species Act and finally to its current role of enhancing connections between park system governance, science, and conservation). As an aside, the 2014 repeal and re-enactment of the park system’s organizing legislation—including the Organic Act—raises the possibility that 1916’s ideals now lay beneath 2014’s legislative ratification of a century’s worth of judicial and administrative interpretation. See HENRY M. HART, JR. & ALBERT M. SACKS, *THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW* 1365-68 (William N. Eskridge, Jr. & Philip P. Frickey eds., 1994).

27. See Felicity Barringer, *Top Official Urged Change in How Parks are Managed*, N.Y. TIMES, Aug. 26, 2005, at 1.

28. See Op-Ed, *Destroying the National Parks*, N.Y. TIMES, Aug. 29, 2005, at 2.

29. See *infra* notes 80-87 and accompanying text.

30. See Barringer, *supra* note 27.

31. Cf. JEDIDIAH PURDY, *AFTER NATURE: A POLITICS FOR THE ANTHROPOCENE* 13 (2015) (“Most of us know, or suspect, what history bears out: that “nature” has been a vessel for many inconsistent ideas, whether one claims to be following it or overcoming it”).

32. Cf. *Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1450 (9th Cir. 1996) (upholding NPS determination that bicycling off-road in parks be prohibited until specifically

parks' loss of natural composition and/or function and the factual connections linking that loss to anthropogenic forces. With climate change as the emergent disruptive force above all such forces, the parks have seemingly entered a permanently defensive crouch against the loss of natural flora, fauna, and functionality.³³ What is NPS's place in that new normal?

Another way to understand this nexus is that our age of disruption is quickly rendering the non-impairment mandate a massive—perhaps NPS's defining—legal, administrative, and informational challenge. A century ago, a wholly informal letter from Interior Secretary Lane to NPS Director Mather could set the broad contours of an agenda for the century to come.³⁴ Today, the public affinity for the parks, coupled with the kaleidoscope of threats to park integrity, have necessitated extraordinarily detailed yet permanently tentative policy guidance, factual study, and lawyering. For its part, NPS has taken an increasingly legalistic approach to its personnel's non-impairment judgments. In its 1988 *Management Policies* document, NPS explained that:

[t]he word “unimpaired” plays an important role in the conservation of resources and providing for present-day public enjoyment. Both physical resources, such as wildlife and geologic features, and intangible values, such as scenic vistas and solitude, may be impaired. Over the years, legislative and administrative actions have been taken that have brought some measure of change to these components of our national parks. Such actions impact park resources, yet they are not necessarily deemed to have impaired resources for the enjoyment of future generations. Whether an individual action is or is not an “impairment” is a management determination. In reaching it, the manager should consider such factors as the spatial and temporal extent of the impacts, the resources being impacted and their ability to adjust to those impacts, the relation of the impacted resources to other park resources, and the cumulative as well as the individual effects.³⁵

Managers balancing multiple factors—as the 1988 interpretation had it—were, of course, familiar with the scope of review doctrines of the

permitted unit-by-unit).

33. See SAUNDERS ET AL., *supra* note 3.

34. See Franklin K. Lane, *Secretary Lane's Letter on National Park Management* (May 13, 1918), in AMERICA'S NATIONAL PARK SYSTEM: THE CRITICAL DOCUMENTS, 48 (Larry Dilsaver ed., 1994). The Lane Letter famously 'directed' Mather to seek out new parks only where they exhibited “scenery of supreme and distinctive quality or some national feature so extraordinary or unique as to be of national interest and importance.” *Id.* at 51.

35. U.S. DEPT. OF THE INTERIOR, NATIONAL PARK SERV., MANAGEMENT POLICIES 1988 1:3 (1988) (hereafter “1988 MANAGEMENT POLICIES”).

day.³⁶ Most of those doctrines were quite deferential by the 1980s.³⁷ Still, any factored judgment where the factors being weighed either are not quantified at all or cannot be compared through a unitary value like money will implicate the balancer's own judgment.³⁸ And the 1988 manual made clear that "impairment," especially in systems that had been thoroughly upset by a century or more of human interference, was a dynamic concept:

Ecological processes altered in the past by human activities may need to be abetted to maintain the closest approximation of the natural ecosystem where a truly natural system is no longer attainable. Prescribed burning is an example. The extent and degree of management actions taken to protect or restore park ecosystems or their components will be determined in light of management objectives and prevailing scientific theory and methodologies.³⁹

What the 2001 and 2006 updates put into sharp relief are this impairment standard's distinguishable facets: its separable aspects of fact, law, and discretion.⁴⁰ The 2006 *Management Policies*' separate definition of park "resources" and "values"⁴¹ and articulation of a presumptive procedural path for a non-impairment determination,⁴² to say nothing of its listing several examples of impacts that ordinarily constitute impairments,⁴³ at the very least organize the administrative record any of these determinations should entail. Furthermore, the various iterations of the *Management Policies* document have proven real constraints in litigation

36. See, e.g., *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 410 (1971).

37. The *State Farm* opinion, see *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 46-57 (1983), which has since become the *locus classicus* of arbitrariness review in the balancing of multiple agency objectives, was never mentioned in a precedent reviewing the management of ORVs at Cape Cod National Seashore, even though the court—citing precedents upholding searching reviews—rejected the arbitrariness challenges brought against NPS. See *Conservation Law Found., Inc. v. Clark*, 590 F. Supp. 1467, 1474 (D. Mass. 1984) (citing *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 850-51 (D.C. Cir. 1970)).

38. Cf. *Pension Benefit Guaranty Corp. v. LTV Corp.*, 496 U.S. 633, 652 (1990) (declining to overturn agency judgment on grounds agency could not fully specify the relevance of the factor it weighed).

39. 1988 MANAGEMENT POLICIES, *supra* note 35 at 4:2. NPS's place in the long history of fire suppression and the consequent disruption of its fire-adapted ecosystems is recounted in Stephen Pyne's history, *Fire in America*. See STEPHEN J. PYNE, *FIRE IN AMERICA: A CULTURAL HISTORY OF WILDLAND RURAL FIRE* 295-305 (1982).

40. In the 2006 version, Sections 1.4.6 and 1.4.7 appeared substantively as they appeared in the 2001 document. See U.S. DEPT. OF THE INTERIOR, NATIONAL PARK SERV., MANAGEMENT POLICIES 2001 12-13 (2001).

41. See *supra* notes 19-21 and accompanying text.

42. See 2006 MANAGEMENT POLICIES, *supra* note 19 at § 1.4.7.

43. See *id.* at § 1.4.7.1.

over their application, with several courts finding that they “bind” NPS like any other legal rule.⁴⁴ As litigation over particular park management decisions quickens, these different facets are growing more clearly contestable as such, enabling an increasingly granular approach to non-impairment as a governance standard. However, with its resolution of discrete units’ discrete “resources” and “values” as the objects of non-impairment, the 2006 policy—combined with the growing frequency of judicial review—are creating informational burdens NPS personnel have yet fully to comprehend let alone shoulder in a sustainable way.⁴⁵ Part III describes that trend.

NEPA is both facilitating and consolidating this trend. As more non-impairment litigation has involved NEPA claims,⁴⁶ and more NPS actions have resulted in NEPA documents, the trend line is manifest: the fuller intertwining of NEPA’s procedural (and, to a lesser extent substantive) values with non-impairment.⁴⁷ Indeed, in 2011 guidance issued to all field staff, NPS noted that “[a]ctions that require preparation of EAs and EISs constitute actions that may have the potential to impair park resources or values” and that, therefore, “a non-impairment determination must be made for any action selected in a FONSI or [EIS/]ROD that could impact park resources and values.”⁴⁸ An updated *Director’s Order No. 12* on conservation and impact analysis states that “[r]ead together, the provisions of NEPA and the [Organic Act] are consonant and jointly commit the Service to make informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations.”⁴⁹ If these separately evolved legal norms are now intertwined and co-evolving, it is not without disruptive ramifications all its own. For NEPA has become the preeminent tool of those who would challenge and seek

44. See, e.g., *Davis v. Latschar*, 202 F.3d 359, 366 & n.4 (D.C. Cir. 2000). But see *The Wilderness Soc’y v. Norton*, 434 F.3d 584, 595-96 (D.C. Cir. 2006) (rejecting *Davis* and concluding that the 2006 *Management Policies* is not a binding rule).

45. The 2006 definition of “park resources and values” include (but apparently are not limited to) scenery, natural and historic objects, wildlife “and the processes and conditions that sustain them,” visibility, soundscapes and smells, soils, archaeological, cultural and historic objects, sites and structures, and “the park’s role in contributing to the national dignity” and the “benefit and inspiration provided to the American people.” 2006 MANAGEMENT POLICIES, *supra* note 19 at § 1.4.6.

46. See *infra* notes 53-101 and accompanying text.

47. See *infra* notes 107-39 and accompanying text.

48. See National Park Serv., *Guidance for Non-Impairment Determinations and the NPS NEPA Process*, 1 (Sept. 2011).

49. See Jonathan B. Jarvis, Director, National Park Serv., *Director’s Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-Making*, 2 (Oct. 5, 2011).

to delay the decisions of government—whatever its aims or goals. And that makes NPS’s NEPA compliance into a fertile source of conflict and, by extension, agency circumspection. Part III surveys that co-evolution to the present.

III. NON-IMPAIRMENT IN THE AGE OF NEPA

By the 1980s, NPS’s authority to exclude “consumptive” uses from the park system, *e.g.*, fishing, hunting, trapping, *etc.*, had been solidly established.⁵⁰ That was certainly evidence of an epochal change from the parks’ founding, but the agency had rarely faced challengers alleging that it was being insufficiently protective of the parks.⁵¹ That soon changed, though, and NEPA was a big impetus. As external pressures increased to manage the parks and their surroundings as integrated systems,⁵² NPS became a regular target with NEPA as the weapon of choice.

In *Sierra Club v. Babbitt*,⁵³ NPS was set to rebuild Highway 140 into Yosemite from the park’s western border to Pohono Bridge after flooding had badly damaged the road and its supporting bridges around the Merced River.⁵⁴ Sierra Club sued, arguing that its EA/FONSI was flawed and had been finished after the decisions had all been made.⁵⁵ Notably, the NEPA claims succeeded (and merited injunctive relief) where the claim that the rebuilding was courting an impairment contrary to the Organic Act failed summarily.⁵⁶

Another formative precedent attacked NPS’s lack of basic information about baseline conditions even as it reached NEPA conclusions. In *National Parks & Conservation Ass’n v. Babbitt*,⁵⁷ NPS was set to increase the number of large cruise ships entering Glacier Bay

50. *See, e.g.*, *Michigan United Conservation Clubs v. Lujan*, 949 F.2d 202 (6th Cir. 1991); *NRA v. Potter*, 628 F. Supp. 903 (D.D.C. 1986); *Organized Fishermen of Florida v. Watt*, 590 F. Supp. 805 (S.D. Fla. 1984).

51. The opinion in *Daingerfield Island Protective Soc’y v. Babbitt*, 823 F. Supp. 950 (D.D.C. 1993), is representative. In summarily dismissing plaintiffs’ challenge to NPS’s permission to build a new interchange between Mount Vernon Memorial Highway and George Washington Parkway, the court held the Organic Act’s non-impairment mandate was not violated and NPS’s determinations were not arbitrary, despite evidence offered by plaintiffs—from NPS’s own EIS—suggesting otherwise. *Id.* at 955-57.

52. *See generally* Robert B. Keiter, *NEPA and the Emerging Concept of Ecosystem Management on the Public Lands*, 25 LAND & WATER L. REV. 43 (1990).

53. *Sierra v. Babbitt*, 69 F. Supp. 2d 1202 (E.D. Cal. 1999).

54. *Id.* at 1207-09.

55. *Id.* at 1217.

56. *See id.* at 1247.

57. *Nat’l Parks & Conservation Ass’n v. Babbitt*, 241 F.3d 722 (9th Cir. 2001).

National Park by over 70%, without having prepared an EIS.⁵⁸ The agency claimed that too little was known about the ships' effects on resident wildlife in the Bay to conclude that the impacts would be "significant" enough to necessitate a full impact statement.⁵⁹ Yet it still found no significant impact to be expected from its proposal. NPS's "mitigated FONSI" promised to monitor the results of the traffic increase and take corrective actions if needed.⁶⁰ The Ninth Circuit was convinced that a "finding" predicated on uncertainty was contrary to NEPA and CEQ's regulations.⁶¹ No recourse to the non-impairment mandate was needed, although it certainly could have gone that direction had the litigants so chosen.⁶²

In *Fund for Animals v. Mainella*,⁶³ NPS had long refused to reconsider its contributions to game hunting on the Cape Cod National Seashore or to prepare a NEPA document analyzing the impacts thereof.⁶⁴ A 1998 EIS on the general management plan took no "hard look" at any population effects or site-specific effects of hunting and the court found that this constituted a violation of NEPA.⁶⁵ Interestingly, the court declined to "enjoin" the hunting program on the circular logic that "[b]ecause the environmental consequences of the hunting program have not been comprehensively evaluated, it cannot be known whether or not ending hunting will have a deleterious environmental effect, such as by allowing for the over-breeding of some species, like deer."⁶⁶ It ordered the preparation of an EA for the hunting program and enjoined pheasant hunting (a lesser included part of the unit's hunting program) for the same NEPA lapses.⁶⁷ Again, missing from the *Fund for Animals* opinion is any reference to non-impairment. Indeed, *Fund for Animals* may be unique in its ordering that an EA be prepared for the continuation of a general policy trend given NEPA's notorious triggering requirement that some discrete agency *action* or *proposal* be at issue.⁶⁸

58. *Id.* at 728. NPS received about 450 comments on its proposed vessel management plan and EA/FONSI. About 85% of which were opposed to the chosen alternative. *Id.*

59. *Id.* at 731-32.

60. *Id.* at 733.

61. *Id.* at 734.

62. The court's guidance on the injunctive relief to be issued, ordering that the increase in vessel traffic be enjoined until NPS could better understand its possible consequences, *id.* at 738-39, suggests that an impairment claim would have succeeded, too.

63. *Fund for Animals v. Mainella*, 283 F. Supp. 2d 418 (D. Mass. 2003).

64. *See id.* at 423-26.

65. *See id.* at 434.

66. *Id.*

67. *See id.* at 434-35.

68. *See* DANIEL R. MANDELKER, NEPA LAW AND LITIGATION § 8:23 (2015 ed.).

In *High Country Citizens' Alliance v. Norton*, NPS attempted to relinquish a water right the *Winters* doctrine protected to the Black Canyon of the Gunnison National Park.⁶⁹ NPS's agreement with the State of Colorado was completed without any NEPA process, however, and the court easily concluded that a "permanent relinquishment of a water right with a 1933 priority date for such a scientifically, ecologically, and historically important national park must be viewed as a major action requiring compliance with NEPA."⁷⁰ That holding alone should have been enough to invalidate the arrangement.⁷¹ But the court went further to hold that NPS had violated several of its legal obligations as trustee of the park⁷²—most especially its responsibilities under the Organic Act.⁷³ Removing resources from NPS governance may or may not lead to their impairment. With no NEPA analysis the court was unable to say, but their being managed by any other authority was, in the court's estimate, "in direct contravention of" the Organic Act.⁷⁴

In *Sierra Club v. Mainella*,⁷⁵ an NPS FONSI accompanying the agency's decision to permit surface activities stemming from oil and gas drilling beneath Big Thicket National Preserve was invalidated and the judgment it supported was set aside as arbitrary and capricious.⁷⁶ NPS had prepared the EA/FONSI in connection with its permission to the drilling operations and had simultaneously prepared a non-impairment determination.⁷⁷ Finding several of the risks NPS dismissed as "very low probability," "negligible," and/or "moderate" impact as *potentially* anything but, the court derided NPS's "descriptors of the impacts" as "wholly uninformative."⁷⁸ "Assigning labels to impacts . . . provides the Court with no basis to determine first, whether NPS reasonably concluded that the impact is "moderate," and second, whether NPS

69. *High Country Citizens' All. v. Norton*, 448 F. Supp. 2d 1235, 1237-38 (D. Colo. 2006). The *Winters* doctrine provides that federal lands withdrawn from the public domain reserve by implication any available water rights needed to fulfill the purpose(s) of the reservation. See *Cappaert v. United States*, 426 U.S. 128, 138 (1976) (*citing* *Winters v. United States*, 207 U.S. 564 (1908)).

70. *High Country Citizens' All.*, 448 F. Supp. 2d at 1245.

71. The APA provides that reviewing courts shall "set aside" as unlawful any agency action taken "without observance of procedures required by law." Administrative Procedure Act, 5 U.S.C. § 706(2)(D) (1966).

72. See *High Country Citizens' All.*, 448 F. Supp. 2d at 1246-53.

73. See *id.* at 1246 (*quoting* Nat'l Parks Serv., 16 U.S.C. § 1 (1916) (repealed by Nat'l Parks Service and Related Programs Enactment, Pub. L. 113-287 § 7, 128 Stat. 3272 (2014)).

74. See *High Country Citizens' All.*, 448 F. Supp. 2d at 1252.

75. *Sierra Club v. Mainella*, 459 F. Supp. 2d 76 (D.D.C. 2006).

76. See *id.* at 108.

77. See *id.* at 82-83.

78. *Id.* at 100.

reasonably concluded that a “moderate” impact should not, under the relevant circumstances, be considered an impairment.”⁷⁹

In *Greater Yellowstone Coalition v. Kempthorne*,⁸⁰ planning snowmobile use in Greater Yellowstone provoked a series of challenges to the rationality of the non-impairment determinations and to the sufficiency of NPS’s NEPA documents.⁸¹ Professor Keiter observed that this case and the related litigation were debated at the “highest” levels of government.⁸² After planning first to exclude, then to limit, and then to allow snowmobile use unabated, the agency’s rationality took center stage.⁸³ The *2006 Management Policies*’ approach to non-impairment structured the court’s scrutiny, especially the statement that “conservation is to be predominant.”⁸⁴ NPS, the court observed, “cannot circumvent this limitation through conclusory declarations that certain adverse impacts are acceptable, without explaining why those impacts are necessary and appropriate to fulfill the purposes of the park.”⁸⁵ It then proceeded to break down NPS’s calculations—or lack thereof—purporting to show the negligibility of snowmobiles’ effects upon wildlife, quiet and solitude, and clean air in Greater Yellowstone.⁸⁶ For each issue, the court took the agency’s factual findings as given, but proceeded to show some factual gap or incompletely reasoned inference from the facts undermining the soundness of the agency’s conclusions. For example, on the impacts to resident wildlife including elk, bison, eagles and coyotes, where NPS had logged studies of various species’ responses to snowmobiles’ presence as “vigilant,” “active” avoidance, no visible response, *etc.*, the court faulted the agency both for its conclusory assertions that the recorded impacts were “moderate” or “negligible,” and for its failure to project and analyze expected future

79. *Id.* at 101. “An unbounded term cannot suffice to support an agency’s decision because it provides no objective standard for determining what kind of differential makes one impact more or less significant than another.” *Id.*

80. *Greater Yellowstone Coal. v. Kempthorne*, 577 F. Supp. 2d 183 (D.D.C. 2008).

81. A parallel suit was litigated in *Wyoming Lodging and Rest. Ass’n v. United States DOI*, 398 F. Supp. 2d 1197 (D. Wyo. 2005).

82. See KEITER, *supra* note 52 at 77-79.

83. See *Greater Yellowstone Coal.*, 577 F. Supp. 2d at 186-88. A 2000 EIS on snowmobiles in Yellowstone concluded that the then-existing conditions were impairing the park’s soundscapes, wildlife, and air quality. *Id.* at 195. The D.C. district court’s involvement in the prior iterations is recorded in *Fund for Animals v. Norton*, 323 F. Supp. 2d 7 (D.D.C. 2004), and *Fund for Animals v. Norton*, 294 F. Supp. 2d 92 (D.D.C. 2003).

84. *Greater Yellowstone Coal.*, 577 F. Supp. 2d at 192 (*quoting* 2006 MANAGEMENT POLICIES, *supra* note 19 at § 1.4.3).

85. *Greater Yellowstone Coal.*, 577 F. Supp.2d at 193.

86. See *id.* at 194-209.

impacts as the patterns of snowmobile use changed.⁸⁷

In *Bluewater Network v. Salazar*,⁸⁸ a decision to permit “personal watercraft” (PWC)—jet skis and similar equipment—back into parks from which they had been excluded prompted one federal judge to ask:

[w]hy has NPS issued Rules allowing jetski use in two beautiful and pristine national parks, acknowledging that such use will impact, to varying degrees, water quality, air quality, wildlife, animal habitats, soundscapes, visitor use and safety, *etc.*, when the users of jetskis are perfectly free to enjoy their vehicles in other equally accessible areas, without threatening the serenity, the tranquility—indeed, the majesty—of these two national treasures.⁸⁹

The judge’s question stemmed from NPS’s own approach to non-impairment and the information its NEPA analyses gathered. When NPS first moved to ban PWCs from park units, it cited the rapid increase in their popularity and power and the consequent noise and chemical pollution issues they raised.⁹⁰ However, the rule allowed NPS units to permit PWCs back by individual rulemaking, which several units then undertook. NPS personnel prepared two park-specific EAs to analyze the impacts of continued PWC use within the Gulf Islands National Seashore and Pictured Rocks National Lakeshore.⁹¹ After an especially searching review employing the standard *State Farm* arbitrariness-review framework,⁹² the court concluded that the Gulf Shore Islands NPS unit had failed adequately to explain or to substantiate how continued use of PWCs would *not* impair park resources and values.⁹³ The court separately faulted NPS both for its failure to gather and sort adequate factual support for its conclusions and for its failed justification or “reasoned explanation” for its choices.⁹⁴ Even NPS’s gathering of specific pollution estimates, using them to determine that the PWCs would not impair park values was deemed “conclusory” for failing to explain how much PWC pollution was *too* much.⁹⁵

87. *See id.* at 202-05.

88. *Bluewater Network v. Salazar*, 721 F. Supp. 2d 7 (D.D.C. 2010).

89. *Id.* at 10.

90. *See id.* at 11 (*citing* Personal Watercraft Use Within the NPS System, 65 Fed. Reg. 15077-080 (2000)).

91. *See Bluewater Network*, 721 F. Supp. 2d at 12-15. Plaintiffs in the action were deemed to lack standing to challenge the proceedings at Picture Rocks National Seashore. *Id.* at 17-18.

92. *See id.* at 21-25.

93. *See id.* at 21-38.

94. *See id.* at 37-38.

95. *See id.* at 29-30. “NPS labeled the impact of PWC emissions . . . as “negligible.” There is no specific and detailed explanation as to how it arrived at that conclusion; without such an

In *Defenders of Wildlife v. Salazar*,⁹⁶ the use of off-road vehicles (ORVs) in Big Cypress National Preserve was the issue, particularly the reopening of ORV traffic to some of the preserve's best Florida panther habitat.⁹⁷ ORV traffic predated the preserve's establishment as a park system unit and NPS had faced years of conflict over its management. Key to the settlement of a 1995 lawsuit—according to the plaintiffs—was NPS's promise to develop an EIS analyzing the cumulative effects of ORV use and its management throughout the preserve.⁹⁸ The court found that no such promise had been made, but followed up by finding that NPS had violated the CEQ regulations requiring a supplemental EIS under the circumstances in any event.⁹⁹ Worse, with the non-impairment obligation as the default,¹⁰⁰ NPS's failure to update its NEPA analysis even as its ORV traffic policy in the preserve swerved left its decision without a rational basis.¹⁰¹

NPS has rarely lost a case where its management decisions caused the curtailment of access to the national parks.¹⁰² And that is likely to continue. What these cases represent collectively is a changed institutional and factual context within which impairment will operate as a governing legal standard. Impairment combined with NEPA's broad procedural ambit and information demands can be found anywhere, depending on the burden of proof. Indeed, as more sophisticated challenges are mounted to decisions erring on the side of access (particularly motorized access), opponents will have their choice of targets. The 2011 guidance on impairment and NEPA made clear that while the NEPA determination(s) and non-impairment determinations are legally separate, every non-impairment determination, on its own, "must include a discussion, for each impacted resource analyzed in detail in the associate EA or EIS, of why the selected action's impacts will not result in impairment."¹⁰³ And that increases the chances that some factual and/or rational basis behind whatever inferences from past experience or data supporting the agency's conclusions can be refuted—

explanation, there is no rational connection between the facts found (quantitative data) and the final conclusions reached (negligible impact and non-impairment."). *Id.* at 30.

96. *Def. of Wildlife v. Salazar*, 877 F. Supp. 2d 1271 (M.D. Fla. 2012).

97. *Id.* at 1279-89.

98. *Id.* at 1293.

99. *See id.* at 1300-01 (*construing* 40 C.F.R. §§ 1502.9(c)(1)(i)-(ii)) (1977).

100. *See* *Def. of Wildlife*, 877 F. Supp. 2d at 1275-76.

101. *See id.* at 1302.

102. Or, where it has lost the occasional trial court decision, it has usually prevailed on appeal. *See, e.g., Mausolf v. Babbitt*, 125 F.3d 661 (8th Cir. 1997).

103. 2011 NEPA Guidance, *supra* note 22 at 4.

or at least put in question. Derivatively, it increases the chances that the decision to limit access protectively is NPS's path of least resistance. NEPA will continue to expose any weaknesses regardless of the decision to increasingly searching judicial scrutiny, but the non-impairment mandate may shade NPS's substantive alternatives nevertheless.

IV. WHERE WILL NEPA/NON-IMPAIRMENT LITIGATION LEAD?

Conjectures that discrete parks will face threats in our climate-disrupted future which depart substantially from experience, though surely grounded in fact,¹⁰⁴ often ignore how much upset and change NPS already handles on a regular basis. Localized extinctions and reintroductions, for example, have long been the norm.¹⁰⁵ But what NEPA/impairment litigation has highlighted over the last two decades is the agency's need to engage in technically defensible site-specific risk planning which is then subject to increasingly searching external review. Indeed, with a statutory mandate since 1998 to "undertake a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends in the condition of National Park System resources,"¹⁰⁶ NPS faces increasingly stringent and broadly applicable duties of this kind.

Yet NPS's differentiation of non-impairment's legal, factual, and discretionary facets ignores the hardest question: at what *scale* are any of these risks to be managed? Elsewhere I have argued at length that NEPA in its best light turns agencies like NPS toward a more systemic understanding and management of risk.¹⁰⁷ To do that, an agency like NPS must be willing to organize itself to attack the irremediable uncertainties through which we confront the threats we take seriously but cannot, despite our best efforts, quantify. Too often, this will mean trading off the narrow-gauged study of threats so that a whole organization can better comprehend the same or related threats at larger scales.¹⁰⁸ Take, for example, the loss of ice and snow (and glacial cover)

104. See, e.g., SAUNDERS ET AL., *supra* note 3.

105. See, e.g., Robert B. Keiter, *Wildlife Conservation, Climate Change, and Ecosystem Management*, in THE LAWS OF NATURE: REFLECTIONS ON THE EVOLUTION OF ECOSYSTEM MANAGEMENT LAW & POLICY, 235 (Kalyani Robbins, ed., 2013).

106. 16 U.S.C. § 5934 (1998)(repealed by Pub. L. 113-287 § 7, 128 Stat. 3272 (2014)).

107. See Jamison E. Colburn, *Addition by Subtraction: NEPA Routines as Means to More Systemic Ends*, in THE LAWS OF NATURE: REFLECTIONS ON THE EVOLUTION OF ECOSYSTEM MANAGEMENT LAW & POLICY, 145, 163-67 (Kalyani Robbins, ed., 2013); Colburn, *Risk in Discretion*, *supra* note 18 at 46-48.

108. See Colburn, *Addition by Subtraction*, *supra* note 107 at 155-60; Colburn, *Risk in Discretion*, *supra* note 18 at 53-54.

at a dozen iconic parks from Acadia to Yosemite.¹⁰⁹ Clearly, planning for an ice-free future in places evolved to depend on snowpack or glacial melt cannot be done from experience alone.¹¹⁰ But neither will system-wide preparations follow from those plans conceived *in situ*—least of all in a park system devised to welcome the American touring public as a whole.¹¹¹ This section considers how NEPA can and should prompt NPS’s adaptation of its non-impairment decision-making to our age of disruption.

A. Risk Selection: Distorting an Already Distorted Enterprise?

Another case supplies what could be the clearest lens yet on where the NEPA/non-impairment train is headed. The case, *Grunewald v. Jarvis*,¹¹² is about thinning the deer herd in Rock Creek Park. Rock Creek Park is an oasis surrounded on all sides by the urban and suburban development of greater Washington, D.C. It was established decades before the park system or NPS.¹¹³ But without natural predators, the only limiting factors on the deer population in the park—which had been extirpated as of the park’s establishment in 1890—have been automobiles and disease.¹¹⁴ Deer at high enough densities can prevent a vegetation community from reproducing itself, and NPS, after studying

109. See SAUNDERS ET AL., *supra* note 3 at 7-10 (listing parks most at risk for loss of glaciers, ice and snow).

110. This is especially true in places where the loss of surface water is expected to coincide with the overthrow of traditional plant communities, *id.* at 19, the loss of dominant wildlife species, *id.* at 25, and the onset of unprecedentedly extreme weather events. *Id.* at 15. Some NPS regions have been modeling expected future conditions for years. See, e.g., Stephen T. Gray et al., *Using Integrated Ecosystem Modeling to Understand Climate Change*, 12 ALASKA PARK SCI. (Nov. 2, 2013), available at <https://www.nps.gov/articles/aps-v12-i2-c3.htm>.

111. As more of America seeks outdoor adventure and more parks come under greater strains from climate change, those parks doing comparatively better, all things considered, should expect to see their visitor numbers increase more rapidly than those known to be suffering. See William B. Monahan & Nicholas A. Fischelli, *Climate Exposure of US National Parks in a New Era of Change*, 9 PLOS ONE e101302 (Moncho Gomez-Gesteira, ed., Nov. 2, 2013). Overall, 307 million visits to the parks in 2015 means *both* “an enormous, unique opportunity to communicate what climate change may do to us and what we can do about it,” SAUNDERS ET AL., *supra* note 3 at 41, and a tsunami of demand for use of the parks.

112. *Grunewald v. Jarvis*, 776 F.3d 893 (D.C. Cir. 2015). Thinning over-abundant ungulate populations has become a repeat-play NEPA ordeal for NPS. See *Davis v. Latschar*, 202 F.3d 359, 367-68 (D.C. Cir. 2000).

113. *Grunewald*, 776 F.3d at 896. After monitoring revealed the park’s deer density of roughly 67 per square mile and an unmistakable “browse line” (the height at which deer cannot reach vegetation, below which, at high enough densities, deer browse away *all* vegetation), NPS began planning a deer cull. *Id.* at 897.

114. See *Grunewald v. Jarvis*, 930 F. Supp. 2d 73, 78 (D.D.C. 2013), *aff’d*, *Grunewald v. Jarvis*, 776 F.3d 893.

deer densities in the park, decided that thinning was necessary.¹¹⁵ It prepared an EIS from reports of a science team¹¹⁶ and proposed alternative plans mixing lethal and nonlethal controls, ultimately deciding that nonlethal methods would not adequately shrink the population.¹¹⁷ The process included a public meeting with 125 attendees, much correspondence with interested parties, and in-depth analysis of the proposed nonlethal measures.¹¹⁸

The trouble was: the more NPS studied deer in Rock Creek Park, the less convinced some of its stakeholders became of their *over*-abundance and the more difficult finding any provable, scientifically grounded solutions became.¹¹⁹ A December 2013 issue of *Time Magazine* featuring a White-tailed deer on the cover with the title “America’s Pest Problem”¹²⁰ provoked a similar reaction nationally to the one NPS had met in Rock Creek Park. *Time* called for an urgent response to nuisance wildlife running amok and championed a nationwide push to increase sport hunting.¹²¹ The article was as much editorial as exposé, though, and the comparisons between it and NPS’s work on the Rock Creek Park deer herd should have ended quickly. But the lawsuit bringing NPS’s approach to federal court kept that from happening.

A litigation-driven, issue-centric approach to something as organic, dynamic, and uncertain as the “integrity” of heavily disturbed systems, or their potential “impairment” over a longer term, will entail expanding process and information burdens as it further intertwines with NEPA. With litigants mostly motivated to stop whatever NPS action they are challenging, it will tend to accentuate whatever uncertainties simply cannot be eliminated, ending in the now-familiar paradox of the increasing uncertainty that grows from focused study.¹²² This can be productive where organized attention to some threat, its probability distribution(s), and/or its expected consequences narrows the

115. See Grunewald, 930 F. Supp. 2d at 79-80.

116. *Id.*

117. See Grunewald, 776 F.3d at 897.

118. See *id.* at 897-98.

119. As for the plaintiffs, the factual issues drawing the bulk of their attention were the relationship, if any, between deer browsing and the reproduction rate of native—as opposed to “exotic”—vegetation species, see Grunewald, 930 F. Supp. 2d at 82-84, 86-87, and the efficacy of non-lethal deer control measures. See *id.* at 91-92.

120. See David Von Drehle, *America’s Pest Problem*, TIME (Dec. 9, 2013).

121. See Von Drehle, *supra* note 120 at 41.

122. See, e.g., Marjolein B. A. van Asselt & Ellen Vos, *The Precautionary Principle and the Uncertainty Paradox*, 9 J. RISK RES. 313, 317-18 (2006).

uncertainties affecting public choice.¹²³ But it can also become a vicious circle that erodes public confidence in science and expertise.¹²⁴ Congress's 1998 mandate that NPS utilize the "highest quality science and information,"¹²⁵ like NEPA's mandate that only "high quality" information" and "[a]ccurate scientific analysis"¹²⁶ be used, did not so much resolve this trap as deepen it.¹²⁷

Even more importantly, investment in process or information collection/creation will have *no* necessary correlation with stakeholder satisfaction given the diversity of views among well-funded but disparately motivated groups like the Sierra Club, WildEarth Guardians, or snowmobilers in Yellowstone. When all of that is rolled up together with NEPA and its priorities of disclosure, deliberation, and informed decision-making, NEPA challenges turn agency personnel increasingly toward the management of *litigation* risks.¹²⁸ It is this lens that casts NEPA and the non-impairment mandate as a cautionary tale looking further into our age of disruption.

In *Bluewater Network*,¹²⁹ *Sierra Club v. Mainella*,¹³⁰ and elsewhere, courts have refused to accept NPS's mere description of an expected impact and a conclusory dismissal of that impact as something less than an impairment.¹³¹ They have required explanations *why* an expected impact will not impair park resources. NEPA precedents are characteristically difficult to synthesize into generalizable principles of

123. See, e.g., George Gray et al., *Beef, Hormones, and Mad Cows*, in *THE REALITY OF PRECAUTION: COMPARING RISK REGULATION IN THE UNITED STATES AND EUROPE* 65 (Jonathan B. Wiener et al., eds., 2011).

124. See HEATHER E. DOUGLAS, *SCIENCE, POLICY, AND THE VALUE-FREE IDEAL* (2009); *REALITY OF PRECAUTION*.

125. The Nat'l Parks Omnibus Mgmt. Act of 1998, Pub. L. No. 105-391, 112 Stat. 3497 (1998), included Title II—devoted entirely to enhancing park management “by providing clear authority and direction for the conduct of scientific study in the National Park System and to use the information gathered for management purposes.” 16 U.S.C. § 5931(2)(1998). Section 202 thereof required NPS to “assure that management of units of the National Park System is enhanced by the availability and utilization of a broad program of the highest quality science and information.” *Id.* at § 5932.

126. 40 C.F.R. § 1500.1(b)(1970).

127. In 2014, Congress repealed Title II of the 1998 Omnibus reform act and re-enacted it as a substantively identical version in a new Title 54. See Nat'l Park Service and Related Programs Enactment, Pub. L. No. 113-287, § 7, 128 Stat. 3272 (2014), *codified at* 54 U.S.C. § 100702.

128. NPS's latest *NEPA Handbook* features detailed guidance on, for example, compiling a “decision file” which can later support the creation of an administrative record, the “minimum required content” of EAs, and the procedural prerequisites to be observed for each NEPA routine type. See NAT'L PARK SERV., *NEPA HANDBOOK* (2015).

129. *Bluewater Network v. Salazar*, 721 F. Supp. 2d 7 (D.D.C. 2010).

130. *Sierra Club v. Mainella*, 459 F. Supp. 2d 76 (D.D.C. 2006).

131. See *Bluewater*, 721 F. Supp. 2d at 30; *Sierra Club*, 459 F. Supp. 2d at 100.

law,¹³² but this trend clearly points up a need for retrospective analysis of past impact estimates and how they fared as events played out. Combined with an underlying legal duty as inherently dynamic and organic as the non-impairment mandate, NEPA's "hard look" burden only promises to grow more onerous and harder to distribute evenly unless NPS organizes with the express purpose of doing so.

Of course, none of this is to say that NPS is powerless to resist. In *WildEarth Guardians v. Nat'l Park Serv.*,¹³³ for example, an environmental group urged NPS to consider introducing a wolf population as a means of controlling the elk herd in Rocky Mountain National Park. Given the group pressing the claim and the nature of the legal argument—that it should be among the "reasonable" alternatives considered in an EIS accompanying park's management plan—NPS had every reason to assume the claim would be litigated.¹³⁴ NPS resisted throughout, devoting substantial attention to rejecting the option as impractical.¹³⁵ Ultimately, the reviewing court agreed, finding for NPS on both the NEPA and the non-impairment claims.¹³⁶

Such exceptions prove the rule, though. For NPS to find a "mature"¹³⁷ position on the risks of disruption and impairment, it will inevitably have to trade off preparing for such litigation against other factors.¹³⁸ And it should expect more lawsuits like the one in *WildEarth Guardians* as ecological drivers are better understood. Ideally, NPS would optimize both as to park-specific and broader scale challenges and

132. See Colburn, *Administering NEPA*, *supra* note 18 at 10296-97.

133. *WildEarth Guardians v. Nat'l Park Serv.*, 804 F. Supp. 2d 1150 (D. Colo. 2011).

134. *WildEarth Guardians* has a reputation for being litigious. See, e.g., Elizabeth Shogren, *The Campaign Against Coal*, HIGH COUNT. NEWS, Vol. 47, No. 19 at 13 (Nov. 9, 2015). The "rule of reason" governing the selection of NEPA alternatives is notoriously flexible and susceptible to interpretation. See William D. Rodgers, *A Hard Look at Vermont Yankee: Environmental Law Under Close Scrutiny*, 67 GEO. L.J. 699 (1979).

135. NPS convened a workshop of a dozen academic and agency experts on various topics, including the experience of the Yellowstone reintroduction, modeling the wolf/elk interactions in Rocky Mountain National Park, and the livestock impact of wolves in the region. *WildEarth Guardians*, 804 F. Supp. 2d at 1156. From the evidence gathered at that workshop, NPS rejected the option of reintroducing wolves and the court held that it did not do so arbitrarily. *Id.*

136. See *id.* at 1159-60.

137. See ADRIAN VERMEULE, *THE CONSTITUTION OF RISK* (2014) (developing a systematic critique of laws animated by different risk governance principles and staking out a "mature" position that optimizes both for precaution and uncertainty).

138. NATIONAL RESEARCH COUNCIL, *SCIENCE AND JUDGMENT IN RISK ASSESSMENT* 80-81 (1994) (finding that without principles establishing default options in risk assessment and when to depart from them, agencies are too prone to ad hoc risk selection and estimation); NATIONAL RESEARCH COUNCIL, *SCIENCE AND DECISIONS: ADVANCING RISK ASSESSMENT* 213-36 (2009) (advocating the adoption of "cumulative risk" assessment protocols to keep agencies from over-emphasizing single agent risks).

meet the expanding threat of impairment/NEPA litigation with investments aimed at tackling both. A key step to that end will be transitioning its NEPA compliance routines—whether in the form of EISs, EA/FONSI, or CATXs—into the subroutines of a larger, more integrated whole: the maintenance of the parks’ integrity in an age of constant disruption.¹³⁹ Section B explains that strategy.

B. The NEPA/Non-Impairment Nexus: An Information Economy for the Second Century

Transitioning to NEPA reviews that can comprise the subroutines of a larger, agency-wide routine by which the agency assesses its decisions in the light of experience and, from there, works to plan for an unprecedented—disrupted—future will demand some key investments and focused leadership. When the Department of Interior was urged to require the internet publication of its bureaus’ NEPA CATX, it refused, citing the administrative burdens of doing so.¹⁴⁰ NEPA’s ‘administrative’ burdens are, thus, hardly unknown at Interior or NPS.¹⁴¹ However, this is the kind of prioritization that NPS must revisit in the age of disruption.

The prevalent use of CATX determinations in place of EA/FONSI has generated real pressure for some kind of record substantiating the agency conclusions therein.¹⁴² NPS directs its personnel that documentation of a CATX is normally required whenever “some level of environmental impact” less than “significant adverse impacts” will

139. Cf. Colburn, *Addition by Subtraction*, *supra* note 107 at 163-67 (arguing that the more summary NEPA routines could and should become valuable tools to risk planners operating at broad scales if only they were reformed to be more explicit about the predictive methods employed, the decision-makers’ attitudes and inferences from necessarily inconclusive evidence, and why one NEPA compliance route was chosen over others).

140. See U.S. Dept. of the Interior, Final Rule: Implementation of the National Environmental Policy Act (NEPA) of 1969, 73 Fed. Reg. 61292, 61305 (2008).

141. Tellingly, in the same rulemaking the Interior Department further specified CEQ’s “incomplete or unavailable information” rule, 40 C.F.R. § 1502.22(b) (1970) (allowing that, if its costs are “exorbitant,” information can be deemed unavailable), stating that “[t]hese costs include monetary costs as well as . . . social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates.” 73 Fed. Reg. at 61316 (*reprinting* 43 C.F.R. § 46.125) (1969). Though the proposal raised many concerns, the Department finalized the rule unchanged. See *Id.* at 61299.

142. See *Wilderness Watch v. Mainella*, 375 F.3d 1085, 1094-95 (11th Cir. 2004); *California v. Norton*, 311 F.3d 1162, 1175 (9th Cir. 2002). CEQ guidance on CATX determinations affirms the approach taken in *California v. Norton* and *Wilderness Watch*. See Council on Env’tl. Quality, Final Guidance for Federal Departments and Agencies on Establishing, Applying, and Revising Categorical Exclusions Under the National Environmental Policy Act, 75 Fed. Reg. 75628, 75632 (2010) (urging agencies to consider documenting the application of individual CATXs).

result.¹⁴³ It directs that a “decision file” should ordinarily accompany *any* NEPA routine and that this file be compiled as records are identified.¹⁴⁴ These decision files are independent of, but often the basis for, the “administrative record” lodged with the court in the event of litigation.¹⁴⁵ But the labors of compiling such a file remain devoted to litigation risk if they are not made more useful, standardized and transparent. Digitizing them and making them available to a wider community of inquiry would be a big step toward the organization’s utilizing whatever “hard looks” are being taken at environmental consequences.¹⁴⁶ The systematic uptake and re-analysis of the same could go a long way toward the pursuit of NEPA’s most basic purpose: understanding the *cumulative* effects our “Federal Government” causes and turning it toward achieving a “productive harmony” between humanity and nature.¹⁴⁷ Today, NPS literally provides no guidance on the role of these decision files *after the decision*.¹⁴⁸

Interior’s departmental regulations state that bureaus including NPS “shall apply the procedural requirements of NEPA when . . . [t]he effects of the proposed action can be *meaningfully evaluated*.”¹⁴⁹ Yet, in addition to CEQ’s own incomplete and unavailable information contingency, the Department’s regulation also instructs its component bureaus to consider *all* costs of obtaining information, including “nonmonetized costs” such as “social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates.”¹⁵⁰ Contrast that clarification of the types of reasons *not* to gather and/or sort information about the environmental consequences of one’s actions with what NPS has actually done to facilitate the study of “cumulative”

143. NEPA HANDBOOK, *supra* note 128 at 33.

144. See NAT’L PARK SERV., *NEPA Handbook Supplemental Guidance: Compiling a Decision File for NEPA Reviews* (Sept. 2015), at 1, available at https://www.nps.gov/orgs/1812/upload/NPS_NEPAHandbook_Final.pdf (hereafter “*Supplemental Guidance*”).

145. See *id.* at 1.

146. See Colburn, *Addition by Subtraction*, *supra* note 107 at 164 (arguing that CATX determinations aggregated into a collection, searchable and available publicly, could offer benefits to a range of analyses, especially those concentrated on matching reasoning to outcomes after the fact); cf. CHRISTOPHER K. ANSELL, *PRAGMATIST DEMOCRACY: EVOLUTIONARY LEARNING AS PUBLIC PHILOSOPHY* (2011) (uniting threads from “problem-solving” traditions and contemporary positive political theory to describe a model in which public agencies are held accountable by their active engagement of the public and by building consent for public policy as the true government-on-the-ground).

147. 42 U.S.C. § 4331(a) (1970).

148. See *Supplemental Guidance*, *supra* note 144 at 1-3.

149. 43 C.F.R. § 46.100(b)(2) (1969) (citing 40 C.F.R. § 1508.23 (1970)).

150. 43 C.F.R. § 46.125 (1969).

impacts.¹⁵¹ Especially for the many NPS units in the massive Ninth and Tenth Circuits, more attention to cumulative impacts in NPS NEPA documents will inevitably follow from court orders.¹⁵² NPS directs its personnel to consider cumulative impacts in every EA/FONSI and EIS.¹⁵³ Adequately weighing cumulative impacts remains one of NEPA's most elusive tasks, though, one that challenges agencies to mount a concerted, long-term effort.¹⁵⁴ But what has NPS done to facilitate the consideration of cumulative impacts, least of all at scales where they can be weighed the most? Thus far, the answer is: not much. Of course, expert review committees face challenges of their own,¹⁵⁵ much as the decentralized components of a larger, uncoordinated whole do.¹⁵⁶ If NPS can optimize its unit/system impairment trade-offs through its NEPA compliance choices, it will be by selecting the worst threats to park system integrity overall, finding what can be done to mitigate those threats nationally and regionally, and using unit-level and regional operations to pursue those objectives. There is no single right track for this kind of problem-oriented use of NEPA. But many wrong tracks have

151. On NPS's anemic long-term monitoring programming, see Steven G. Fancy & Robert E. Bennetts, *Institutionalizing an Effective Long-term Monitoring Program in the U.S. National Park Service*, in DESIGN AND ANALYSIS OF LONG-TERM ECOLOGICAL MONITORING STUDIES 481 (Robert A. Gitzen *et al.* eds., 2012). When the Department of Interior adopted CEQ's guidance permitting the aggregation of past actions in any cumulative impact analysis in 2008, see 73 Fed. Reg. at 61298, it did so in part to leave individual bureaus the discretion needed to appraise cumulative impact within their own budgets and institutional constraints. See *id.* (leaving the option of more specific guidance being adopted into the Departmental Manual or individual bureau policies). But NPS's 2015 *NEPA Handbook* states only that "[a] cumulative impact analysis must consider the overall effects of the direct and indirect impacts of the proposed action, when added to impacts of past, present and reasonably foreseeable actions on a given resource." NEPA HANDBOOK, *supra* note 128 at 62. It further allows that "changes to the environment that are not attributable to specific actions, such as general urban encroachment or population growth, should be addressed as part of the affected environment." *Id.* at 63.

152. The Ninth and Tenth Circuits have made clear that they expect all "reasonably foreseeable" cumulative impacts to be weighed in EA/FONSIs. See, e.g., *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895-96 (9th Cir. 2002); *Davis v. Mineta*, 302 F.3d 1104, 1120-1122 (10th Cir. 2002).

153. See NEPA HANDBOOK, *supra* note 128 at 62-63.

154. See Colburn, *Risk in Discretion*, *supra* note 18 at 24-33, 46-48.

155. Cf. Bernard Grofman *et al.*, *Thirteen Theorems in Search of the Truth*, 15 THEORY & DECISION 261 (1983) (setting out over a dozen theories linking the accuracy of summary group judgments to the competence of the group's individual members); see also Christian List & Philip Pettit, *An Epistemic Free-Riding Problem?*, in KARL POPPER: CRITICAL APPRAISALS 128, 136-40 (Philip Catton & Graham Macdonald eds., 2004) (arguing that group members have a powerful incentive to "free ride" on others' information in any group of experts asked to reach a collective judgment and arguing that the incentive is correlated with group size).

156. See ANSELL, *supra* note 146 at 69-73 (rejecting the dualism of centralization versus decentralization and finding that effective organizations use internal connections and networks to bootstrap themselves into continuous improvement).

already been identified.

In the Yellowstone fires of 1988 when over a third of the park burned, some of it in high intensity, stand-replacing fires, NPS made a decision to allow “nature” to take its course. But it did so after it had suppressed nature—routine, relatively low intensity fires—for decades.¹⁵⁷ Making matters worse for NPS had been Smokey Bear’s long campaign to convince the American public of fire’s evils, leaving a dissonance that, in the aftermath, bewitched the agency.¹⁵⁸ Wyoming Senator Alan Simpson lashed out at NPS repeating inaccuracies and outright falsehoods about the fires—which did virtually no lasting harm to the park ecologically or as a tourism engine but did sour the congressional delegation on NPS for a time.¹⁵⁹ A better approach to fire and its management throughout Greater Yellowstone would be to collect the fundamentally different alternatives in fire-adapted ecosystem governance, to describe those alternatives for personnel to resolve into operational terms, and to present those alternatives to the public for its review and input.¹⁶⁰ The planning now required of NPS by statute¹⁶¹ should be channeled into this kind of problem-oriented use of programmatic (and site-focused) NEPA reviews which can simultaneously prompt and engage stakeholders, investigate cumulative human impacts on whole regions, and prepare the public for changes that lie ahead.¹⁶² Site-specific risks like a stand-replacing wildfire are

157. See John D. Varley & Paul Schullery, *Reality and Opportunity in the Yellowstone Fires of 1988*, in *THE GREATER YELLOWSTONE ECOSYSTEM: REDEFINING AMERICA’S WILDERNESS HERITAGE* 105, 115-119 (Robert B. Keiter & Mark S. Boyce eds., 1991).

158. *Id.* at 115-16 (finding that, despite a public outcry after the fires, the Greater Yellowstone region quickly recovered from the 1988 fire season but that NPS faced a crippling backlash).

159. See Dennis Glick & Ben Alexander, *Development by Default, Not Design: Yellowstone National Park and the Greater Yellowstone Ecosystem*, in *NATIONAL PARKS AND RURAL DEVELOPMENT: PRACTICE AND POLICY IN THE UNITED STATES* 181, 189-195 (Gary E. Machlis & Donald R. Field eds., 2000).

160. Compare ANSELL, *supra* note 146 at 75-81 (describing the elements of “responsive” organizations, dependent upon their citizens’ inputs for their own character and competence, which pursue the broadest goals like evolutionary learning by constantly reviewing program lines, budgets, procurement, and personnel management), with USDA FOREST SERV., FINAL SIERRA-NEVADA BIO-REGIONAL ASSESSMENT 31-52 (2013) (reviewing cumulative effects of fire suppression, resource extraction, wildland-urban interface development, drought, and fire reintroduction throughout Sierra-Nevada region in programmatic analysis supporting land management plan revisions for, among other goals, fire resilience in region’s three national forests).

161. See 54 U.S.C. §§ 100502-100505 (2014) (requiring unit-level land management and strategic plans).

162. A programmatic EIS that examined the cumulative effect of fire suppression and studied the reasonable alternatives to its reintroduction throughout Greater Yellowstone would have passed through U.S. EPA in its role as reviewer of essentially all EISs pursuant to Clean Air Act Section 309. EPA’s review guidance directs its personnel to “determine” whether the NEPA analysis has

certainly worth planning for, but with agency resources at historically low levels and more units to administer with every Presidential Administration that goes by, it is the larger, more integrative exercises in risk planning to which true leadership must attend.¹⁶³

Some shifts, like assisted migration/transplantation¹⁶⁴ and fire management,¹⁶⁵ are highly salient politically. They quickly draw out engaged stakeholders and the information that flows from an active public dialogue. But many more issues lack ready solutions grounded in science or even careful modeling and are not assured any public salience to change that. And in real terms, resources have been dwindling steadily for decades.¹⁶⁶ This is where a “recursive” organization that actively shapes its personnel and routines around the organizing challenges of the world-at-large can make the biggest difference.¹⁶⁷ NEPA routines intentionally scaled to fit both the most important cumulative environmental impacts and NPS decision-makers’ practical needs should be entitled to judicial deference across all the pertinent

identified the resources and ecosystems components cumulatively impacted” and whether “these effects have been *historically significant* for this resource.” U.S. ENVIRONMENTAL PROTECTION AGENCY, CONSIDERATION OF CUMULATIVE IMPACTS IN EPA REVIEW OF NEPA DOCUMENTS 5 (May 1999) (EPA 315-R-99-002) (emphasis added). It goes on to direct that EPA’s reviewers “should determine whether the NEPA analysis has used geographic and time boundaries large enough to include all potentially significant effects on the resources of concern.” *Id.* at 8. Finally, EPA instructs that “current condition typically may not adequately represent how actions have impacted resources in the past and present or how resources might respond to future impacts. Designating existing environmental conditions as a benchmark may focus the environmental impact assessment too narrowly . . .” *Id.* at 14. Although these are clearly very flexible—and subjective—directions EPA at least has here instructed its personnel to take cumulative impact analysis, separate from the designation of “baseline” conditions, very seriously.

163. NPS must create a “[g]eneral management plan for the preservation and use” of every NPS unit, 54 U.S.C. § 100502 (2014), and its 2006 Management Policies assure that planning is to be “interdisciplinary and tiered.” 2006 MANAGEMENT POLICIES, *supra* note 19 at § 2.1.2. Indeed, NPS policies maintain that park planning includes no fewer than *five* different levels of plans, not including the “foundation statement” for each unit’s planning outputs, *see id.* at §§ 2.2-2.3, yet remains wholly noncommittal as to when or where different kinds of NEPA reviews are best prepared.

164. *See* Jason S. MacLachlan *et al.*, *A Framework for Debate of Assisted Migration in an Era of Climate Change*, 21 CON. BIO. 297, 297-98 (2007).

165. *See* A.L. Westerling *et al.*, *Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity*, 313 SCIENCE 940, 943 (2006).

166. *See, e.g.*, Emily Yehle, *Park Service Grapples with “Frustrated” Workforce*, GREENWIRE (May 31, 2016), *available at* www.eenews.net/greenwire (“Almost \$12 billion in deferred maintenance is spread throughout the Park Service’s 411 units, leaving a growing to-do list that grinds down once-proud employees.”).

167. *Cf.* ANSELL, *supra* note 146 at 104-05 (defining *recursiveness* as a continuous and interlocking cycle of perspectives and a recursive organization as one that resolves the tension between centralization and decentralization by circularly integrating its different hierarchies and feeding real-time information throughout).

standards of review.¹⁶⁸ But they can also unite stakeholders behind park management decisions. Additionally, NPS units have had the occasional success in using a NEPA routine to bring together diverse stakeholders behind dramatic changes in management priorities.¹⁶⁹

What is needed for the agency's second century is guidance that seizes the many interwoven threads of the problem and spins them into a coherent tapestry. Broad-scale re-analysis of decision files from non-impairment/NEPA findings is one vital step. Better distributing the informational burdens of non-impairment/NEPA work as between broad and small scale decision-making is another.¹⁷⁰ Careful quantitative inventorying of cumulative effects may be a third.¹⁷¹ Is there any broader theme, though?

To business strategists, *disruptive innovation's* key facets are not technological, they are economic.¹⁷² Disruptive innovations are possible in two places that most incumbents ignore. First, what are known as *low-end footholds*. Where incumbents typically try to provide ever-improving products and services, they often ignore less-demanding customers and overshoot the latter's performance requirements. That opens the door to someone looking to supply these low-end customers with a "good enough" product. Second are *new-market footholds*. Here, disrupters create a market where none existed by turning non-consumers into consumers.¹⁷³ In neither are the upstarts outcompeting the incumbent (whose advantages are too great). They are learning, taking clues from successful markets and creating another. This could be a lesson to NPS as it looks for ways to answer the calls for "accountability" from NEPA plaintiffs and/or the public, to knit non-impairment together with the ecological sciences, to sustain local communities that have grown dependent on access to the parks, and to

168. Cf. *League of Wilderness Defs. v. Allen*, 615 F.3d 1122, 1135-38 (9th Cir. Or. 2010) (deferring to Service's use of cumulative impact analysis in a programmatic EIS from which it would tier smaller, site-specific actions still to be planned); *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895-97 (9th Cir. 2002) (overturning EA/FONSI prepared in connection with timber sales for failure to aggregate the cumulative effect of the logging projects, "even though distantly spaced throughout the forest").

169. See, e.g., ENVTL. LAW INST., *NEPA SUCCESS STORIES: CELEBRATING 40 YEARS OF TRANSPARENCY AND OPEN GOVERNMENT* 23-24 (2010) (recounting Hells Canyon National Recreation Area's use of EIS process to forge agreement between grazing, tribal, recreationist and preservationist stakeholders in shift toward "natural ecosystem" approach to region).

170. See *supra* notes 129-36 and accompanying text.

171. See *supra* notes 106-28 and accompanying text.

172. See Clayton M. Christensen *et al.*, *What Is Disruptive Innovation?* HARV. BUS. REV. 44 (Dec. 2015).

173. See *id.* at 45-47.

do it all with a diminishing resource base. Disruptive innovation by NPS would anticipate all of these calls upon its resources, anticipate the most likely threats to park unit and system integrity in our climate-disrupted future, and start assembling the teams of people to address them intentionally and with focus. That sort of learning-by-doing is about the only option NPS has left.

An information economist at NPS looking ahead to its second century would conclude that the information it needs to do those jobs is too costly and too scarce to be obtained routinely (at least with current technology) and that, in any event, actual markets have a way of working even without people knowing what they know or being able to communicate it. Real markets are thought to work because prices act as a proxy for what buyers and sellers really want. And although NPS may have no such proxy for solving its problems, it does have the power to create buffers for itself and avoid wasting resources pursuing information it cannot obtain. As in the *2006 Management Policies*' creation of "unacceptable impacts,"¹⁷⁴ NPS can better structure its decision-making to take full advantage of proof burdens, the default settings in cases where proof burdens remain unmet, and the affected public's incentives to produce needed information bearing on NPS judgments. Creating prohibitory access norms that apply until adequate proof permits a finding of acceptable impacts is but one example. The legal imagination could easily derive others.¹⁷⁵

V. CONCLUSION

In an age of disruption, maintaining fragments of our natural world and national heritage undiminished for future generations is becoming a devilishly complex task. NEPA could play a vital role in steering the cultural and institutional inertia of NPS while at the same time addressing two challenging statutory mandates. Given their natures, these two mandates promise to continue intertwining with each other and producing yet unknown legal duties for NPS. Fulfilling them will require NPS to get ahead of the informational and organizational challenges they bring, which may mean thinking like the disruptive innovator. Almost every disruptive innovation begins as a small-scale experiment, and therefore no one should expect NPS to accomplish the agenda described

174. See *supra* notes 23-25 and accompanying text.

175. Our legal tradition's basic response to uncertainty and information costs has taken this form for a very long time. See, e.g., H.L.A. Hart, *Legal Powers*, in *ESSAYS ON BENTHAM: JURISPRUDENCE AND POLITICAL THEORY* 194 (H.L.A. Hart ed., 1982).

here overnight. But NPS management must take the lead in spurring and supporting more experiments. If they do not, the informational and organizational burdens swelling behind the non-impairment/NEPA trends promise to fill its second century with distress.