
To Achieve Biodiversity Goals, the New Forest Service Planning Rule Needs Effective Mandates for Best Available Science and Adaptive Management

*Nell Green Nylén**

*The U.S. Forest Service and other federal agencies often face tough choices about how to reconcile competing congressional mandates for multiple use and environmental protection of public lands. The balance they achieve will determine the long-term health of many of our nation's ecosystems and the sustainability of the invaluable services they perform. Providing agency scientists and managers with the flexibility and systemic incentives to intelligently address the questions they face is therefore crucial. As the Forest Service actively reworks its planning rule, past failures provide valuable lessons about where improvements to biodiversity protections are needed and what forms they should take. The 2010 decision by the Ninth Circuit in *Native Ecosystems Council v. Tidwell* highlights some of the problems inherent in the current system, including a management indicator species mandate that lacks scientific support, front-loaded environmental analysis which fails to facilitate learning and perpetuates unsuccessful practices, and a lack of transparency in Forest Service decision making that can render the National Forest Management Act's biodiversity mandate judicially unenforceable. The new planning rule should address these deficiencies with strong requirements for native species viability, use of the best available science (including full disclosure of uncertainties), and a truly adaptive management framework*

Copyright © 2011 Regents of the University of California.

* J.D. Candidate, University of California, Berkeley, School of Law (Boalt Hall), 2012; Ph.D., Geological and Environmental Sciences, Stanford University, 2005. Professor Eric Biber, Katy Lum, Ryan Kelly, and my husband, David Zinniker, deserve special thanks for providing invaluable feedback and guidance throughout the research, writing, and editing process. Additionally, thanks go out to Professor Robert Infelise and the other participants in Boalt's Environmental Law Writing Seminar for their useful feedback and to Tara Garcia, Alex Arensberg, Danny Kramer, Kristi Black, and other members of *Ecology Law Quarterly* for their hard work editing and preparing this Note for publication. Finally, I want to thank my father, Brady Green, for sharing the insights he developed over his career as a Forest Service biologist.

based on ongoing monitoring, frequent reevaluation, and changed practices when failures occur. While the draft rule issued in February 2011 takes tentative steps in this direction, it does not achieve the meaningful, enforceable changes needed.

Introduction.....	243
I. Context for a Case Study: Forest Service Management Effects on Sagebrush Ecosystems and Sage Grouse.....	247
II. <i>Native Ecosystems Council v. Tidwell</i> Highlights Problems with the Planning Rule	252
A. Statutory and Regulatory Background.....	253
1. The National Forest Management Act.....	253
2. The National Environmental Policy Act.....	255
3. The Administrative Procedure Act and Judicial Review	256
B. Facts and Procedural Summary	257
C. The Decision	260
1. Proxy-on-Proxy Habitat Monitoring is Inappropriate Because Habitat Presence Fails to Ensure Species Viability.....	260
2. The EA and SIR Were Inconsistent with the Scientific Documents They Purportedly Relied Upon.....	261
3. The Forest Service’s Methodology Violated NFMA and the BDNF Forest Plan and Rendered the EA Deficient under NEPA.....	263
D. <i>NEC</i> and Circuit Precedent	264
III. Current Forest Service Planning and Management	266
A. The Contentious History of the Forest Service Planning Rule	266
B. Limitations of the 1982 Planning Rule’s Biodiversity Requirements	270
1. Inappropriate MIS Selection Defeats Conservation Goals	270
2. Management Failures Do Not Trigger Changed Practices	274
3. Too Much Judicial Deference Leaves the MIS Mandate Largely Unenforceable	275
IV. A New Framework: Changing Forest Service Planning and Practice to Achieve Biodiversity Goals.....	279
A. A Best Available Science Mandate.....	280
B. An Adaptive Management Mandate	283
Conclusion	286
Addendum: Response to the Draft Planning Rule	288
A. The Draft Rule’s Treatment of NFMA’s Biodiversity Mandate..	289
B. The Draft Rule’s Take on Best Available Science.....	289
C. The Draft Rule’s Formulation of Adaptive Management	290
D. The Draft Rule’s Impact on Transparency and Accountability ...	292

INTRODUCTION

Because federal public lands belong to all U.S. citizens, we have a collective interest in ensuring they are sustainably managed.¹ The Forest Service, Bureau of Land Management (BLM), and other government agencies hold almost one-third² of the land in the United States in trust³ for the benefit of current and future generations. At its core, our system of public lands management is a balancing act involving competing statutory mandates for economic use, recreation, sustainability, and environmental protection.⁴ The Forest Service motto of “[c]aring for the land and serving people”—prominently displayed in the title bar of the agency’s website⁵—acknowledges this tension, but glosses over the real-world difficulties of reconciling the National Forest Management Act’s (NFMA) directives for multiple use and maintenance of biodiversity. The specifics of how these mandates are balanced during implementation are crucial, especially in the western United States, where over 90 percent of federal holdings are concentrated.⁶

Federal land management decisions have major repercussions for the health and diversity of regional ecosystems and for the sustainability of economic and recreational uses of public lands. Therefore, NFMA demands that the Forest Service “provide for the diversity of plant and animal communities.”⁷ This biodiversity mandate is consistent with the recognition that biodiversity—“the variability among living organisms . . . and the

1. See Winifred B. Kessler et al., *New Perspectives for Sustainable Natural Resource Management*, 2 *ECOLOGICAL APPLICATIONS* 221, 222 (1992) (stating that “[p]eople . . . [increasingly] understand the need to sustain healthy, diverse, and productive wildlands, not only for their resource values, but also as life-support systems”).

2. See Carol Hardy Vincent, *Introduction to FEDERAL LAND MANAGEMENT AGENCIES* 1, 2 (Pamela D. Baldwin ed., 2005). Most federal land (96 percent) is administered by four agencies: the Forest Service (in the Department of Agriculture) and the BLM, Fish and Wildlife Service, and National Park Service (in the Department of the Interior). *Id.* The Forest Service manages almost 8 percent (193 million acres) of the land area of the United States, and the BLM administers even more (245 million surface acres). See *Welcome to the USDA Forest Service*, U.S. FOREST SERV., <http://www.fs.fed.us> (last visited Mar. 4, 2011); *About the BLM*, U.S. BUREAU OF LAND MGMT., http://www.blm.gov/wo/st/en/info/About_BLM.html (last visited Mar. 4, 2011). Most of this territory falls within the western United States.

3. While state public trust doctrine is a creature of common law that tends to restrict state action, federal public trust doctrine appears to flow primarily from statutory obligation and is generally invoked to enhance federal power, rather than to restrict it. See *United States v. Beebe*, 127 U.S. 338, 342 (1888) (“The [Federal] Government is charged with the duty and clothed with the power to protect” public lands held “as part of its trust.”); Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 *J. LAND RESOURCES & ENVTL. L.* 173, 174–75 (2004).

4. See, e.g., Vincent, *supra* note 2, at 5.

5. E.g., *Office of the Chief*, U.S. FOREST SERV., <http://www.fs.fed.us/aboutus/chief/> (last visited Mar. 4, 2011).

6. See Vincent, *supra* note 2, at 3–4 tbl.1.

7. National Forest Management Act, 16 U.S.C. § 1604(g)(3)(B) (2006).

ecological complexes of which they are part⁸—is integral to the ability of ecosystems to provide the invaluable provisions (such as food, wood, fiber, and fuel) and services (such as breathable air, clean water, flood protection, disease prevention, and climate regulation) we depend on for survival.⁹ Indeed, Congress intended NFMA to clarify the need to protect and improve “wildlife and fish habitats, water, air, esthetics, [and] wilderness” as part of multiple-use- and sustained-yield-centered forest management.¹⁰

The Forest Service, while best known for its forestry practices,¹¹ has long allowed grazing of privately owned cattle on “suitable” national forest lands, including open forests, grassland, and most Forest Service-administered sagebrush habitat.¹² The Organic Administration Act of 1897¹³ codified this use, and additional legislation has reaffirmed it in intervening years.¹⁴ Today grazing occurs on approximately one-half of National Forest land¹⁵ and two-thirds of BLM land.¹⁶ Since the 1970s, an increasing interest in recreation and

8. MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: BIODIVERSITY SYNTHESIS 18 (2005), available at <http://www.maweb.org/en/Reports.aspx>; see also James A. Siemans, A “Hard Look” at Biodiversity and the National Forest Management Act, 6 TUL. ENVTL. L.J. 157, 159–160 (1992–93).

9. See, e.g., MILLENNIUM ECOSYSTEM ASSESSMENT, *supra* note 8, at 18–19, 30.

10. S. REP. NO. 94-893, at 10 (1976) [hereinafter NFMA REPORT]. The report concluded:

It is, therefore, time for Congress to act in order to insure that the resources found in our National Forest can be used and enjoyed by the American public, now and in the future. Only by managing National Forest System lands in a manner aimed at maximizing all the renewable resources, air, soil, and water can this objective be achieved. S. 3091 [NFMA] will establish the mechanism for achieving this objective.

Id. at 11.

11. These include, for example, permitting and regulating logging in national forests.

12. Note the significant overlap between the distribution of federal grazing allotments, *National Forest and National Grassland Grazing Allotments Map*, U.S. BUREAU OF LAND MGMT., <http://www.landsinfo.org/sierraclub/grazing/allotments2.tif> (last visited Jan. 23, 2011), and the distribution of the sagebrush biome, U.S. GEOLOGICAL SURVEY, FACT SHEET: PROVIDING SCIENTIFIC UNDERSTANDING OF THE SAGEBRUSH BIOME 3 fig.A (2005), available at <http://fresc.usgs.gov/products/fs/fs2005-3091.pdf>.

13. See Organic Administration Act of 1897, ch. 2, § 1, 30 Stat. 11, 34–36 (codified as amended at 16 U.S.C. §§ 473–482, 551 (2006)).

14. See, e.g., Taylor Grazing Act of 1934, ch. 865, 48 Stat. 1269 (codified as amended at 43 U.S.C. §§ 315–315o-1 (2006)); Multiple-Use Sustained-Yield Act of 1960, Pub. L. No. 86-517, 74 Stat. 215 (codified as amended at 16 U.S.C. §§ 528–531 (2006)); Forest and Rangeland Renewable Resources Planning Act, Pub. L. No. 93-378, 88 Stat. 476 (1974) (codified as amended at 16 U.S.C. §§ 1600–1614 (2006)); Federal Land Policy and Management Act of 1976, Pub. L. 94-579, 90 Stat. 2743 (codified as amended at 43 U.S.C. §§ 1701–1782 (2006)); National Forest Management Act of 1976, Pub. L. 94-588, 90 Stat. 2949 (codified at 16 U.S.C. §§ 1600–1614 (2006)).

15. See, e.g., *Forest Service Grazing Program: Hearing Before the S. Subcomm. on Public Lands and Forests, Committee on Energy and Natural Resources*, 108th Cong. 32 (2004) (statement of Tom Thompson, Deputy Chief, National Forest Systems, Forest Service) [hereinafter *Thompson Statement*], available at <http://www.fs.fed.us/congress/108/senate/oversight/thompson/062304.html>.

16. See *Grazing*, U.S. BUREAU OF LAND MGMT., <http://www.blm.gov/wo/st/en/prog/grazing.html> (last visited Feb. 25, 2011).

conservation has made grazing on public lands a contentious national issue.¹⁷ Environmental critics often point to the failure of livestock grazing fees to cover the costs of permitting, let alone the costs of remediating grazing-related environmental damage.¹⁸ They voice their concerns through the media, academic journals, public comment on proposed agency actions, appeals of final agency actions, and, sometimes, lawsuits.¹⁹

Critics of various viewpoints have directed their complaints not just to specific agency land use decisions, but also to the planning framework that guides them. For example, following three unsuccessful attempts in 2000, 2005, and 2008,²⁰ the Forest Service is currently enmeshed in the process of trying to revise its planning regulations.²¹ It must struggle with the tension inherent in creating a planning structure that promotes biodiversity (by mandating protection and restoration of at-risk species and ecosystems) yet provides managers with the flexibility to intelligently address the array of factual situations they will encounter in the field.²² Highlighting the difficulty

17. See, e.g., WESTERN PUBLIC LANDS AND ENVIRONMENTAL POLITICS 1–2 (Charles Davis ed., 1997), available at <http://www.questia.com/read/89731093>; see also Floyd Reed, David Bradford & Justin McConkey, *A Century of Managing Rangelands on National Forests*, 27 RANGELANDS 45, 46–47 (2005).

18. See, e.g., KARYN MOSKOWITZ & CHUCK ROMANIELLO, ASSESSING THE FULL COST OF THE FEDERAL GRAZING PROGRAM 1 (Oct. 2002), available at http://www.biologicaldiversity.org/publications/papers/assessing_the_full_cost.pdf. These concerns are confirmed by government reports. See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, REPORT TO CONGRESSIONAL REQUESTERS, LIVESTOCK GRAZING: FEDERAL EXPENDITURES AND RECEIPTS VARY, DEPENDING ON THE AGENCY AND THE PURPOSE OF THE FEE CHARGED, HIGHLIGHTS (2005), available at <http://www.gao.gov/new.items/d05869.pdf> (finding that BLM and the Forest Service charge significantly below-market rates that are not intended to, and do not come close to, recovering their grazing program expenditures).

19. See, e.g., Thomas L. Fleischner, *Ecological Costs of Livestock Grazing in Western North America*, 8 CONSERVATION BIOLOGY 629 (1994); Reed F. Noss, *Cows and Conservation Biology*, 8 CONSERVATION BIOLOGY 613, 615–16 (1994) (advocating the involvement of scientists in determining rangeland policy because it “is too important to be left to the policy makers, most of whom know and care little about biodiversity” and acknowledging that “the goal of restoring healthy rangeland ecosystems is value-laden, but figuring out the best way to accomplish that goal depends on the highest professional standards” of field research, modeling, developing and “testing restoration strategies,” synthesizing information and educating policy-makers and the public, and supporting land use reforms that harmonize with the best available science); Christopher Christie, *Environmental Issues: Sage Grouse; Grazing Fee*, BAKER CNTY. BLOG, <http://bakercountyblog.blogspot.com/2010/02/environmental-issues-healthcare.html> (last visited Oct. 31, 2010); *Livestock Grazing and the National Environmental Policy Act*, SIERRA CLUB, <http://www.sierraclub.org/grazing/nepa/> (last visited Oct. 31, 2010) (describing avenues for public involvement in the environmental review process).

20. All three were derailed by “lawsuits and negative feedback.” *History of Forest Planning*, U.S. FOREST SERV., <http://www.fs.usda.gov/planningrule> (last visited Feb. 4, 2011) (follow “History of Forest Planning” hyperlink).

21. See *The Forest Planning Rule*, U.S. FOREST SERV., <http://www.fs.usda.gov/planningrule> (last visited Dec. 18, 2010).

22. This need to balance structure with discretion is an across-the-board concern in administrative law. See, e.g., JOHN D. DELEO, JR., ADMINISTRATIVE LAW 21 (2008) (“The proper level of discretion is crucial to an agency functioning properly. If too little discretion is delegated, then the agency will lack the flexibility it needs to solve the problem. On the other hand, if too much discretion is given, the

of this task, the existing planning regulations' biodiversity protections (like most regulations) have been decried as both too restrictive and too lax.²³ *Native Ecosystems Council v. Tidwell (NEC)*,²⁴ illustrates both critiques and chronicles the Ninth Circuit's attempts to reconcile them, demonstrating the need for a new approach to addressing environmental concerns in public land management.

I use the *NEC* case—which centers on the adequacy of environmental review for updates to grazing allotment management plans in southwestern Montana sagebrush habitat—as a jumping-off point for exploring why the Forest Service planning rule needs a significant makeover. One area that needs particular attention is the management indicator species (MIS) concept, a requirement that Forest Service units use biological yardsticks for management decisions.²⁵ The way MIS selection and use are currently structured frequently fails to achieve Congress's biodiversity goals and can place Forest Service managers in untenable situations where they are unable to adhere either to the letter of the law or to its purpose. For example, faced with the planning rule requirement to monitor the population of sage grouse, the sole MIS selected for sagebrush habitat in the 3.35 million acre Beaverhead-Deerlodge National Forest²⁶—even though it was absent from the *NEC* project area—the Forest Service chose to monitor sagebrush habitat instead.²⁷ The Ninth Circuit found habitat to be an inadequate proxy for sage grouse population, because the grouse was absent even though sagebrush abounded.²⁸

MIS monitoring data theoretically provides an indication of a management decision's effects on the ecosystem it is associated with.²⁹ However, the planning rule gives little guidance about how to choose MIS or how many

agency has little guidance on how to properly implement the intent of the legislature when it charged the agency to solve the problem.”)

23. Compare Raymond A. Just & Brett M. Hager, *Predator MIS: A Mechanism for Ecosystem Management Under the FCMA*, 9 TUL. ENVTL. L.J. 385, 398 (1995–96) (“The U.S. Forest Service is given such broad discretion with regards to MIS selection that there really are no criteria to insure appropriate and meaningful selection of management indicator species.”), with Comment Letter from Bill Crapser, Chair, Council of W. State Foresters to U.S. Forest Serv. Ecosystem Mgmt. Coordination Staff 1–2 (Oct. 22, 2007) (on file with author), available at http://www.wflccenter.org/news_pdf/266_pdf.pdf (stating that “[o]verly-prescriptive and arbitrary standards for field-level projects [like MIS] do not support adaptive management in theory or practice”).

24. *Native Ecosystems Council v. Tidwell (NEC)*, 599 F.3d 926 (9th Cir. 2010).

25. See 36 C.F.R. § 219.19(a)(1) (1999) (stating that MIS “shall be selected because their population changes are believed to indicate the effects of management activities” on wildlife populations). MIS are intended as proxies for species viability in their particular habitat type, so that “maintenance and improvement of habitat for management indicator species” helps “maintain viable populations of existing . . . species in the planning area.” *Id.* § 219.19.

26. See *Beaverhead-Deerlodge National Forest Homepage*, U.S. FOREST SERV., <http://www.fs.usda.gov/bdnf> (last visited Jan. 25, 2011).

27. See *NEC*, 599 F.3d at 933.

28. See *id.*

29. See 36 C.F.R. § 219.19(a)(6) (1999) (“Population trends of the management indicator species will be monitored and relationships to habitat changes determined.”).

should be selected, and it contains no mandate for management failures to trigger reevaluation and changed practices. Because courts defer to agencies in the absence of clear requirements, this can result in inappropriate MIS selections and management choices that are shielded from judicial review.

In Part I, I discuss sagebrush habitat and examine the effects of past management activities on the wildlife it supports. In Part II, I summarize the law relevant to disposition of the *NEC* case, the case itself, and how it fits into precedent. In Part III, I discuss the history of the Forest Service planning rule and the limitations of its biodiversity requirement. Finally, in Part IV, I present my suggestions for improving Forest Service planning and management by revising the Forest Service planning rule.

I conclude that the new planning rule currently being developed needs to empower management decisions that maintain and restore sustainable ecosystems and biodiversity. The requirement to select and monitor MIS should give way to requirements for using the best available science and an adaptive management system that forces practices to change when ongoing monitoring shows management has failed to maintain biodiversity and native species viability. In addition to improving management outcomes, these mandates will enhance the transparency of the decision-making process, facilitating more robust public participation and providing a basis for more meaningful judicial review. Notably, the draft planning rule—released as this Note went to press³⁰—invokes the concepts of best available science and adaptive management. However, it fails to meaningfully implement them. In the Addendum, I analyze the draft rule’s biodiversity provisions and suggest changes aimed at creating more effective and enforceable mandates that better serve NFMA’s biodiversity goals.

I. CONTEXT FOR A CASE STUDY: FOREST SERVICE MANAGEMENT EFFECTS ON SAGEBRUSH ECOSYSTEMS AND SAGE GROUSE

Because approximately 70 percent of all sagebrush habitat in the United States occurs on public lands,³¹ federal land use decisions can significantly influence the sustainability, health, and biological diversity of this important and geographically extensive³² habitat type. Livestock grazing on National Forest System and BLM lands spans a variety of ecosystem types, including

30. See National Forest System Land Management Planning, 76 Fed. Reg. 8480 (proposed Feb. 14, 2011) (to be codified at 36 C.F.R. pt. 219) [hereinafter *Proposed Rule*].

31. See U.S. GEOLOGICAL SURVEY, FACT SHEET: PROVIDING SCIENTIFIC UNDERSTANDING OF THE SAGEBRUSH BIOME (2005) [hereinafter FACT SHEET], available at <http://fresc.usgs.gov/products/fs/fs2005-3091.pdf>.

32. Sagebrush ecosystems cover 120 million acres of the North American continent, mostly in the United States, but also extending across the border into Canada. See *id.*

most regions dominated by sagebrush,³³ and can have significant impacts on sagebrush habitat quality and extent.³⁴

Unfortunately, the current outlook for these ecosystems is bleak. Sagebrush habitats throughout North America are stressed by human activities that exploit natural resources, physically restructure the landscape, introduce non-native species, and pollute the environment.³⁵ These activities include agriculture, widespread livestock grazing, oil and natural gas development, mining, and urbanization.³⁶ At risk are hundreds of species of plants and animals that depend upon sagebrush ecosystems for at least part of their life cycles, including a large percentage of the “endemic and imperiled species” within the western United States.³⁷

For example, management issues in sagebrush habitat have reached a state of crisis in Montana where the greater sage grouse,³⁸ a sagebrush obligate³⁹ bird species, has been listed as a “sensitive” species by the Forest Service.⁴⁰ In March 2010, the U.S. Fish and Wildlife Service denied the species federal Endangered Species Act (ESA) listing, deciding that listing was “warranted but precluded” due to a glut of “higher priority species.”⁴¹ The greater sage grouse therefore joins a waitlist of more than 250 other candidate species that warrant protection but must wait for it.⁴² Sage grouse abundance and distribution have

33. See, e.g., *Thompson Statement*, *supra* note 15, at 32; U.S. BUREAU OF LAND MGMT., *supra* note 16. Grazing occurs in “wilderness areas, wildlife refuges, national forests, and even some national parks.” Fleischer, *supra* note 19, at 629–30.

34. See, e.g., J.W. Connelly et al., *Setting the Record Straight: A Response to “Sage-Grouse at the Crossroads,”* 29 RANGELANDS 35, 36–37 (2007).

35. See JOHN W. CONNELLY ET AL., W. ASS’N OF FISH AND WILDLIFE AGENCIES, CONSERVATION ASSESSMENT OF GREATER SAGE GROUSE AND SAGEBRUSH HABITATS 13-10 (2004) [hereinafter CONSERVATION ASSESSMENT], available at <http://gf.state.wy.us/downloads/pdf/GreaterSGConservationAssessment.pdf>; see also FACT SHEET, *supra* note 31, at 1.

36. See FACT SHEET, *supra* note 31, at 1.

37. CONSERVATION ASSESSMENT, *supra* note 35, at 1–2.

38. See U.S. FOREST SERV. REGION 1, SENSITIVE SPECIES LIST 1 (2005), available at <http://www.fs.fed.us/r1/projects/wwfrp/sens-species/Sens%20Spp%20List%20Wildlife.pdf>.

39. Sagebrush obligate species require sagebrush habitat to survive.

40. Sensitive species are

plant and animal species identified by a regional forester for which population viability is a concern, as evidenced by . . . [s]ignificant current or predicted downward trends in population numbers or density . . . [or] [s]ignificant current or predicted downward trends in habitat capability that would reduce a species’ existing distribution.

Forest Service Manual, FSM 2670.5 (2005), available at <http://www.fs.fed.us/im/directives/fsm/2600/2670-2671.doc>; see also *Inland Empire Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 759 (9th Cir. 1996) (describing sensitive species as “requiring additional attention” under the Forest Service planning rule’s viability requirement, 36 C.F.R. § 219.19 (1999)). It is unclear what impact the sensitive species designation has in practice.

41. Endangered and Threatened Wildlife and Plants: 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered, 75 Fed. Reg. 13910 (Mar. 23, 2010).

42. See Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened: Annual Notice of Findings on Resubmitted

dramatically declined in the face of human management practices, resulting in extirpation of the species from nearly half of its former range.⁴³ Because population monitoring did not begin in earnest until at least the 1950s—long after most distributional changes had already occurred⁴⁴—it is difficult to determine how far sage grouse numbers have plummeted. However, the current range-wide population may be less than 1 percent of historic levels,⁴⁵ and there are two to three times fewer sage grouse now than there were in the early 1970s.⁴⁶

In Montana alone, statewide sage grouse populations are only about half what they were in the early 1970s.⁴⁷ Researchers have linked these population declines to widespread habitat loss and habitat disturbance,⁴⁸ which “may be too large, too frequent, and too intense” for sagebrush ecosystems to handle.⁴⁹ While natural disturbance⁵⁰ has long been a fact of life in sagebrush ecosystems, the high frequency, long duration, and large magnitude of many human-caused disturbances leaves these ecosystems without the time and space they need to recover.⁵¹

In the area at issue in the *NEC* case—the Antelope Basin region of the Beaverhead-Deerlodge National Forest (BDNF) in southwestern Montana—sage grouse populations have declined significantly in concert with intense

Petitions: Annual Description of Progress on Listing Actions, 75 Fed. Reg. 69222 (Nov. 10, 2010) (showing 251 species as candidates for listing); *see also* *Endangered Species Candidate Notice of Review*, U.S. FISH & WILDLIFE SERV., <http://www.fws.gov/endangered/what-we-do/cnor.html> (last visited Jan. 23, 2011).

43. *See* CONSERVATION ASSESSMENT, *supra* note 35, at 13-3.

44. *Id.* at 13-3–13-4.

45. Assuming a historic range-wide population of 16 million and a modern population of 100 thousand. *See* *Endangered and Threatened Wildlife and Plants: 90-day Finding and Commencement of Status Review for a Petition to List the Western Sage Grouse in Washington as Threatened or Endangered*, 65 Fed. Reg. 51,578, 51,580 (Aug. 24, 2000). The most conservative estimate, assuming a historic population of 1.6 million and a modern population of 500 thousand, suggests current range-wide numbers are 69 percent below historic levels. *See id.*

46. *See* CONSERVATION ASSESSMENT, *supra* note 35, at 6-71.

47. *See id.* at 6-34 (analyzing population trends during the 1965 to 2003 period). Note that the inconsistency of monitoring efforts and short period of record hampers data interpretation. *See id.* at 6-33, 6-64. The recent up-tick in monitoring efforts may be responsible for what appears to be a slight increase in state-wide populations during the late 1990s and early 2000s. *See id.* at 6-33, 6-36, 6-64–6-65.

48. *See, e.g.,* Connelly et al., *supra* note 34, at 36–37 (reporting that “sage-grouse avoid nesting in sparse stands of sagebrush”; “nest success is largely influenced by herbaceous understory”; “disturbed areas often support stands of exotic forbs and grasses” instead of native grasses and forbs; and “unlike most areas in sagebrush steppe with a long history of grazing, . . . [a] study area (with much less grazing) supported an abundance of perennial grasses and a high diversity of forbs”).

49. CONSERVATION ASSESSMENT, *supra* note 35, at 13-5.

50. Due to fire, precipitation changes, and herbivory by native species. *See id.* at 13-6.

51. *See id.* at 13-6–13-7.

Forest Service management activities.⁵² During the 1960s and 1970s, the Forest Service maintained “a very aggressive program” of chemical sagebrush eradication to create new grazing pasture in the area.⁵³ Much of the sagebrush habitat was treated with herbicide (often multiple times), with a sagebrush kill rate exceeding 90 percent.⁵⁴ Subsequently, the Forest Service began a burning program to combat sagebrush regrowth that eventually occurred in chemically treated areas.⁵⁵ Both herbicide treatments and controlled burns can significantly impact sage grouse populations.⁵⁶

Even long after sagebrush acreage rebounded post-treatment, sage grouse populations in the Antelope Basin area have remained low.⁵⁷ The mere presence of sagebrush habitat is necessary but not sufficient for continued sage grouse viability.⁵⁸ Factors like habitat quality, which is less easily measured than habitat quantity, or predation⁵⁹ may be important alternative determining factors. Unfortunately, little data addresses direct causation for the continued decline, because wildlife monitoring in most areas has been infrequent, inconsistent, and lacking in adequate spatial coverage or detail.⁶⁰ However, the

52. See J.W. CONNELLY, A REVIEW OF USFS MANAGEMENT ACTIVITIES AND THEIR RELATIONSHIP TO SAGE GROUSE IN THE ANTELOPE BASIN / ELK LAKE AREA OF SOUTHWESTERN MONTANA 5–6 (2004) [hereinafter CONNELLY REVIEW].

53. U.S. FOREST SERV., GRAVELLY SAGEBRUSH FINAL ENVIRONMENTAL IMPACT STATEMENT III-14 (1991) [hereinafter GRAVELLY FEIS] (“Sagebrush was unwanted due to its’ [sic] competition with desirable forage species.”). Data suggest a long-term downward trend during this time in the breeding population of sage grouse in the immediate vicinity of the project area. See CONNELLY REVIEW, *supra* note 52, at 5.

54. See GRAVELLY FEIS, *supra* note 53, at III-14. Between 1960 and 1974, about 5865 acres of the NEC project area were herbicided. See NEC, 599 F.3d 926, 929 n.2 (9th Cir. 2010).

55. GRAVELLY FEIS, *supra* note 53, at III-14. Between 1982 and 1988, about 6491 acres of the NEC project area were burned, followed by the burning of an additional 6476 acres between 1992 and 2000. See NEC, 599 F.3d at 929 n.3.

56. See, e.g., CONSERVATION ASSESSMENT, *supra* note 35, at 13-11.

57. See *id.* at 4-17.

58. See GRAVELLY FEIS, *supra* note 53, at S-6. A habitat-wide analysis for sage grouse in North America explained that:

Sage-grouse populations typically inhabit large, interconnect [sic] expanses of sagebrush and thus have been characterized as a landscape-scale species. Historically, the distribution of sage-grouse was closely tied to the distribution of the sagebrush ecosystem. However, populations of sage-grouse have been extirpated at places throughout their former range, concomitant with habitat loss and degradation, so that the species’ current distribution is less closely aligned with that of sagebrush. Causes for habitat loss, fragmentation, and degradation in sagebrush are many and varied, and include brush control and other means to remove sagebrush, inappropriate livestock management, energy development, urbanization, and the infrastructure necessary to maintain these activities.

CONSERVATION ASSESSMENT, *supra* note 35, at 4-15 (internal citations removed).

59. See, e.g., Michael A. Schroeder & Richard K. Baydack, *Predation and the Management of Prairie Grouse*, 29 WILDLIFE SOC’Y BULLETIN 24 (2001) (discussing the consequences of predation on sage grouse population dynamics).

60. See CONSERVATION ASSESSMENT, *supra* note 35, at 13-10.

linkage between the presence of sagebrush habitat and the viability of sage grouse populations is more complex than once thought.⁶¹

Given the history of sagebrush eradication efforts—common to much of the federally-owned sagebrush habitat in the BDNF, Montana, and the broader American West—analysis of the cumulative impacts of sagebrush eradication efforts on the viability of sage grouse and other sagebrush obligates ought to be a standard part of environmental assessment under the National Environmental Policy Act (NEPA) for proposed grazing projects in sagebrush habitat on federal lands.⁶² However, no environmental review document for a project in the BDNF has included these considerations.⁶³ In the environmental assessment (EA) prepared pursuant to NEPA for the grazing allotment management plan updates at issue in *NEC*, even the direct negative effects of past management practices, while superficially acknowledged, are often downplayed or given a neutral gloss.⁶⁴ As the opening brief in *NEC* suggests, “it strains credulity to assert that decades of aggressively poisoning and burning the natural habitat of

61. See *id.* at 4-15, 4-17, 13-11; see also J.L. Beck & D.L. Mitchell, *Influences of Livestock Grazing on Sage Grouse Habitat*, 28 WILDLIFE SOC’Y BULLETIN 993 (2000) (“Prior to large-scale eradication and degradation of sagebrush habitat, sage grouse occurrence was predictably wherever big sagebrush . . . occurred.”). This makes it essentially impossible to extrapolate how much habitat sage grouse need to maintain viability in order to satisfy NFMA’s MIS requirement. See 36 C.F.R. § 219.19 (1999).

62. NEPA requires analysis of cumulative impacts that result “from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7 (2010). They may “result from individually minor but collectively significant actions taking place over a period of time.” *Id.* Even an environmental assessment, prepared to determine whether an environmental impact statement is needed, must include “brief discussions of . . . the environmental impacts [including cumulative impacts] of the proposed action and alternatives.” 40 C.F.R. § 1508.9(b) (2010).

63. See Brief for Appellant at 18, *NEC*, 599 F.3d 926 (9th Cir. 2010) (No. 06-35890).

64. In its brief review of the effects of past management activities in the project area, the EA mentions that:

The vegetation component has been subjected historically to the impacts caused by road and trail construction, livestock and wildlife grazing, timber harvest, and mining. These impacts have contributed to the current vegetation structure and composition. . . . All allotments . . . have been grazed intensively using rest-rotation or deferred rotation grazing systems for up to 30 years. Structural improvements, including fences, pipelines and water troughs have been established throughout the project area. . . . Sagebrush and wyethia eradication projects took place during the 1960’s and 1970’s by use of herbicidal spray. These projects were also driven by the need to re-vegetate the area with more desirable species. . . . Prescribed burning has occurred . . . over the last 20 years . . . [and] has primarily influenced vegetation communities including Douglas-fir, sagebrush, grassland, and aspen types.

U.S. FOREST SERV., ANTELOPE BASIN/ELK LAKE ALLOTMENT MANAGEMENT PLAN UPDATES ENVIRONMENTAL ASSESSMENT REVISED 116–17 (2002) [hereinafter EA]. This description largely ignores damage to sagebrush habitat caused by past activities, instead framing effects as intended or inevitable management outcomes. The EA also mentions that the “[p]opulation trend for sage grouse in southwestern Montana has been slowly downward for the past decade . . . due to a combination of factors including, but not limited to, loss of winter range, degradation of habitat and conversion of sagebrush habitat to agricultural use,” but it fails to link this population decline in a more meaningful way to past Forest Service actions. *Id.* at 110.

sage-grouse in an effort to increase its value for cows has no relation to the fact that sage-grouse have essentially disappeared from the landscape over that same period of time.”⁶⁵

In addition to Forest Service activities designed to clear sagebrush to increase forage for livestock, grazing itself can significantly alter the extent and quality of sagebrush ecosystems.⁶⁶ While in the past it has been difficult to fully understand the broader effects of livestock grazing on sagebrush communities,⁶⁷ grazing is now thought to negatively impact sage grouse habitat in three general ways: (1) by changing the “composition, density, and structure of vegetation,” (2) by disturbing nesting hens and trampling nests, and (3) by removing forage and cover important for nestling survival and protection.⁶⁸ Studies suggest that annual grazing negatively impacts nesting success the following year and that ending livestock grazing in an area leads to increased sage grouse productivity.⁶⁹ Therefore sage grouse demonstrate the tension inherent in NFMA’s multiple-use mandate: what’s good for the grouse is bad for grazing, and vice versa. How should the Forest Service approach reconciling these generally incompatible uses?

II. *NATIVE ECOSYSTEMS COUNCIL V. TIDWELL* HIGHLIGHTS PROBLEMS WITH THE PLANNING RULE

To begin to answer this question, this Part explores *NEC* as an example of how current Forest Service planning often fails to uphold NFMA’s biodiversity mandate. I begin with an overview of the statutes and regulations important to the case, summarize the facts of the case and its procedural posture, discuss the court’s decision, and analyze how it fits into prior precedent.

65. Brief for Appellant at 59, *NEC*, 599 F.3d 926 (9th Cir. 2010) (No. 06-35890).

66. See *NEC*, 599 F.3d 926, 929 (9th Cir. 2010); see also Connelly et al., *supra* note 34, at 36–37; J.W. Connelly & C.E. Braun, *Long-term Changes in Sage Grouse *Centrocercus Urophasianus* Populations in Western North America*, 3/4 WILDLIFE BIOLOGY 229, 231 (1997); Beck & Mitchell, *supra* note 61, at 995–96; K.A. Coggins, *Relationship Between Habitat Changes and Productivity of Sage Grouse at Hart Mountain National Antelope Refuge, Oregon* 33–34 (unpublished thesis, Oregon State University) (on file with author).

67. Due both to a dearth of (ungrazed) control areas extensive enough to take into account landscape processes and to limited knowledge of the ecological condition of much public land. See CONSERVATION ASSESSMENT, *supra* note 35, at 13-9. However, the *Conservation Assessment* attempted to gather available data and summarize it in a way that could begin to address some of these shortcomings. See *id.* at 13–14.

68. Brief for Appellant at 14, *NEC*, 599 F.3d 926 (9th Cir. 2010) (No. 06-35890).

69. See Connelly et al., *supra* note 34, at 36–37. “The large number of documented negative impacts of livestock grazing in sagebrush shrub steppe appears to neutralize or outweigh any positive effects.” *Id.* at 37.

A. Statutory and Regulatory Background

In order to understand the substance and import of the *NEC* case, it is helpful to briefly review the federal statutes and implementing regulations involved. NFMA⁷⁰ governs Forest Service activities, including planning and management of National Forest land.⁷¹ The National Environmental Policy Act (NEPA)⁷² dictates the environmental review process for federal actions. Finally, the Administrative Procedure Act (APA) provides for judicial review of final agency decisions.⁷³

1. The National Forest Management Act

Congress passed NFMA in 1976 in response to environmental concerns about logging practices on federal lands.⁷⁴ The statute directs the Forest Service to produce an integrated land management plan (“forest plan”) for each national forest unit⁷⁵ using “a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences.”⁷⁶ Forest plans must be prepared in compliance with NEPA,⁷⁷ and the public must be provided with sufficient opportunities to participate in developing, reviewing, and revising the plans.⁷⁸ NFMA calls for plan revisions at least every fifteen years, or more frequently if conditions in the national forest unit “have significantly changed” since the last revision.⁷⁹ In accordance with the goals of NFMA, all management activities must be consistent with the forest plan.⁸⁰

Congress created mandates for both multiple use and biodiversity maintenance. On one hand, each forest plan must honor the Multiple-Use

70. 16 U.S.C. §§ 1600–1614 (2006).

71. *See id.* § 1604(f)(1) (requiring the formation of an “integrated plan for each unit of the National Forest System”); *id.* § 1604(i) (requiring consistency of “[r]esource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands”).

72. 42 U.S.C. §§ 4321–4347 (2006).

73. 5 U.S.C. §§ 701–706 (2006).

74. *See* PAUL W. HIRT, A CONSPIRACY OF OPTIMISM: MANAGEMENT OF THE NATIONAL FORESTS SINCE WORLD WAR TWO 244 (1994) (explaining that NFMA, “[e]nacted after a successful lawsuit by environmentalists that threatened to end clearcutting on the national forests, . . . legally authorized clearcutting . . . [but] also incorporated a number of clauses supported by environmental interests”). The lawsuit was *West Virginia Division of Izaak Walton League of America, Inc. v. Butz* (*Monongahela decision*), 522 F.2d 945, 948 (4th Cir. 1975) (holding that the Forest Service Organic Act of 1897 barred clearcutting of multi-age stands by restricting timber sales to “dead, [physiologically] matured or large growth” trees); NFMA REPORT, *supra* note 10, at 8 (discussing the proposed legislation and citing *Monongahela* decision among “[r]ecent developments [that] have underscored the need for legislative changes to enable the Forest Service to perform its proper role of management”).

75. *See* 16 U.S.C. § 1604(f)(1) (2006).

76. *Id.* § 1604(b).

77. *Id.* § 1604(g)(1).

78. *Id.* § 1604(d).

79. *Id.* § 1604(f)(5).

80. *See id.* § 1604(i); *see also* 36 C.F.R. § 219.10(e) (1999).

Sustained-Yield Act of 1960 (MUSYA)⁸¹ by coordinating “outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.”⁸² For example, under this mandate national forest lands must be evaluated for their suitability “for producing forage for grazing animals.”⁸³ Where national forest land is suitable for grazing, the Forest Service designates grazing allotments (“logical range management units”) and develops allotment management plans (AMPs)⁸⁴ that are consistent with the forest plan for the area.⁸⁵ MUSYA acknowledges that not all possible uses will be accommodated in every area, and economic factors are not necessarily the primary determinants of allowable use.⁸⁶ In fact, the Senate report on NFMA stated that “wildlife and fish habitats, water, air, esthetics, [and] wilderness must be protected and improved.”⁸⁷ It called for “managing National Forest System lands in a manner aimed at maximizing all the renewable resources, air, soil, and water” in order to “insure that the resources found in our National Forests can be used and enjoyed by the American public, now and in the future.”⁸⁸

To further this end, NFMA requires forest plans to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area.”⁸⁹ This requirement is commonly referred to as NFMA’s biodiversity mandate.⁹⁰ Forest Service planning regulations implement the biodiversity mandate by requiring both the management of fish and wildlife habitat “to maintain viable populations of existing native and desired non-native vertebrate species in the planning area,”⁹¹ and the monitoring of

81. 16 U.S.C. §§ 528–531 (2006).

82. 16 U.S.C. § 1604(e)(1).

83. 36 C.F.R. § 219.20 (1999). “Lands in less than satisfactory condition shall be identified and appropriate action planned for their restoration.” *Id.* § 219.20(a).

84. AMPs are prepared in consultation with state and local stakeholders—“the lessees or permittees involved.” Federal Land Policy and Management Act of 1974, 43 U.S.C. § 1702 (2006). They prescribe “the manner in, and extent to, which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic and other needs and objectives.”

85. *See* 36 C.F.R. § 222.2 (1999).

86. MUSYA calls for renewable resource management to achieve “multiple use and sustained yield of the several products and services obtained” from national forest lands, taking into account “the relative values of the various resources” in an area, 16 U.S.C. § 529, instead of requiring “the combination of uses that will give the greatest dollar return or the greatest unit output,” *id.* § 531. It explicitly authorizes setting aside wilderness areas, *id.* § 529, and specifies that renewable resource exploitation may not impair the “productivity of the land,” *id.* § 531.

87. NFMA REPORT, *supra* note 10, at 10.

88. *Id.* at 11.

89. 16 U.S.C. § 1604(g)(3)(B) (2006); *see also* 36 C.F.R. § 219.27(a)(5) (1999).

90. *See* Greg D. Corbin, *The United States Forest Service’s Response to Biodiversity Science*, 29 ENVTL. L. 377, 381 (1999).

91. 36 C.F.R. § 219.19 (1999).

[A] viable population . . . has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. . . . [H]abitat must be provided to support, at least, a minimum number of reproductive

population trends of selected MIS to estimate the effects of management alternatives on fish and wildlife populations.⁹² In other words, instead of requiring direct monitoring of every species in the National Forest (which would be impractically labor-intensive and expensive), MIS are used as proxies⁹³ for environmental outcomes whose “population changes are believed to indicate the effects of management activities.”⁹⁴

2. *The National Environmental Policy Act*

NFMA’s requirements must be carried out in compliance with NEPA,⁹⁵ which therefore serves as an important constraint on Forest Service planning. The statute directs federal agencies to consider the potential environmental impacts of their actions. Instead of mandating a particular outcome, it aims to ensure the integrity of the agency decision-making process and to facilitate public participation.⁹⁶ To achieve these goals, NEPA requires agencies to identify and consider a project’s direct, indirect, and cumulative impacts⁹⁷ and to prepare a detailed environmental impact statement (EIS) for major federal actions that could significantly affect “the quality of the human environment.”⁹⁸ Whether an action might significantly affect the environment should be analyzed in terms of both context⁹⁹ and intensity.¹⁰⁰

individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.

Id.

92. *Id.* § 219.19(a)(1), (6). Furthermore, section 219.26 requires that inventories “include quantitative data making possible the evaluation of diversity in terms of its prior and present condition.” *Id.* § 219.26.

93. Proxy, or surrogate, species are species used as a shortcut “to represent other species or aspects of the environment to attain a conservation objective.” TIM M. CARO, CONSERVATION BY PROXY: INDICATOR, UMBRELLA, KEYSTONE, FLAGSHIP, AND OTHER SURROGATE SPECIES 1 (2010).

94. 36 C.F.R. § 219.19(a)(1) (1999). MIS

shall be selected because their population changes are believed to indicate the effects of management activities. . . . [T]he following categories shall be represented where appropriate: Endangered and threatened plant and animal species . . . ; species with special habitat needs that may be influenced significantly by planned management programs; species commonly hunted, fished, or trapped; non-game species of special interest; and additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality.

Id.

95. 42 U.S.C. § 4321–4347 (2006).

96. *See, e.g.,* Robertson v. Methow Valley Citizens, 490 U.S. 332, 349 (1989); *Neighbors of Cuddy Mountain v. Alexander*, 303 F.3d 1059, 1063 (9th Cir. 2002).

97. *See Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d at 1378; 40 C.F.R. §§ 1501.2(b), 1508.25(c) (2010).

98. 42 U.S.C. § 4332 (2006).

99. Contextual considerations include how the action will affect “society as a whole . . . , the affected region, the affected interests, and the locality. . . . Both short- and long-term effects are relevant.” 40 C.F.R. § 1508.27(a) (2010).

An agency may first prepare an EA to determine if EIS preparation is indicated.¹⁰¹ If the EA results in a finding of no significant impact (FONSI), the agency “must supply a convincing statement of reasons to explain why a project’s impacts are insignificant” in order to show that it “took a hard look” at the question.¹⁰²

If “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts” arises, the agency must supplement its EA or EIS to reflect this.¹⁰³ When new information arises, the Forest Service Handbook¹⁰⁴ calls for “interdisciplinary review and consideration . . . within the context of the overall program or project” to determine whether a “correction, supplement, or revision to an environmental document” is necessary.¹⁰⁵ This review is documented in a supplemental information report (SIR).¹⁰⁶ If amendment of some type is found to be necessary, the SIR “cannot repair deficiencies in the original environmental analysis or documentation, nor can it change a decision.”¹⁰⁷ Instead, the EA or EIS must be corrected, supplemented, or revised to comply with NEPA.¹⁰⁸

3. *The Administrative Procedure Act and Judicial Review*

While NFMA and NEPA lack provisions giving private citizens the right to sue to enforce their substantive mandates, the APA¹⁰⁹ allows adversely affected persons to seek judicial review of final agency decisions.¹¹⁰ It directs courts to “hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in

100. Intensity describes “the severity of impact” and should take into account factors including “both beneficial and adverse” impacts, “[u]nique characteristics of the geographic area,” the level of uncertainty/controversy regarding potential effects, the potential for “individually insignificant but cumulatively significant impacts,” and whether the action is likely to violate federal, state, or local statutes or regulations “imposed for the protection of the environment.” 40 C.F.R. § 1508.27(b) (2010).

101. See 40 C.F.R. § 1508.9 (2010); see also *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1185 (9th Cir. 2008).

102. *Ctr. for Biological Diversity*, 538 F.3d at 1220.

103. 40 C.F.R. § 1502.9(c)(1)(ii) (2010); see also *Klamath Siskiyou Wildlands Ctr. v. Boody*, 468 F.3d 549, 560 (9th Cir. 2006).

104. The Forest Service Handbook provides “specialized guidance and instructions for carrying out the direction issued” in the Forest Service Manual. *Forest Service Handbooks*, U.S. FOREST SERV., <http://www.fs.fed.us/im/directives/dughtml/fsh.html> (last visited Mar. 4, 2011). The Forest Service Manual “contains legal authorities, objectives, policies, responsibilities, instructions, and guidance needed on a continuing basis by Forest Service line officers and primary staff in more than one unit to plan and execute assigned programs and activities.” *Forest Service Manual*, U.S. FOREST SERV., http://www.fs.fed.us/im/directives/dughtml/serv_fsm.html (last visited Mar. 4, 2011).

105. Forest Service Handbook, FSH 1909.15(18.1) (2010), available at http://www.fs.fed.us/im/directives/fsh/1909.15/wo_1909.15_10.doc.

106. See *id.*

107. *Id.*

108. See *id.* 1909.15(18.1)–(18.4).

109. 5 U.S.C. §§ 701–706 (2006).

110. See *id.* §§ 702, 704.

accordance with law.”¹¹¹ A decision is arbitrary and capricious if it neglects “an important aspect of the problem” or offers an explanation inconsistent with the evidence in the record.¹¹²

Courts have commonly interpreted the APA to give agencies significant leeway in decision making,¹¹³ under the logic that courts lack competence to second-guess agency experts.¹¹⁴ Therefore, unless an agency perpetrates “a clear error in judgment,”¹¹⁵ a court will likely defer to its decision—a standard which governs the “hard look” NEPA requires an agency to take before concluding its actions will not have significant environmental impacts.¹¹⁶ In other words, the agency may not simply “brush-off . . . negative effects,” but must explain why they are not significant.¹¹⁷

B. Facts and Procedural Summary

In *NEC*, environmental groups challenged a proposed Forest Service action to update eleven outdated livestock grazing AMPs in the Antelope Basin / Elk Lake area of the BDNF in southwestern Montana.¹¹⁸ The allotments encompass approximately 48,000 acres of “open, mountain sagebrush/grasslands with some scattered timber along streams.”¹¹⁹

111. *Id.* § 706(2)(A).

112. *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); *see also* 5 U.S.C. § 706(2)(E).

113. *See, e.g., Chevron U.S.A., Inc. v. Natural Res. Def. Council (Chevron)*, 467 U.S. 837, 843–44 (1984) (giving agency interpretations considerable deference when statutes are “silent or ambiguous with respect to the specific issue” at hand); *see also Chase Bank USA, N.A. v. McCoy*, 131 S. Ct. 871, 880 (2011) (requiring courts to “defer to an agency’s interpretation of its own regulation . . . unless that interpretation is ‘plainly erroneous or inconsistent with the regulation’” (quoting *Auer v. Robbins*, 519 U.S. 452, 461 (1997))).

114. *See Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 378 (1989) (“When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive.”); *see also Tucson Herpetological Soc’y v. Salazar*, 566 F.3d 870, 875 (9th Cir. 2009) (“Review under the arbitrary and capricious standard ‘is narrow and [we do] not substitute [our] judgment for that of the agency,’” however, the agency is obligated “to ‘state a rational connection between the facts found and the decision made.’” (quoting *Lands Council v. McNair*, 537 F.3d 981, 987 (9th Cir. 2008); *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1065 (9th Cir. 2004)); *Selkirk Conservation Alliance v. Forsgren*, 336 F.3d 944, 954 (9th Cir. 2003).

115. *Lands Council v. McNair*, 537 F.3d 981, 994 (9th Cir. 2008).

116. *See, e.g., Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233, 1239 (9th Cir. 2005).

117. *Id.* at 1241.

118. *See NEC*, 599 F.3d 926, 929–30 (9th Cir. 2010). The timing of the updates was, in large part, the result of a settlement. *See EA, supra* note 64, at 3. The updates were needed in order for two of the AMPs “[t]o comply with the terms and conditions in the Final Settlement Agreement (4/28/95) for the National Wildlife and Montana Wildlife Federation vs. the Beaverhead National Forest Lawsuit.” *Id.* at 3, 6. The other AMPs were “located within the same landscape” and were all at least 10 years old (and did not take into account current management concerns). *Id.*

119. *NEC*, 599 F.3d at 929.

The proposed AMPs specified where, when, and under what circumstances livestock grazing could occur¹²⁰—shifting grazing intensity away from riparian zones and establishing “forage utilization,” “stream bank alteration,” and other thresholds that would trigger the transfer of livestock on to the next pasture.¹²¹ To achieve this shift, the updates called for installing miles of new fencing and pipeline, an additional reservoir, and twenty-six more water troughs, as well as the relocation and removal of some portions of fence.¹²² Conservation organizations agreed that riparian areas were overgrazed, but expressed concerns that decreasing grazing intensity in riparian zones without decreasing grazing in the project area as a whole would overburden upland sagebrush areas.¹²³

The BDNF forest plan identified sage grouse as the MIS the Forest Service must use to indicate the effects of management activities on sagebrush habitat.¹²⁴ Additionally, the plan set a high priority on “maintenance and enhancement of wildlife habitat,” stating that “[v]iable populations of all existing wildlife species will be maintained by providing a diversity of habitats throughout the Forest.”¹²⁵ The plan clarified that MIS population monitoring was intended to provide a check on the appropriateness of Forest Service assumptions about “the effects of management activities on wildlife habitat and populations.”¹²⁶ Sage grouse population monitoring, then, would ensure that management activities would not adversely impact the viability of sagebrush-dependent species.

The Madison Ranger District’s EA¹²⁷ for the AMP updates analyzed three management alternatives: maintaining the status quo, executing the proposed updates, and completely banning grazing in the project area.¹²⁸ Although the forest plan identified sage grouse as the MIS for sagebrush habitat, the species was “virtually non-existent” within the project area,¹²⁹ and actual population

120. *Id.* at 929–30.

121. U.S. FOREST SERV., ANTELOPE BASIN/ELK LAKE ALLOTMENT MANAGEMENT PLAN UPDATES DECISION NOTICE AND FINDING OF NO SIGNIFICANT IMPACTS 2 (2003) [hereinafter DN/FONSI].

122. *See NEC*, 599 F.3d at 930 & n.5.

123. *See, e.g.*, Comment Letter from Glenn Hockett, President, Gallatin Wildlife Assoc., to Mark A. Petroni, Dist. Ranger, U.S. Forest Serv. (Jan. 24, 2003) (on file with author), available at http://www.gallatinwildlifeassociation.org/gwa_antelope_basin_comments.htm.

124. *See* U.S. FOREST SERV., FOREST PLAN, BEAVERHEAD NATIONAL FOREST II-26 (1986) [hereinafter FOREST PLAN]; *see also* 36 C.F.R. § 219.19(a)(1) (1999). Because sage grouse generally “inhabit large, interconnected expanses of sagebrush,” they “have been characterized as a ‘landscape-scale species’” that provides an indication of overall sagebrush ecosystem health. Brief for Appellant at 13, *NEC*, 599 F.3d 926 (9th Cir. 2010) (No. 06-35890).

125. FOREST PLAN, *supra* note 124, at II-3.

126. *Id.*

127. *See* discussion *supra* Part II.A.2.

128. *See NEC*, 599 F.3d 926, 930 (9th Cir. 2010); EA, *supra* note 64, at 21.

129. *NEC*, 599 F.3d at 933. Sage grouse have not been observed in the project area during the past fifteen years, except for two possible sightings in 2002 associated with illegal taking. *See NEC*, 599 F.3d at 931, 939.

data was unavailable.¹³⁰ Therefore, to address the potential impacts of the project, the Forest Service used a “proxy-on-proxy”¹³¹ approach in lieu of sage grouse population monitoring: it analyzed sagebrush habitat as a proxy for the viability of sage grouse which in turn served as a proxy for the viability of sagebrush-obligate species more generally.¹³²

The ranger district selected to execute the proposed updates, and issued a decision notice and finding of no significant impacts (DN/FONSI) in November of 2003,¹³³ concluding that “the project was not a major federal action with significant effect on the quality of the human environment.”¹³⁴ Therefore, it concluded, NEPA did not require preparation of an EIS.¹³⁵

The environmental petitioners (“NEC”) appealed approval of the AMP updates, arguing that they did not “ensure continued diversity of plant and animal communities and the continued viability of wildlife”¹³⁶ in the project area’s sagebrush ecosystems, contrary to the BDNF forest plan and in violation of NFMA.¹³⁷ NEC believed that, rather than warranting a FONSI, in order to comply with NEPA, the project required preparation of an EIS addressing potentially significant environmental impacts to sagebrush ecosystems.¹³⁸ However, the regional forester denied the appeal in February of 2004, and NEC filed the case in federal district court in June of that year.¹³⁹

Later that year, Forest Service staff prepared a SIR to address new information, including several scientific reports, that became available after the EA was complete.¹⁴⁰ The SIR concluded that the FONSI and project approval were warranted, and the EA did not need to be supplemented.¹⁴¹ In August of 2006, the district court granted summary judgment to the Forest Service, and NEC appealed the decision to the Ninth Circuit a few months later, challenging the lower court’s conclusions that the Forest Service had complied with its

130. *Id.* at 933.

131. *See* *Lands Council v. McNair*, 537 F.3d 981, 997 n.10 (9th Cir. 2008) (describing the proxy-on-proxy approach as using “habitat as a proxy to measure a species’ population, and then . . . us[ing] that species’ population as a proxy for the population of other species).

132. *NEC*, 599 F.3d at 933.

133. DN/FONSI, *supra* note 121, at 1.

134. *NEC*, 599 F.3d at 930.

135. *See id.*

136. 16 U.S.C. § 1604(g)(3)(B) (2006); *Idaho Sporting Cong., Inc. v. Rittenhouse*, 305 F.3d 957, 961 (9th Cir. 2002).

137. *See* Brief for Appellant at 4, *NEC*, 599 F.3d 926 (9th Cir. 2010) (No. 06-35890).

138. *See id.* at 4–5.

139. *See NEC*, 599 F.3d at 931; *see also* KATHLEEN A. MCALLISTER, ACTING REG’L FORESTER, NATIVE ECOSYSTEMS COUNCIL ANTELOPE BASIN/ELK LAKE AMP UPDATES DECISION NOTICE APPEAL DECISION 1 (2004).

140. *See id.* at 931; *see also* U.S. FOREST SERV., ANTELOPE BASIN/ELK LAKE AMP UPDATE ENVIRONMENTAL ASSESSMENT SAGE GROUSE SUPPLEMENTAL INFORMATION REPORT (SIR) (2004) [hereinafter SIR].

141. *See* SIR, *supra* note 140, at 13–14.

obligation under the NFMA “to ensure species diversity” and that the EA satisfied the requirements imposed by NEPA.¹⁴²

C. *The Decision*

Applying de novo review, the Ninth Circuit held that the Forest Service’s use of a non-existent MIS for sagebrush habitat, and the “proxy-on-proxy” approach to monitoring it used in the species’ absence, were inconsistent with the BDNF forest plan and NFMA.¹⁴³ First, the court established that the sage grouse is, for all practical purposes, an absentee MIS in the project area¹⁴⁴ and attacked the use of the proxy-on-proxy habitat monitoring approach when the MIS is absent.¹⁴⁵ Next, it found that the Forest Service’s EA and SIR did not agree with the central scientific documents they claimed to rely upon.¹⁴⁶ Finally, the court held that these deficiencies violated NFMA and NEPA. It reversed and remanded the case, directing the Forest Service to rework its EA and noting that a revised EA based on MIS population monitoring “might come to a different conclusion” that would require an EIS to be prepared.¹⁴⁷

1. *Proxy-on-Proxy Habitat Monitoring is Inappropriate Because Habitat Presence Fails to Ensure Species Viability*

A “proxy-on-proxy” monitoring approach—in which habitat is used as a proxy for one species’ population, which is then used as a proxy for the effects of management decisions on the viability of other species¹⁴⁸—“effectively allows the Forest service to avoid studying” MIS population trends.¹⁴⁹ According to Ninth Circuit precedent, this shortcut is only appropriate when the Forest Service understands what amount and quality of habitat is required to support the MIS and the habitat measurement methodology is “reasonably reliable and accurate.”¹⁵⁰ In other words, “[t]he test for whether the habitat proxy is permissible . . . is whether it reasonably ensures that the proxy results mirror reality.”¹⁵¹

142. *NEC*, 599 F.3d at 929, 931.

143. *See id.* at 932, 936.

144. *See id.* at 933.

145. *See id.* at 933–34.

146. *See id.* at 934–36.

147. *Id.* at 938.

148. *See supra* note 131 and accompanying text.

149. *NEC*, 599 F.3d at 933 (quoting *Lands Council v. Powell*, 395 F.3d 1019, 1036 (9th Cir. 2005)) (internal quotation marks removed).

150. *See id.*; *see also* *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233, 1250 (9th Cir. 2005).

151. *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1066 (9th Cir. 2004).

Applying this test, the court found that the sagebrush habitat proxy fails “to reasonably ensure viable populations of the species at issue”¹⁵² because “almost no sage grouse have been seen in the project area for fifteen years.”¹⁵³ The court found the Forest Service’s failure to acknowledge this logical disconnect, and its view that it was, nonetheless, somehow meeting its statutory and regulatory requirements for species viability, “unfathomable.”¹⁵⁴ In a footnote, the court stated that this finding does not clash with previous Ninth Circuit decisions holding that “monitoring difficulties do not render a habitat-based analysis unreasonable, so long as the analysis uses all the scientific data currently available.”¹⁵⁵ Here the court distinguished the Forest Service’s use of habitat analysis as based not on the idea that monitoring sage grouse populations was prohibitively difficult, but on the fact that there were “no sage grouse in the project area to monitor.”¹⁵⁶

2. *The EA and SIR Were Inconsistent with the Scientific Documents They Purportedly Relied Upon*

After dismantling the Forest Service’s justification for using proxy-on-proxy monitoring in this case, the court proceeded to identify further problems with the Forest Service’s analysis, including inconsistencies between the EA and SIR and key scientific documents they supposedly relied upon.¹⁵⁷ These documents—*Guidelines to Manage Sage Grouse Populations and Their Habitats* (“*Connelly Guidelines*”),¹⁵⁸ *Conservation Assessment of Greater Sage-*

152. *NEC*, 599 F.3d at 933 (quoting *Idaho Sporting Cong., Inc. v. Rittenhouse*, 305 F.3d 957, 972 (9th Cir. 2002)).

153. While the dissent argues that sage grouse may simply be “difficult to find” in the project area, *id.* at 939, the majority holds that “a ‘report of two sage grouse being taken illegally from the project area [of 48,000 acres] in 2002’ . . . just doesn’t cut it,” *id.* at 934.

154. *Id.* at 934. *See also infra* note 179 and accompanying text.

155. *Id.* at 933 n.9 (quoting *Lands Council v. McNair*, 537 F.3d 981, 998 (2008)). *McNair* held that “studies provided by the Forest Service and the Forest Service’s reasonable assumption that maintaining suitable habitat for the flammulated owl will also maintain a viable population of flammulated owls” provided a reasonable basis for using a habitat proxy when species monitoring proved difficult. *McNair*, 537 F.3d at 998–99. This case differs, however, because the Forest Service cannot reasonably make the assumption that maintaining suitable habitat for the sage grouse will maintain a viable population of sage grouse.

156. *NEC*, 599 F.3d at 933 n.9. The court explained that

There is simply no basis to evaluate the Forest Service’s assertion that the sagebrush habitat is sufficient to sustain viable sage grouse populations when sage grouse cannot be found in the project area. Therefore the Forest Service cannot reasonably argue that the proxy-on-proxy approach allows it to avoid separately monitoring sage grouse population trends, as sage grouse are its chosen MIS . . . especially . . . where, as here, the forest plan [explicitly] requires monitoring of the MIS.

NEC, 599 F.3d at 933–34.

157. *See id.* at 934–36.

158. John W. Connelly et al., *Guidelines to Manage Sage Grouse Populations and Their Habitats*, 28 WILDLIFE SOCIETY BULLETIN 967 (2000) [hereinafter *Connelly Guidelines*].

grouse and Sagebrush Habitats (“*Conservation Assessment*”),¹⁵⁹ and *A Review of USFS Management Activities and Their Relationship to Sage Grouse in the Antelope Basin/Elk Lake Area of Southwestern Montana* (“*Connelly Review*”)¹⁶⁰—variously stressed the importance of population monitoring;¹⁶¹ discussed the decoupling of sage grouse distribution from sagebrush habitat due to habitat loss and degradation;¹⁶² identified suitable nesting habitat within the project area;¹⁶³ and noted that, at high elevations, the breeding season could be considerably delayed, placing breeding in conflict with the start of grazing.¹⁶⁴ By contrast, the EA and SIR contained statements to the contrary or ignored these issues entirely.¹⁶⁵

For example, one of the primary documents the EA expressly relied upon to determine the sufficiency of sage grouse habitat, the *Connelly Guidelines*, specifically used the presence of sage grouse as an indication of habitat health.¹⁶⁶ The document flatly stated that “quantitative data from *population and habitat monitoring* are necessary to implement the [sage grouse management] guidelines correctly.”¹⁶⁷ Additionally, the *Conservation Assessment*, supposedly considered by the SIR, explained that “habitat loss and degradation” has wiped out sage grouse “throughout their former range” with the result “that the species’ current distribution is less closely aligned with that of sagebrush.”¹⁶⁸ Both of these observations boded poorly for the proxy-on-proxy approach taken by the Forest Service; indeed, they “militate against the . . . assertion that evaluation of the sagebrush habitat in the complete absence of a sage grouse population meets” NFMA obligations to “ensure population viability of the sage grouse and other sagebrush obligates.”¹⁶⁹

Similarly, the court found that the Forest Service did not adhere to the *Connelly Guidelines* when it decided that the project area contained no known sage grouse nesting habitat because nesting conditions were not met during the May to mid-June nesting season.¹⁷⁰ Even after the site-specific *Connelly*

159. CONSERVATION ASSESSMENT, *supra* note 35.

160. CONNELLY REVIEW, *supra* note 52.

161. See *Connelly Guidelines*, *supra* note 158, at 975.

162. See CONSERVATION ASSESSMENT, *supra* note 35, at 4-15.

163. See CONNELLY REVIEW, *supra* note 52, at 11-12.

164. See *id.* at 4.

165. *E.g.*, EA, *supra* note 64, at 110 (“Nesting conditions as described by Connelly et al. (2000) are not met within the project area during the sage grouse nesting season (May to mid-June). This appears to be limited by growing conditions and plant physiology, not by past years’ cattle grazing . . . because the nesting conditions are met in the project area later in the summer.”).

166. *NEC*, 599 F.3d 926, 934 (9th Cir. 2010) (citing *Connelly Guidelines*, *supra* note 158, at 975-76).

167. *Id.* at 934 (quoting *Connelly Guidelines*, *supra* note 158, at 975-76).

168. *Id.* (quoting CONSERVATION ASSESSMENT, *supra* note 35, at 4-15).

169. *Id.* at 934-35.

170. See *id.* at 935 (citing EA, *supra* note 64, at 110, which blamed “growing conditions and plant physiology, not . . . past years’ cattle grazing” for the lack of nesting habitat).

Review, incorporating new sage grouse information,¹⁷¹ noted that 1900 acres of habitat in fact experience suitable nesting-season conditions, the Forest Service did not revise its EA to reflect the new data or adequately address it in its SIR.¹⁷² The court, therefore, found that “the Forest Service’s method of measuring the sagebrush habitat is neither reasonably reliable nor accurate,” another strike against proxy-on-proxy monitoring under NFMA.¹⁷³

Lastly, the court notes that the SIR “concluded that the grazing season was [theoretically] compatible with sage grouse breeding” even though the two potentially overlapped by almost a month, according to the *Connelly Review*.¹⁷⁴ This overlap was not acknowledged in the EA or SIR.¹⁷⁵

3 *The Forest Service’s Methodology Violated NFMA and the BDNF Forest Plan and Rendered the EA Deficient under NEPA*

The failings of the methodology the Forest Service used to analyze the environmental consequences of the AMP updates violated NFMA’s general viability and MIS monitoring requirements¹⁷⁶ and the Forest Plan’s specific MIS monitoring requirements.¹⁷⁷ In light of these problems, the Forest Service’s “overall study of the sage grouse habitat throughout the Environmental Assessment was similarly deficient,” and its reliance on incorrect assumptions did not constitute the “hard look” required by NEPA.¹⁷⁸ The litany of problems therefore demonstrated that the finding the project would have minimal impact on sage grouse “was not derived from a reliable methodology.”¹⁷⁹

171. See CONNELLY REVIEW, *supra* note 52, at 11–12. In fact, the CONNELLY REVIEW concluded that “the area seems to have all the characteristics associated with productive sage grouse breeding habitat.” *Id.* at 12.

172. See NEC, 599 F.3d at 935, 937; SIR, *supra* note 140, at 3.

173. NEC, 599 F.3d at 935–36 (citing *Lands Council v. Powell*, 395 F.3d 1019, 1036 (9th Cir. 2005) (proxy-on-proxy approach violates NFMA when habitat analysis is flawed)).

174. *Id.* at 936; see also SIR, *supra* note 140, at 3; CONNELLY REVIEW, *supra* note 52, at 4.

175. NEC, 599 F.3d at 936.

176. See 16 U.S.C. § 1604(g)(3)(B) (2006); 36 C.F.R. § 219.19 (1999).

177. See FOREST PLAN, *supra* note 124, at II-3, -26.

178. NEC, 599 F.3d at 937 (“Just as the methodology applied by the Forest Service to measure habitat conditions did not meet the NFMA requirements, its flawed methodology in the complete absence of a sage grouse population does not constitute the requisite “hard look” mandated by NEPA.”).

179. *Id.* at 936. What practical effect does this holding have? Disallowing the use of proxy-on-proxy analysis in this case forces the Forest Service to, at a minimum, supplement or revise its EA to acknowledge the actual sage grouse population data available for the project area (essentially no sage grouse, even though significant sagebrush habitat is available). See *supra* text accompanying note 147. Since this data cannot demonstrate that the proposed management regime will maintain viable populations of sage grouse or other sagebrush obligate species, the Forest Service would likely conclude that the project could have significant environmental impacts, necessitating preparation of a full EIS (after which the agency might, nonetheless, select the same management alternative). Alternatively, after revising the EA, the Forest Service might produce a mitigated FONSI (perhaps involving increased restrictions on grazing in sagebrush habitat). While both options seem to satisfy NEPA’s procedural requirements, neither adequately addresses the purpose or substance of NFMA’s statutory and

The court also took issue with the Forest Service's failure to revise or supplement the EA, in violation of NEPA, after the *Connelly Review* revealed new information about suitable sage grouse nesting habitat.¹⁸⁰ The EA relied heavily on the assumption that nesting habitat did not exist within the project area, and neither it nor the SIR (which, regardless, was not a NEPA document¹⁸¹) adequately addressed how grazing could affect potential nesting habitat.¹⁸² Furthermore, while the Forest Service's "overarching position [was] that reliance on habitat alone is sufficient to predict sage grouse viability," it undermined its own argument for proxy-on-proxy analysis by trying to minimize the *Connelly Review*'s identification of 1900 acres of suitable nesting habitat as "made . . . on the basis of the quality of the vegetation, not on any documented breeding in this area."¹⁸³

D. NEC and Circuit Precedent

Arguably, the majority opinion in *NEC* departs from the pattern of deference to agency decisions established by a string of prior Ninth Circuit cases. In his dissent, Chief Judge Kozinski accuses the majority of ignoring precedent and overstepping the bounds of judicial review to play the role of "both legislature and biologist."¹⁸⁴ He points to a series of decisions that have endorsed the proxy-on-proxy approach of monitoring MIS habitat instead of MIS population to fulfill NFMA's viability requirements.¹⁸⁵ This line of cases

regulatory biodiversity mandates. *See infra* Part III.B.1. Due to their highly deferential stance towards agency decisions, either option would likely satisfy most courts. *See infra* Part III.B.3. However, the *NEC* majority implied that, where the MIS designated in the forest plan is absent, the Forest Service should choose a different MIS on an ad hoc basis. *See infra* notes 236–242 and accompanying text. Therefore the *NEC* court might reject, as violating NFMA, any environmental analysis that continued to rely on sage grouse as the sagebrush MIS.

180. *See id.* at 937; 40 C.F.R. § 1502.9(c)(1)(ii) (2010).

181. *See* discussion *supra* Part II.A.2.

182. *NEC*, 599 F.3d at 937.

183. *Id.* at 937–38. In the DN/FONSI, the Forest Service also claimed, conclusorily, that weather conditions presented "an immediate bar to the use of the identified habitat for nesting." *Id.* at 938. However, the CONNELLY REVIEW took weather conditions, and their inter-annual variability, into account in its analysis. *Id.* at 938; *see also* CONNELLY REVIEW, *supra* note 52, at 7–8.

184. *See NEC*, 599 F.3d at 942 (Kozinski, J., dissenting) (describing the majority opinion as "inventing new NFMA requirements and . . . dissecting reports about sage grouse in a misguided effort at second-guessing those reports' authoring scientists").

185. *See id.* at 939–40. For example, in *Lands Council v. McNair*, the court accepted proxy-on-proxy analysis where monitoring flammulated owl populations was difficult because the Forest Service's assumption that maintenance of suitable habitat would maintain flammulated owl viability was reasonable. *See Lands Council v. McNair*, 537 F.3d 981, 995–96, 999 (9th Cir. 2008). Unlike in *NEC*, the species at issue was not a designated MIS, and the forest plan lacked explicit site-specific monitoring requirements to demonstrate wildlife viability. *See id.* at 989 n.5. Notably, the court warned that the "record is relatively sparse and approaches the limits of our deference" but found that there was enough evidence to support the Forest Service's conclusions. *Id.* at 995; *see also* *Env'tl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 451 F.3d 1005, 1018 (9th Cir. 2006) (allowing proxy-on-proxy monitoring where population monitoring was difficult and the agency analyzed all currently available data); *Native*

does demonstrate that the Ninth Circuit is willing to defer to an agency's reliance on habitat as a proxy for species viability when it is not a clear-cut error of judgment to do so—specifically, “where both the Forest Service's knowledge of what quality and quantity of habitat is necessary to support the species and the Forest Service's method for measuring the existing amount of that habitat are reasonably reliable and accurate.”¹⁸⁶

However, the majority in *NEC* sees itself as upholding precedent rather than contradicting it. Where the dissent sees overstepping, the majority believes it is properly asking the Forest Service to live up to its responsibilities under the law.¹⁸⁷ *NEC* finds company in a number of Ninth Circuit cases that have disallowed use of a habitat proxy in certain contexts, for example: where the species/habitat relationship is unclear,¹⁸⁸ where the forest plan explicitly requires population monitoring,¹⁸⁹ where habitat monitoring is flawed in some way,¹⁹⁰ or where the habitat proxy fails to reasonably ensure viable populations of the MIS.¹⁹¹ As a whole, the case law suggests that the Ninth Circuit sees the adequacy of a habitat proxy to be fact-dependent.

Other circuits are split on the issue of proxy-on-proxy monitoring. For example, the Seventh Circuit has embraced the habitat proxy in fairly expansive terms,¹⁹² but the Tenth and Eleventh Circuits have determined that

Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1251 (9th Cir. 2005) (accepting a habitat proxy where the monitoring methodology was sound); *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1066 (9th Cir. 2004) (allowing a habitat proxy where it “‘reasonably ensures’ that the proxy results mirror reality”); *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 760–61 (9th Cir. 1996) (holding that the Forest Service assumption that preservation of sufficient habitat ensured species viability was “eminently reasonable” and warranted deference).

186. See *McNair*, 537 F.3d at 998–99 (quoting *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d at 1250).

187. See *NEC*, 599 F.3d at 934 (majority opinion). “Far from usurping the agency's role,” the court described itself as properly holding the Forest Service “to its statutory responsibility to fully study the effects of the planned agency action [under NEPA], and ‘to maintain viable populations of existing . . . species’” under NFMA. *Id.* at 934 (quoting 36 C.F.R. § 219.19 (1999) (emphasis added)). The majority states that it does not “share our dissenting colleague's perception that the Forest Service can meet its obligations to the environment by naming a virtually non-existent species to serve as a proxy for critical habitat in the targeted area.” *Id.*

188. See *Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 891 (9th Cir. 2007) (rejecting a habitat proxy where the EIS described the species/habitat relationship as unclear).

189. See *Earth Island Inst. v. U.S. Forest Serv.*, 442 F.3d 1147, 1175–76 (9th Cir. 2006) (rejecting use of habitat monitoring where the forest plan required population monitoring and, in the absence of a specific requirement, where habitat monitoring was inadequate), *abrogated in part on other grounds by Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7 (2008).

190. See *Lands Council v. Powell*, 395 F.3d 1019, 1034–35 (9th Cir. 2005) (holding that the proxy-on-proxy approach failed to comply with NFMA and requiring “on-site spot verification” for soil analyses where habitat analysis was flawed).

191. See *Idaho Sporting Cong., Inc. v. Rittenhouse*, 305 F.3d 957, 972–73 (9th Cir. 2002) (rejecting a habitat proxy that did not “reasonably ensure viable populations of the species at issue”).

192. See *Ind. Forest Alliance, Inc. v. U.S. Forest Serv.*, 325 F.3d 851, 863–64 (7th Cir. 2003) (framing proxy-on-proxy analysis as an “eminently reasonable” alternative to “going into the field and actually counting all of the birds”).

section 219.19¹⁹³ of the Forest Service planning rule mandates quantitative MIS population monitoring, rendering habitat monitoring an unacceptable surrogate in every instance.¹⁹⁴

This inconsistent state of affairs raises the question: Is this hodgepodge of approaches within and between circuits conducive to promoting biodiversity and sustainable use of our publicly held lands? If not, how can we improve the management practices of the Forest Service and other agencies in charge of public lands? The current effort to revise the Forest Service planning rule presents a realistic opportunity to make some much-needed changes that should not be missed. However, additional context will further define the scope of the problem and suggest potential solutions.

III. CURRENT FOREST SERVICE PLANNING AND MANAGEMENT

In the context of the Forest Service, part of the blame for management problems rests with Forest Service regulations developed to implement the sometimes vague mandates of NFMA. Whether particular problems originate with the regulations themselves, with strained agency interpretations, or with overly deferential courts, the Forest Service planning rule¹⁹⁵ continues to be highly contentious and is long overdue for change. This Part summarizes the history of the Forest Service planning rule and explores the limitations of the existing biodiversity requirements, specifically the MIS concept.

A. *The Contentious History of the Forest Service Planning Rule*

The planning rule got its start in 1979 when the first planning regulations were issued under NFMA.¹⁹⁶ Revisions in 1982 expanded the rule and clarified

193. Together with section 219.26. See discussion *supra* note 92 and accompanying text.

194. See *Utah Env'tl. Cong. v. Bosworth*, 372 F.3d 1219, 1225–27 (10th Cir. 2004) (holding that “a reading of § 219.19 as requiring only habitat analysis is inconsistent with the regulation’s plain meaning,” so the Forest Service is required to “gather quantitative data on actual MIS populations”); *Sierra Club v. Martin*, 168 F.3d 1, 4–7 & n.10 (11th Cir. 1999) (stating that 36 C.F.R. sections 219.19 and 219.26 “require the Forest Service to gather quantitative data on MIS and use it to measure the impact of habitat changes on the Forest’s diversity”).

195. 36 C.F.R. § 219.35 (2010) (2000 planning rule transition provision providing for continued use of the 1982 planning rule’s provisions); see 36 C.F.R. §§ 219.1–219.29 (1999) (1982 planning rule). Appendix B to the transition provision of the 2000 planning rule states:

During the transition period, responsible officials may use the provisions of the 1982 rule to prepare plan amendments and revisions. Projects implementing land management plans must comply with the transition provisions of § 219.35, but not any other provisions of the 2000 planning rule . . . must be developed considering the best available science in accordance with § 219.35(a) . . . [and] must be consistent with the provisions of the governing plan.

36 C.F.R. § 219.35 app. B (2010).

196. See National Forest System Land Management Planning, Notice of Intent to Prepare an Environmental Impact Statement, 74 Fed. Reg. 67,165, 67,166 (Dec. 18, 2009) [hereinafter NOI].

the substantive and procedural requirements of the planning process.¹⁹⁷ As mentioned previously, the rule's biodiversity requirements call for management of fish and wildlife habitat "to maintain viable populations of existing native and desired non-native vertebrate species in the planning area," as well as for monitoring the population trends of selected MIS to estimate the effects of management alternatives on wildlife populations.¹⁹⁸ All existing forest plans are based on the 1982 planning rule,¹⁹⁹ and due to a complex legal history, the 1982 rule is still in effect in nearly all but name.

After a comprehensive critique of land management planning²⁰⁰ found the 1982 rule too complex, too expensive, too long, and that it made public participation in planning and management decisions too difficult, the Forest Service decided to rework the planning rule.²⁰¹ This process lasted for a decade and culminated in a new planning rule in 2000.²⁰²

The 2000 rule refocused forest planning on the "overall goal" of sustainability, which it defined as encompassing "interdependent ecological, social, and economic elements."²⁰³ On the surface it seemed to be a leap forward in terms of applying current scientific thinking. It changed the scope of planning to better fit the scale of the contemplated action,²⁰⁴ introduced the requirement of a monitoring strategy for every plan,²⁰⁵ and encouraged joint monitoring for adaptive management with scientific and academic communities and other federal, state, local, and tribal agencies.²⁰⁶ The 2000 rule also added a mandate to consider the best available science.²⁰⁷ Collected monitoring information would be reported annually and *could* be used to determine the effects and effectiveness of management decisions and to reevaluate and modify site-specific decisions.²⁰⁸

On the other hand, conservation-oriented critics found much to disagree with. Many of the 2000 planning rule's "requirements" contained qualifications or allowed significant discretion,²⁰⁹ potentially making them judicially

197. See National Forest System Land and Resource Management Planning, 47 Fed. Reg. 43,026, 43,037 (Sept. 30, 1982) (formerly codified at 36 C.F.R. pt. 219).

198. 36 C.F.R. § 219.19(a)(1), (6) (1999).

199. See NOI, *supra* note 196, at 67,166.

200. See GARY LARSEN ET AL., U.S. FOREST SERV., SYNTHESIS OF THE CRITIQUE OF LAND MANAGEMENT PLANNING viii–ix (1990).

201. See *id.*

202. See *id.*

203. See 36 C.F.R. § 219.1(b) (2000). "Sustainability means meeting needs of the present generation without compromising the ability of future generations to meet their needs." *Id.* § 219.1(b)(3); see also *id.* § 219.19.

204. See *id.* § 219.3.

205. See *id.* § 219.11(a) (requiring monitoring and evaluation of ecosystem and species diversity (ecological sustainability) and social and economic sustainability); see also *id.* § 219.20–21.

206. See *id.* § 219.11(e).

207. See *id.* §§ 219.22(a), 219.24(a).

208. See *id.* § 219.11(d), (f).

209. See, e.g., Corbin, *supra* note 90, at 413.

unenforceable.²¹⁰ The MIS monitoring requirement of the 1982 rule was dropped, and its species viability requirement was downgraded from “maintain” viability to “a high likelihood” of maintaining viability.²¹¹ Furthermore, the 2000 rule reduced public participation by replacing the “post-decision appeal process” with a “pre-decision ‘objection’ process.”²¹²

In early 2001, the newly formed Bush administration suspended the 2000 rule after review concluded it was unworkable because it also was too complex, too expensive, and too procedurally burdensome.²¹³ Environmental groups sued, claiming NFMA, NEPA, and ESA violations, but stipulated to dismissal when a new rule was issued.²¹⁴

The resulting rule, issued in 2005 under the Bush administration, appeared to many to gut the forest planning process.²¹⁵ Among other things, it eliminated any form of species viability requirement,²¹⁶ severely curtailed the avenues for public participation by claiming exemption from NEPA for itself and all Forest Service planning documents,²¹⁷ and converted regulatory requirements into unenforceable agency directives.²¹⁸ The Forest Service had issued a categorical exclusion²¹⁹ that exempted “all proposals to develop, amend, or revise land use plans which did not approve particular projects or site-specific activities” from

210. See Robert B. Keiter, *Ecological Concepts, Legal Standards, and Public Land Law: An Analysis and Assessment*, 44 NAT. RESOURCES J. 943, 949 (2004).

211. 36 C.F.R. § 219.20(b)(2) (2000). This change left little in the way of “an effective limitation on the agency’s multiple-use options.” Keiter, *supra* note 210, at 964.

212. See *Citizens for Better Forestry v. U.S. Dep’t of Agric. (Citizens 2009)*, 632 F. Supp. 2d 968, 971 (N.D. Cal. 2009).

213. See Katrina M. Kayden, *Will Paradise Become a Parking Lot?: The Debate Over the Bush Administration’s Overhaul of Forest Management Regulations*, 17 VILL. ENVTL. L.J. 285, 291 (2006); NOI, *supra* note 196, at 67,167.

214. See *Citizens 2009*, 632 F. Supp. 2d at 972.

215. See, e.g., Michael C. Blumm & Sherry L. Bosse, *Norton v. SUWA and the Unraveling of Federal Public Land Planning*, 18 DUKE ENVTL. L. & POL’Y F. 105, 153–54 (2007–08) (“The rule represented a radical shift from NFMA’s congressional intent that forest plans were to be meaningful, prescriptive, judicially enforceable documents, prepared with public participation and in a manner consistent with NEPA.”); Martin Nie, *The 2005 National Forest System Land and Resources Management Planning Regulations: Comments and Analysis*, 27 PUB. LAND & RESOURCES L. REV. 99, 105 (2006) (“Such unbridled discretion was the problem, not the solution, according to NFMA’s primary architects.”).

216. See Kayden, *supra* note 213, at 292 (stating that “the new regulations remove mandatory protection of species viability from the management agenda”); David Mason, *Forest Guardians v. Forsgren and NFMA Planning Reform: The Return of Maximum Forest Service Discretion*, 85 DENV. U. L. REV. 653, 671–72 (2008) (stating that the 2005 and proposed 2007 rules “dispense[d] with the species viability and MIS requirements entirely, replacing these requirements with broad language requiring plans [to] ‘describe the monitoring program’ to be adopted for a planning area”).

217. See Blumm & Bosse, *supra* note 215, at 152–53.

218. See *id.* at 152.

219. See 36 C.F.R. § 219.4 (2005); see also National Forest System Land Management Planning, 70 Fed. Reg. 1023, 1031–33 (Jan. 5, 2005) (to be codified at 36 C.F.R. pt. 219) (explaining that the Forest Service was revising “its NEPA procedures,” described “in Forest Service Handbook (FSH) 1909.15 . . . to provide a new categorical exclusion for plan development, amendment, and revision”).

the NEPA process.²²⁰ The 2005 rule met vigorous challenges by environmental groups, and the reviewing district court held that its adoption—without an EA or EIS, public notice, public comment, or ESA consultation—violated NEPA and the ESA.²²¹

The Forest Service re-branded the 2005 rule, reissuing it with an EIS in 2008,²²² but the district court again struck it down,²²³ reinstating the 2000 rule.²²⁴ However, the 2000 rule contains a transition provision that allows continued use of the 1982 rule, with the added requirement to consider the best available science when amending or implementing a forest plan.²²⁵ According to the Forest Service, all forest plans in existence have been developed using the 1982 rule, either directly or through the 2000 rule's transition provision.²²⁶

Currently, the Forest Service is working on a new iteration of the planning rule,²²⁷ and (as of the time of this writing) is expected to release a draft EIS in early 2011.²²⁸ It remains to be seen whether this revision will solve some of the more pernicious problems facing forest planning and management. On one hand, “analysis paralysis” and increased litigation could result from new procedural burdens and substantive requirements. On the other hand, accidental or intentional abuses could result from too much free reign and insufficient judicial oversight—problems the current system of forest planning already experiences, as I describe below.

220. See *Citizens for Better Forestry v. U.S. Dep't of Agric.*, 481 F. Supp. 2d 1059, 1067 (N.D. Cal. 2007).

221. See *id.*

222. See *Citizens 2009*, 632 F. Supp. 2d, 968, 973 (N.D. Cal. 2009); National Forest System Land Management Planning, Final Rule and Record of Decision, 73 Fed. Reg. 21,468 (Apr. 21, 2008). The EIS determined that “the proposed rule would have no direct or indirect impact on the environment because the rule was programmatic in nature and did not, in itself, effect any predictable changes in the management of specific National Forest sites.” *Id.*; see also U.S. FOREST SERV., NATIONAL FOREST SYSTEM LAND MANAGEMENT PLANNING ENVIRONMENTAL IMPACT STATEMENT vi (2008), available at http://www.fs.fed.us/emc/nfma/includes/planning_rule/eis.pdf.

223. The district court held that the EIS for the 2008 rule violated NEPA, and the biological assessment did not meet the ESA's requirements of analysis and consultation. See *Citizens 2009*, 632 F. Supp. 2d at 981–82.

224. See, e.g., *Paulsen v. Daniels*, 413 F. 3d 999, 1008 (9th Cir. 2005) (“The effect of invalidating an agency rule is to reinstate the rule previously in force.”).

225. See 36 C.F.R. § 219.35 (2009); see also National Forest System Land and Resource Management Planning, 74 Fed. Reg. 67,059, 67,060–61 (Dec. 18, 2009) (interpreting paragraph (a) of section 219.35 to require consideration of “the best available science in implementing and, if appropriate, amending the current plan” until a new planning rule is issued).

226. See, e.g., *Planning Rule 101*, U.S. FOREST SERV., <http://www.fs.usda.gov/planningrule> (follow “Planning Rule 101” hyperlink) (last visited Mar. 4, 2011).

227. See NOI, *supra* note 196, at 67,165.

228. See *The Forest Planning Rule*, U.S. FOREST SERV., <http://fs.usda.gov/planningrule> (last visited Dec. 18, 2010); *Planning Rule Blog: Update on Planning Rule Development*, U.S. FOREST SERV. (Nov. 22, 2010), <http://planningrule.blogs.usda.gov/2010/11/22/update-on-planning-rule-development/>. The Forest Service released the draft rule as this Note when to press. See *Proposed Rule*, *supra* note 30; see also discussion *infra* Addendum.

B. Limitations of the 1982 Planning Rule's Biodiversity Requirements

Recall that the 1982 version of the Forest Service planning rule meets NFMA's biodiversity mandate by introducing two substantive biodiversity requirements. First, fish and wildlife habitat must be "managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area."²²⁹ Second, the "[p]opulation trends of . . . management indicator species [must] be monitored and relationships to habitat changes determined" in order to estimate the effects of management alternatives on fish and wildlife populations.²³⁰ While some form of viability requirement retains an important role in guiding Forest Service planning and management activities,²³¹ the second requirement—for selecting and monitoring MIS—has perhaps outlived its usefulness. A discussion of its limitations follows.

1. Inappropriate MIS Selection Defeats Conservation Goals

The 1982 planning rule's general language requires that MIS be chosen and incorporated into forest plans, but doesn't place useful limits on selection criteria or specify that at least one MIS shall be chosen for each habitat type. Consequently, the selection of inappropriate MIS or too few MIS leaves gaping holes in the implementation and enforcement of an effective biodiversity mandate.²³²

Managers wanting to emphasize ubiquitous, economically important game species can select them as MIS, even though their population levels may have little to do with preserving biodiversity or the viability of other, more sensitive, species. In fact, increasing the density of game species often has negative repercussions on habitat quality and ecosystem health that can result in decreased viability for other species.²³³ For example, while species diversity in North America has generally declined in the last 100 years, "[w]hite-tailed deer have increased in abundance and expanded their geographic range . . . and now exist at higher densities than they have in the past several hundred years," with

229. 36 C.F.R. § 219.19 (1999).

230. *Id.* § 219.19(a)(1), (6).

231. Without it "the Service would not be held accountable for loss of viability so long as it could prove that it attempted to "support diversity," presumably by showing evidence of general protection and preservation of the species' surrounding ecosystem." Kayden, *supra* note 213, at 296.

232. See Gerald J. Niemi et al., *A Critical Analysis on the Use of Management Indicator Bird Species of the Chequamegon National Forest*, 61 J. WILDLIFE MGMT. 1240 (1997) (finding little correlation between MIS and the habitat they are intended to represent); Ryan Kelly, Matthew Armsby & Erin Praehler, *Marine Spatial Planning* 31 (Nov. 3, 2010) (unpublished manuscript, on file with author) (stating that the vertebrate viability and MIS requirements are too vague to be enforceable).

233. See, e.g., T.P. Rooney, *Deer Impacts on Forest Ecosystems: A North American Perspective*, 74 FORESTRY 201 (2001) (finding "significant negative effects on understor[ly] plants . . . [including] herb and shrub species loss accompanying increases in deer density," and noting that high densities of mule deer "have severe impacts on sagebrush (*Artemisia* spp.) communities").

negative “impacts on the forest ecosystems they inhabit.”²³⁴ Selecting common deer species as MIS can therefore have perverse consequences, yet fourteen of the seventeen national forests in California have selected mule deer as one of their MIS.²³⁵

As *NEC* amply illustrates, when a management decision implicates habitat where the designated MIS is locally absent, the Forest Service may find it difficult to comply with either the letter of the law or its purpose.²³⁶ The *NEC* majority implied that when MIS specified in the forest plan are absent from a project area, the Forest Service should select and monitor ad hoc MIS at the project level.²³⁷ They explained that

If the Forest Service decided to select a project site consisting of the head ranger’s backyard . . . , it must indeed analyze *that particular site* to determine the effects of the proposed action. If the MIS [selected in the forest plan] were absent from that site, it is difficult to see how an assessment of th[ose] MIS could demonstrate that the proposed action at that site complied with either the NFMA or a Forest Plan based on monitoring of the MIS.²³⁸

By this logic, when the MIS designated in the forest plan is absent, failing to invoke a new MIS on an ad hoc basis could violate NFMA’s biodiversity requirement, because a proxy-on-proxy habitat monitoring approach is not defensible in these situations.²³⁹

The *NEC* dissent pushed back, highlighting the problems inherent in potentially requiring the Forest Service to pick a “stand-in indicator species” for every project area where MIS are “absent or impossible to detect.”²⁴⁰ Not only would “inventing” a judicial requirement to select ad hoc MIS complicate

234. *Id.*

235. See U.S. FOREST SERV. REGION 5, MANAGEMENT INDICATOR SPECIES REPORT FOR CLEVELAND NATIONAL FOREST 88 (2007).

236. See *NEC*, 599 F.3d 926, 934 (9th Cir. 2010). Because “the Forest Service is bound to assess proposed actions on a ‘site specific’ basis for compliance with the Forest Plan and NFMA,” if an MIS is absent, “it is difficult to see how an assessment of the MIS could demonstrate that the proposed action at that site complied with either the NFMA or a Forest Plan based on monitoring of the MIS.” *Id.* However, monitoring of MIS—which must be designated in the forest plan—is required. See 36 C.F.R. § 219.19(a)(6) (1999).

237. See *NEC*, 599 F.3d at 934 (“We do not share our dissenting colleague’s perception that the Forest Service can meet its obligations to the environment by naming a virtually non-existent species to serve as a proxy for critical habitat in the targeted area.”); see also *id.* at 937 (“We cannot say that the results of the [EA] . . . would have differed if an appropriate MIS for sagebrush obligates had been selected. [However,] [i]n the absence of that analysis, we reverse and remand for the Forest Service to undertake a new or revised” EA.).

238. *Id.* at 934 (emphasis in original).

239. See discussion *supra* Part II.C.1.

240. *NEC*, 599 F.3d at 940.

forest-wide planning and administration,²⁴¹ it would likely breed intra-forest inconsistencies that could overwhelm reviewing courts.²⁴²

As the disagreement between the majority and the dissent shows, absentee MIS present a conundrum under current law and expose a shortcoming of the MIS approach in environmental management more generally.

Because the planning rule's vertebrate species viability requirement²⁴³ lacks its own specific monitoring mandate, it is frequently conflated with the MIS monitoring requirement, which is intended to provide a proxy for the effects of management decisions on wildlife more generally.²⁴⁴ This leads to the frequent selection of only highly visible and nearly ubiquitous vertebrate MIS, including "charismatic megafauna,"²⁴⁵ even when monitoring the populations of less obvious vertebrates, invertebrates, plants, or suites of species from a variety of trophic levels in each habitat type would be more informative.²⁴⁶ Such oversimplification does not serve to maintain biodiversity or adhere to modern concepts of conservation biology.

The 1986 BDNF Forest Plan is a relevant example. Its MIS includes a total of eleven species: four threatened or endangered species (grizzly bear, peregrine falcon, bald eagle, and gray wolf), one "[b]ig [g]ame [s]pecies" (elk), one species representing sagebrush habitat (sage grouse), one species representing old growth spruce/fir habitat (pine marten), one representing old growth Douglas fir / fir habitat (goshawk), one representing marshland (trumpeter swan), and two representing "[c]old [w]ater [f]isheries" (arctic grayling and cutthroat trout).²⁴⁷ All are vertebrates, all are highly visible and fairly high on the food chain. Several habitat types are represented by just a single species. It seems unlikely that this suite of MIS provides enough diversity or redundancy to deliver the ecosystem-wide insights about management effects the planning rule requires.

241. See *id.* at 940, 942. "The entire point of a forest-wide plan is that complying with its forest-wide standards will ensure forest-wide species and habitat preservation." *Id.* at 940.

242. Courts are not supposed to impose new procedural requirements that are not "explicitly enumerated in the pertinent statutes." *Wilderness Soc'y v. Tyrrel*, 918 F.2d 813, 818 (9th Cir. 1990). They could have a hard time distinguishing where to give deference to agency decisions to create ad hoc project-level MIS and where to find them arbitrary and capricious.

243. "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." 36 C.F.R. § 219.19 (1999).

244. See *id.* § 219.19(a)(1), (6).

245. See DONALD G. KAUFMAN & CECILIA M. FRANZ, *BIOSPHERE 2000: PROTECTING OUR GLOBAL ENVIRONMENT* 342 (3d ed. 2000).

246. See, e.g., Kelly, Armsby & Praher, *supra* note 232, at 40 (suggesting that, in order to address this problem, an MIS requirement could define necessary categories of species, like ecological guilds, that must be included as MIS). Alternatively, an MIS requirement could introduce a procedural mandate to give "data-backed justifications for why each MIS acts as an indicator for . . . [a specific] management goal." *Id.*

247. FOREST PLAN, *supra* note 124, at II-26.

Even where planners have the best of intentions and take NFMA's biodiversity mandate to heart, MIS selection can create an unwarranted sense of security about the mechanisms of ecosystem sustainability, leading to management decisions based on inaccurate assumptions.²⁴⁸ Monitoring MIS cannot sufficiently predict the effects of management decisions on ecosystem health, biodiversity, or species viability when there is no adequate understanding of causal relationships and the mechanisms that connect them.²⁴⁹ Given the uncertainties and limitations of much present knowledge, there is frequently no clear linkage between a particular MIS and the complex web of variables sought to be estimated.²⁵⁰ In fact, the Forest Service has flatly admitted that the use of MIS as proxies for other species is "not supported by current science" and has discouraged their use in this manner.²⁵¹ Instead, Forest Service documents suggest that MIS should be chosen to address particular management issues and environmental conditions with which they have a clear relationship.²⁵² This alternative guidance would seem to be at odds with the 1982 regulatory requirements, which imply that MIS population monitoring should be used as a proxy of the viability of other species.²⁵³ It certainly militates against making the even more tenuous leap to using a proxy-on-proxy approach as the Ninth Circuit has allowed in some cases.

248. See, e.g., David B. Lindenmayer et al., *Indicators of Biodiversity for Ecologically Sustainable Forest Management*, 14 CONSERVATION BIOLOGY 941, 942 (2000).

Concepts associated with indicators and indicator species are not well understood, yet there is strong pressure on forest managers to embrace indicators in the conservation of biological diversity. Selection of the wrong or inappropriate indicators could give a false impression of scientific understanding, managerial knowledge, and ecological sustainability. This could have negative effects on biological diversity in forest ecosystems.

Id.

249. See *id.* at 945 (stating that "the causal linkages between an indicator and other entities (e.g., species or ecosystem processes) are not well demonstrated").

250. See *id.*

251. See, e.g., WAYNE OWEN, U.S. FOREST SERV., BEST PRACTICES FOR SELECTING AND USING MANAGEMENT INDICATOR SPECIES 4 (2010).

Perhaps the most important caveat concerning the selection of MIS concerns species on species proxies. 36 CFR 219.19(a)(1) indicates that it may be appropriate to select: "Additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities[.] . . ." This use of indicator species is not supported by current science and we should not use species as proxies for other species.

Id. (quoting 36 C.F.R. § 219.19(a)(1) (1999)); see also Samuel A. Cushman et al., *Use of Abundance of One Species as a Surrogate for Abundance of Others*, 24 CONSERVATION BIOLOGY 830 (2010).

252. See, e.g., U.S. FOREST SERV., SW. REGION, REGION 3 MANAGEMENT INDICATOR SPECIES SELECTION PROCESS AND CRITERIA, MODIFIED FROM R2, OPERATIONAL DRAFT, at 4 (2010).

253. The rule states that MIS should include "plant or animal species selected because their population changes are believed to indicate the effects of management changes on other species of selected major biological communities." 36 CFR § 219.19(a)(1) (1999).

MIS monitoring tends to provide, at best, a rough proxy that can oversimplify important management questions and conceal significant levels of uncertainty.²⁵⁴ However, the MIS concept

remains an appealing and potentially important one because of the impossibility of monitoring everything. If indicator species could be identified, they would be a powerful management tool, but taxon-based indicators are not adequate at present. . . . [T]he specific entities or conditions that they are supposed to indicate are often not stated explicitly . . . [or] those entities or conditions are nebulous or are difficult to define rigorously (e.g., ecosystem health). Moreover, the causal linkages . . . are not well demonstrated.²⁵⁵

Unfortunately, then, the MIS concept is a tempting short-cut without strong scientific support or documented management success. Its inherent oversimplification may create more problems than it solves.

2. *Management Failures Do Not Trigger Changed Practices*

MIS monitoring can be problematic in another way. In combination with the multiple-use mandate, it can be used to justify going forward with irresponsible or especially risky projects with an unreasonably high likelihood of doing long-term damage to species viability and ecosystem diversity. Whereas the precautionary principle²⁵⁶ is generally invoked to argue for caution in the face of uncertain environmental consequences,²⁵⁷ the vague and unenforced promise of adaptive management can have the opposite effect: encouraging potentially destructive land uses to be authorized on a “trial” basis without effective end.

Ideally, adaptive management is a structured, iterative approach to improving natural resource management by learning from management outcomes.²⁵⁸ The technique requires a team of managers and scientists to predict the outcomes of potential management alternatives, implement a management action based on the predictions, monitor the results of the action, and reevaluate and adjust future management actions to take these results into

254. See Lindenmayer et al., *supra* note 248, at 945; Cushman et al., *supra* note 251, at 10.

255. Lindenmayer et al., *supra* note 248, at 945.

256. See, e.g., Holly Doremus, *Precaution, Science, and Learning While Doing in Natural Resource Management*, 82 WASH. L. REV. 547, 550–51 (2007) (describing the rationale for the precautionary principle as “better safe than sorry”).

257. See *id.* at 548.

258. See, e.g., *Adaptive Management*, U.S. GEOLOGICAL SURVEY, http://biology.usgs.gov/water/adaptive_mngmt.html (last visited Nov. 13, 2010) [hereinafter *Adaptive Management*]; see also BYRON K. WILLIAMS, ROBERT C. SZARO & CARL D. SHAPIRO, *ADAPTIVE MANAGEMENT: THE U.S. DEPARTMENT OF THE INTERIOR TECHNICAL GUIDE 1* (2d ed. 2009), available at <http://www.doi.gov/initiatives/AdaptiveManagement/TechGuide.pdf>.

account.²⁵⁹ If adaptive management is carried out faithfully, it can greatly improve management outcomes and, through ongoing monitoring and data collection, help remedy the many knowledge deficits we know we have.²⁶⁰

However, in the absence of rigorous, ongoing monitoring to confirm whether management assumptions were warranted and effective triggers for management reevaluation and modification, the concept of adaptive management is dangerously dysfunctional. Given budgetary and time constraints and constantly shifting agency priorities, this kind of experimentation must be coupled with rigid, enforceable mandates. Ongoing monitoring must take place, and management failures must trigger changed practices.

Unfortunately, current regulations, including those that implement NFMA, do not contain enforceable mandates for adaptive management.²⁶¹ So although it is often invoked during the planning and environmental review process, it is rarely implemented.²⁶² Too frequently “management actions, even those that arouse substantial opposition, may continue for decades without any evaluation of their effectiveness.”²⁶³

3. *Too Much Judicial Deference Leaves the MIS Mandate Largely Unenforceable*

As described above, numerous authors, writing in both scientific and legal contexts, have recognized problems with the MIS concept.²⁶⁴ However, the hands-off approach generally taken by courts in the face of an expert agency interpreting its own, arguably vague, regulations leaves little incentive for forest planners to institute self-imposed tests of appropriateness in MIS

259. See, e.g., *Adaptive Management*, *supra* note 258; Williams, Szaro & Shapiro, *supra* note 258, at 1.

260. “Monitoring and on-going learning are cornerstones to effective decision making amid uncertainty in natural resource management.” Georgina Cundill & Christo Fabricius, *Monitoring in Adaptive Co-management: Toward a Learning Based Approach*, 90 J. ENVTL. MGMT. 3205 (2009).

261. “No federal agency has a systematic program for following up” to assess the predictions it made during the environmental review process. Holly Doremus, *Data Gaps in Natural Resource Management: Sniffing for Leaks Along the Information Pipeline*, 83 IND. L.J. 407, 429 (2008); see also Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 COLUM. L. REV. 903, 927 (2002) (noting that in most cases we never know the actual environmental impacts of actions evaluated under NEPA because neither federal agencies nor anyone else regularly conduct any follow-up analysis or monitoring).

262. See, e.g., Williams, Szaro & Shapiro, *supra* note 258, at 1.

263. Doremus, *supra* note 261, at 421.

Monitoring drains scarce agency resources without providing the political benefits of action. It may even threaten to scuttle delicate political compromises if it highlights problems with existing management efforts. As a result, post-decision monitoring of management steps is the exception rather than the rule, and opportunities for learning are regularly squandered.

Id. at 429.

264. See, e.g., sources cited *supra* notes 232, 236, 246, 248–251.

selection or for forest managers to hold to strict adaptive management practices. A lack of effective judicial review could contribute to inconsistent, poorly reasoned, and unresponsive management plans.²⁶⁵ When judicial review has no teeth, public lands suffer.

Courts commonly produce two related justifications for showing extreme deference to administrative agency decisions during judicial review: a constitutional justification based on the separation of powers, and an expertise justification centered on the lack of judicial competence to make judgments involving the specific areas of agency expertise. Chief Judge Kozinski, the dissenting judge in *NEC*, invoked both, accusing the majority of pretending to be “both legislature and biologist . . . by inventing new NFMA requirements and . . . dissecting reports about sage grouse in a misguided effort at second-guessing those reports’ authoring scientists.”²⁶⁶

There is much overlap in the reasoning for these justifications. Courts are loath to be seen as interfering where Congress has delegated the task of reconciling conflicting policy goals, such as multiple use and sustainability, to an agency.²⁶⁷ But their temerity has narrowed the role of judicial review far beyond the dictates of the APA to “hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”²⁶⁸ The arbitrary and capricious standard, in practice, seems to be too high a bar: courts are often reluctant to find against an agency in all but the most flagrant cases of error or indiscretion.²⁶⁹

For example, in at least some circumstances the Seventh and Ninth Circuits have accepted proxy-on-proxy habitat monitoring in lieu of MIS population monitoring to satisfy the Forest Service planning rule’s specific

265. See, e.g., Sara A. Clark, Note, *Taking a Hard Look at Agency Science: Can the Courts Ever Succeed?*, 36 *ECOLOGY L.Q.* 317, 343 (2009) (arguing that too much discretion “allows the agency to fill in scientific gaps using policy judgments, without requiring them to either gather more data to fill the gaps or to show that those judgements were reliable”). In effect, the Forest Service can disguise its “underlying bias toward timber harvesting . . . as a rational, scientific determination that additional harvesting will not adversely affect biodiversity.” *Id.* at 342–43.

266. *NEC*, 599 F.3d 926, 942 (Kozinski, J., dissenting) (9th Cir. 2010).

267. See, e.g., Holly Doremus & A. Dan Tarlock, *Science, Judgment, and Controversy in Natural Resource Regulation*, 26 *PUB. LAND & RESOURCES L. REV.* 1, 18 (2005); see also *Chevron*, 467 U.S. 837, 865 (1984) (holding that EPA’s interpretation represented “a reasonable accommodation of manifestly competing interests . . . entitled to deference” where “the regulatory scheme [wa]s technical and complex” and the expert agency “considered the matter in a detailed and reasoned fashion”); *NEC*, 599 F.3d 926, 938–39, 942 (9th Cir. 2010).

268. 5 U.S.C. § 706(2)(A) (2006).

269. See, e.g., Clark, *supra* note 265, at 335 (“[S]uccessful challenges to Forest Service decisions have traditionally resulted from a failure to meet the requirements of its own regulations or from procedural defects.”); Doremus & Tarlock, *supra* note 267, at 19 (“Scientific judgments are generally set aside only in the most egregious situations, as when it is clear that there is a major inconsistency between the underlying information and the ultimate conclusion.”).

implementation of NFMA's general biodiversity mandate.²⁷⁰ The Tenth and Eleventh Circuits have not.²⁷¹ Under the *Chevron* rule, when reviewing an agency's interpretation of a statute it administers, courts must address a two-part question: Is congressional intent unambiguous, and, if not, is the agency's interpretation permissible?²⁷² NFMA does not specify how its general biodiversity mandate must be met, leaving that for the implementing regulations²⁷³—the Forest Service planning rule—to determine, so we proceed to the second part of the analysis. Because the text of the planning rule explicitly requires the Forest Service to monitor MIS “population trends,”²⁷⁴ the agency's alternative interpretation of its own rule—allowing habitat monitoring to stand in for population monitoring—is not compelling and, in fact, is contraindicated.²⁷⁵ Nonetheless, many courts, including several federal courts of appeals, seem to have accepted as a foregone conclusion the idea that a proxy-on-proxy monitoring approach is “in accordance with law” under at least some circumstances.²⁷⁶ This acceptance, based on the assumption that an expert agency knows better than the court whether it is reasonable to use habitat monitoring to fulfill its MIS population monitoring requirement,²⁷⁷ even when the plain language of the regulation indicates otherwise,²⁷⁸ undermines the effectiveness of judicial review.

The expertise excuse has potentially broad repercussions. Recall that Judge Kozinski, dissenting in *NEC*, accepted the idea that the planning rule did not preclude proxy-on-proxy monitoring, and thought this meant the court should take no part in limiting the agency's options.²⁷⁹ He cited “the Forest Service's 216-page Environmental Assessment, six sage-grouse project-area-surveys, and bevy of supplemental reports” as constituting impervious shielding from judicial review.²⁸⁰ NFMA's substantive MIS monitoring

270. See *supra* notes 185, 192.

271. See *supra* note 194.

272. See *Chevron*, 467 U.S. at 842–43.

273. See 16 U.S.C. § 1604(g), (g)(3)(B) (2006) (requiring the Forest Service to promulgate regulations for developing and revising forest plans to meet NFMA's mandate to “provide for diversity of plant and animal communities”).

274. “Planning alternatives shall be stated and evaluated in terms of both amount and quality of habitat and of animal population trends of the management indicator species.” 36 C.F.R. § 219.19(a)(2) (1999) (emphasis added). “Population trends of the management indicator species will be monitored and relationships to habitat changes determined.” *Id.* § 219.19(a)(6) (emphasis added).

275. See *Chase Bank USA, N.A. v. McCoy*, 131 S. Ct. 871, 880 (2011) (“[A]n agency's interpretation of its own regulation” is due no deference if the “interpretation is ‘plainly erroneous or inconsistent with the regulation.’” (quoting *Auer v. Robbins*, 519 U.S. 452, 461 (1997))).

276. See discussion *supra* Part II.D.

277. See *NEC*, 599 F.3d 926, 941 (9th Cir. 2010) (“Courts are ill-equipped to second guess scientists, particularly scientists who are interpreting their own scientific evidence.”).

278. See *supra* notes 193–194 and accompanying text.

279. See *NEC*, 599 F.3d 926, 938 (9th Cir. 2010).

280. See *id.*

requirement seems to have become purely procedural in his eyes²⁸¹—the court had no business paging through the stack of scientific reports to confirm that the agency had followed the law.²⁸² However, the *NEC* majority looked to the substance of the requirement and was willing to condemn proxy-on-proxy monitoring where it was inconsistent with the underlying mandate.

NEC notwithstanding, the general climate of heightened deference to agency decisions means that science mandates initially intended to make agencies more accountable for their decisions may have “precisely the opposite effect” in practice.²⁸³ Because decisions are often highly technical, and agencies tend to portray their policy judgments (inaccurately) as naturally flowing from their scientific conclusions, courts may not feel equipped with the tools necessary to discern any but the most blatant violations.²⁸⁴ The Ninth Circuit, for example, is most deferential when “reviewing the agency’s technical analysis and judgments, based on an evaluation of complex scientific data within the agency’s technical expertise.”²⁸⁵ It reserves less deference for review of what it considers to be legal or policy decisions.²⁸⁶ Because science and policy decisions are often intermingled, science mandates can, paradoxically, end up “insulating agency judgments from oversight by the courts and the political process.”²⁸⁷

Presumably Congress had a compelling reason to build a biodiversity requirement into NFMA.²⁸⁸ Without meaningful judicial review, Forest Service

281. “We should abstain from this sort of law office science. The Service has already printed hundreds of pages analyzing the Antelope Basin/Elk Lake’s suitability for summer grazing. Both NFMA and NEPA were satisfied. We have no authority to stand in the way.” *Id.* at 942.

282. *See id.*; *see also* quote *supra* note 277.

283. Doremus & Tarlock, *supra* note 267, at 18.

284. *See, e.g.*, Adam Babich, *Too Much Science in Environmental Law*, 28 COLUM. J. ENVTL. L. 119, 160–66 (2003); Doremus & Tarlock, *supra* note 267, at 18–20; Christopher Edley, *The Governance Crisis, Legal Theory, and Political Ideology*, 1991 DUKE L.J. 561, 576 (1991); Laura Anzie Nelson, *Delineating Deference to Agency Science: Doctrine or Political Ideology?*, 40 ENVTL. L. 1057, 1062, 1063 (2010); Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1617 (1995); Clark, *supra* note 265, at 319–20 (2009) (quoting Wagner, *supra*, at 1622 n.28).

285. *Ctr. for Biological Diversity v. Kempthorne*, 588 F.3d 701, 707 (9th Cir. 2009) (quoting *Envtl. Def. Ctr. v. U.S. Env’tl. Prot. Agency*, 344 F.3d 832, 869 (9th Cir. 2003)).

286. *See id.*; *see also* Nelson, *supra* note 284, at 1065 (“[F]actual determinations receive less judicial scrutiny and are more likely to be upheld.”). While this may be the announced policy of the court, in practice there is little consistency. Individual judges tend to “flex their judicial muscle” by using greater scrutiny “when the implemented policy conflicts with their own ideology.” *Id.* at 1097. As a result, although significant judicial deference should theoretically protect “science-based” agency decisions from overturn by industry-sympathetic judges, the tendency of judges to “vote according to their policy preferences or ideological beliefs,” makes this less of a sure thing. *Id.* at 1085; *see also, e.g.*, Cass R. Sunstein et al., *ARE JUDGES POLITICAL?: AN EMPIRICAL ANALYSIS OF THE FEDERAL JUDICIARY* 3, 45 (2006) (“Because of party differences and panel effects, judicial decisions—both the results and the ultimate course of the law—are greatly affected by the composition of the panel. A litigant who draws three Democratic appointees will often have very different prospects than a litigant who draws three Republican appointees.”).

287. Doremus & Tarlock, *supra* note 267, at 18.

288. *See supra* note 10 and accompanying text.

decisions inconsistent with that requirement will go unchecked, with potentially devastating long-term consequences. Clearly, something must be done to encourage courts to perform their core function and duty—“to say what the law is”²⁸⁹—with respect to judicial review of administrative decisions. Judges should not be hamstrung by lack of scientific expertise and relegated to rubber-stamping agency decisions.²⁹⁰

IV. A NEW FRAMEWORK: CHANGING FOREST SERVICE PLANNING AND PRACTICE TO ACHIEVE BIODIVERSITY GOALS

MIS selected at a forest-wide level may be of little utility at the scale of any particular project. As the discussion in Part III.B.1 suggests, the species may be absent, difficult to monitor, or simply uninformative. For example, in the *NEC* case, where the sole MIS for sagebrush habitat was absent from the project area, the Forest Service was nonetheless compelled to monitor the MIS, so it enlisted a proxy-on-proxy approach to attempt to fulfill its obligations under NFMA. The lack of operational flexibility in the MIS requirement can lead to absurd and counterproductive results that defeat the purpose of the mandate.

Instead of forcing them to adhere to an ill-fitting, one-size-fits-all mandate, the planning rule needs to provide agency scientists and managers with the flexibility to choose analytical tools and environmental indicators to meet NFMA’s biodiversity requirement in a way that is both tailored to the project at hand and represents the best science has to offer.

However, too much flexibility comes with a price: without ground rules, no one can hold an agency accountable for its decisions.²⁹¹ The key is to provide agency scientists with enough flexibility to provide the data, scientific

289. *Marbury v. Madison*, 5 U.S. 137, 177 (1803).

290. Excessive judicial deference is especially dangerous where agency capture has occurred, and regulators are cooperating too closely with regulatees. *See, e.g.*, Matthew D. Zinn, *Policing Environmental Regulatory Enforcement: Cooperation, Capture, and Citizen Suits*, 21 *STAN. ENVTL. L.J.* 81, 84, 107–11 (2002). This phenomenon is illustrated in an extreme form by the industry highjacking of the Minerals Management Service (renamed the Bureau of Ocean Management, Regulation, and Enforcement in the aftermath of BP’s Deepwater Horizon oil spill), which was tasked with the “conflicting responsibilities” of promoting offshore oil development, collecting revenue from oil company leases, and overseeing drilling operation safety. *See Protecting the Public Interest: Understanding the Threat of Agency Capture: Hearing Before the Senate Subcommittee on Administrative Oversight and the Courts*, 111th Cong. 8 (2010) (statement of Nicholas Bagley, Assistant Professor of Law, University of Michigan Law School), available at <http://judiciary.senate.gov/pdf/08-03-10%20Bagley%20Testimony.pdf>; *see also, e.g.*, Jaclyn Lopez, *BP’s Well Evaded Environmental Review: Categorical Exclusion Policy Remains Unchanged*, 37 *ECOLOGY L. CURRENTS* 93, 93–94 (2010).

291. Additionally, while federal agencies are not necessarily “routinely or intentionally misusing science,” they do not always make “the best use of science,” so giving some structure to the biodiversity mandate of NFMA will help ensure a base level of science quality control. Holly Doremus, *The Purposes, Effects, and Future of the Endangered Species Act’s Best Available Science Mandate*, 34 *ENVTL. L.* 397, 401 (2004).

conclusions, and explanations of uncertainty that managers need to make informed decisions, without sacrificing reliability and enforceability. A framework for flexible decision making should, at minimum, include mandates for both application of the best available scientific information and an adaptive management scheme that requires changed practices when management activities fail to maintain biodiversity and the viability of native species. This framework would require analysis and synthesis of currently available and feasibly acquirable information to satisfy the first requirement and ongoing monitoring, data collection, and analysis, combined with frequent management reevaluation, to satisfy the second.

A. *A Best Available Science Mandate*

A number of important federal statutes already directly employ mandates to use the “best available science.”²⁹² The Endangered Species Act, Marine Mammal Protection Act, and Magnuson-Stevens Fishery Conservation and Management Act contain “pervasive” references to requirements for using the best available science.²⁹³ As these statutes generally lack detailed definitions, the 2000 planning rule’s construction of a best available science mandate could serve as a model for a similar, but more robust, mandate central to a new planning regime. It would have required decision makers to ensure consistency with the best available science by analyzing whether (1) they took relevant scientific information into account “in a manner consistent with current scientific understanding at the appropriate scales,” (2) uncertainties were “recognized, acknowledged, and adequately documented,” and (3) risks were adequately assessed.²⁹⁴ Additionally, it would have allowed for an interdisciplinary science advisory board²⁹⁵ to assist in this consistency evaluation, and any “substantial disagreement” among board members or between the board and the decision maker would have been recorded in appropriate NEPA documentation.²⁹⁶

292. See *id.* at 405–07 nn.45–55; see, e.g., Safe Drinking Water Act, 42 U.S.C. § 300g-1(b)(3)(A) (2006) (requiring EPA to use the best available science in making decisions about drinking water standards).

293. See Doremus, *supra* note 291, at 405 n.45; see also, e.g., 16 U.S.C. § 1371(a)(3)(A) (2006) (requiring use of “the best scientific evidence available” to determine whether to allow the take of a marine mammal); 16 U.S.C. § 1533(b)(1)(A) (2006) (requiring ESA listing determinations to be based solely on “the best scientific and commercial data” the agency has at its disposal); 16 U.S.C. § 1851 (2006) (mandating that fishery “[c]onservation and management measures . . . be based upon the best scientific information available”).

294. 36 C.F.R. § 219.24(a)–(b) (2000). Note that the transition provision of the 2000 rule does not require adherence to these science consistency requirements. Instead it requires only that “the responsible official . . . consider the best available science in implementing and, if appropriate, amending the plan.” 36 C.F.R. § 219.35(a) (2010) (emphasis added); see also *supra* note 195.

295. See *id.* § 219.25.

296. See *id.* § 219.24(a), (c).

While it would be unrealistic to mandate consultation with a science advisory board for every project, the 2000 rule unnecessarily left some elements to agency discretion. For example, the 2000 rule stated that “incomplete or unavailable information, scientific uncertainty, and the variability inherent in complex systems” *should* be acknowledged “when appropriate.”²⁹⁷ A more enforceable mandate might instead read: “incomplete or unavailable information, scientific uncertainty, and the variability inherent in complex systems *must* be acknowledged *and discussed*.” Stronger, less discretionary, language would create greater transparency in the planning and management process, preventing a court from giving deference to an expert agency’s interpretation of when it might be “appropriate” to reveal information about the limitations of data. This type of disclosure will help distinguish between the rare decisions compelled largely by science and those that involve a significant component of value judgment.²⁹⁸ While perhaps politically difficult to stomach, this is in everyone’s interest.

A relevant example of how the best available science mandate ought to work where sage grouse are at issue comes from John W. Connelly, a sage grouse expert and primary author of many of the scientific reports the Forest Service relied upon in the *NEC* case. In *NEC* the Forest Service sidestepped sage grouse monitoring, instead using proxy-on-proxy habitat monitoring²⁹⁹ to evaluate the potential effects of AMP updates on the viability of sage grouse and other sagebrush obligates. Yet in the 2000 *Connelly Guidelines*³⁰⁰ and more recent documents, Connelly urged that sage grouse viability be measured by population monitoring instead of by the mere “existence of sagebrush-dominated habitat.”³⁰¹ His 2007 paper suggests a combination of one or more metrics including sage grouse distribution, the number of active leks,³⁰² the total number of males counted at each active lek, counting sage grouse pellets along random transects, and modeling the effects of management practices on sage grouse populations.³⁰³ The last two methods (pellet transects and modeling)

297. *Id.* § 219.22(a).

298. See Doremus & Tarlock, *supra* note 267, at 28 (“When areas of scientific uncertainty are unspecified, critical agency science judgments, as well as policy judgments, may go unreviewed.”).

299. Which has proven to be unsuitable for sage grouse. See discussion *supra* Part II.C.1. It is important to note, however, that habitat monitoring data is likely to be an important part of meeting the best available science requirement for most, if not all, projects. Replacing the straightjacket-formality of the MIS requirement with more flexible mandates should prevent Forest Service managers from feeling compelled to twist habitat monitoring data to serve a purpose for which it is unfit, for example using it as a proxy-on-proxy stand-in for species viability without scientific justification.

300. See *Connelly Guidelines*, *supra* note 158, at 976 (calling for “[r]outine population monitoring”).

301. John W. Connelly & Clait E. Braun, *In Our Opinion: Measuring Success of Sage-grouse Conservation Plans*, GROUSE NEWS, May 2007, at 4.

302. Leks are “breeding display sites [that] typically occur in open areas surrounded by sagebrush.” *Connelly Guidelines*, *supra* note 158, at 970.

303. See, e.g., Connelly & Braun, *supra* note 301, at 4.

may be useful even where active leks are absent, as in the *NEC* project area, to better gauge whether sage grouse are indeed absent from the area. Additionally, in areas that have experienced large-scale habitat loss, the *Connelly Guidelines* suggest protecting “all remaining habitats from additional loss or degradation” and restoring degraded zones.³⁰⁴ Given the history of destructive management practices and concomitant decreases in sage grouse population in the vicinity of the grazing allotments at issue in *NEC*,³⁰⁵ this would likely require restricting or eliminating grazing from some areas.

Even if these kinds of data are not readily available at the time a project’s environmental review, a best available science mandate may be written to require “an affirmative obligation to find data, rather than to simply evaluate what others present.”³⁰⁶ For example, the First Circuit has interpreted the ESA’s best available science mandate in this way, calling for additional study that was both feasible and likely to contribute significantly to understanding the project’s risks.³⁰⁷ This is consistent with a congressional report on the 1978 ESA amendments stating that the best available science mandate required use of the best data “available or [which] can be developed during” the ESA consultation process.³⁰⁸ However, the D.C. Circuit later rejected the idea that new information must be developed to satisfy the ESA’s best available science requirement.³⁰⁹ That court found “no obligation to conduct independent studies.”³¹⁰ In order to avoid this confusion, the new planning rule should explicitly require the Forest Service to use the best science available as well as that which can be feasibly developed during the project review process.

Science is often perceived to be something it is not. The general public and many policymakers imagine that, if only we could collect enough data, scientific analysis would provide a single correct answer to every problem. However, a best available science mandate cannot ensure “objective, value-neutral decision making,”³¹¹ and that is not where its value lies:

The essence of science is not objective certainty. It is, instead, a process carefully designed to illuminate the extent and reliability of knowledge

304. See *Connelly Guidelines*, *supra* note 158, at 978.

305. See *supra* notes 52–69 and accompanying text.

306. Doremus, *supra* note 291, at 424.

307. See *Roosevelt Campobello Int’l Park Comm’n v. U.S. Env’tl. Prot. Agency*, 684 F.2d 1041, 1052, 1055 (1st Cir. 1982). The Ninth Circuit has made similar decisions. See *Connor v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988).

308. Doremus, *supra* note 291, at 425 (quoting H.R. REP. NO. 96-697, at 12 (1979), *reprinted in* 1979 U.S.C.C.A.N. 2557, 2576).

309. *Id.* (citing *Southwest Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 61 (D.C. Cir. 2000)).

310. *Id.* (quoting *Southwest Ctr. for Biological Diversity*, 215 F.3d at 60).

311. Doremus, *supra* note 291, at 419.

about studied systems, and to increase the reliability and extent of that knowledge over the course of time.³¹²

Unlike the overly restrictive yet excessively discretionary MIS concept of the 1982 Forest Service planning rule, a best available science mandate, in combination with adaptive management, makes productive use of these characteristics to serve the greater goals of NFMA.

B. An Adaptive Management Mandate

In order for Forest Service planning and management to be effective, data collection and analysis cannot end with the initial environmental review process. Because information is “widely recognized . . . [as] a limiting factor for environmental and natural resource policy,” successful public land management may hinge on being able to monitor the effects of a management decision and change course if it produces undesirable results.³¹³ Similar decisions need to be made repeatedly over time³¹⁴—at a minimum whenever a project-specific plan is updated, like the AMP updates at issue in *NEC*—and each subsequent decision can benefit from what the agency has learned in the interim.³¹⁵ The key is to ensure that the learning process is not set back by data gaps or missed opportunities due to infrequent or sporadic monitoring. Ongoing monitoring efforts, the collection of relevant data, and timely data analysis aimed at evaluating management assumptions³¹⁶ should form the basis of an adaptive management requirement.

Unfortunately, the Forest Service and other agencies have traditionally viewed the NEPA process in a way that is hostile to adaptive management. Operating on limited budgets and within tight time constraints, federal agencies tend to concentrate on minimizing the expenditure of these scarce resources at the expense of failing to assure consistent quality and adequacy of NEPA analysis.³¹⁷ However, grazing and other ongoing management activities do not lend themselves readily to purely front-end environmental analysis and

312. Holly Doremus, *Science Plays Defense: Natural Resource Management in the Bush Administration*, 32 *ECOLOGY* L.Q. 249, 297 (2005).

313. Doremus, *supra* note 261, at 408.

314. For example: whether to allow grazing in an area at all; if so, how much grazing to allow; and whether/what conditions should be placed on grazing permits to minimize environmental damage.

315. See Doremus, *supra* note 261, at 409. “[N]atural resource decisions present opportunities for the incorporation of new information because they are frequently iterative, with the same or similar choices arising periodically.” *Id.*

316. See, e.g., *id.* at 425, 427, 429 (2008) (noting “[a] litany of examples of failure to extract information that is both readily available and highly relevant to management . . . [which] suggests that . . . systemic information gaps remain” even where baseline data exists or monitoring has occurred and data is available).

317. See ROBERT SMYTHE AND CAROLINE ISBER, *NEPA IN THE AGENCIES—2002: A REPORT TO THE NATURAL RESOURCES COUNCIL OF AMERICA* 1–2 (2002), available at <http://classwebs.spea.indiana.edu/kenricha/NEPA%20and%20the%20Forest%20Service/NEPA%20-%20Forest%20Service/Smythe-%20NEPA%20in%20the%20agencies.pdf>.

decision making,³¹⁸ so trying to force them to fit that mold has ironically contributed to a feedback loop of suboptimal management decisions. A front-loaded system that precludes reevaluation and course correction without starting the NEPA process anew severely hampers managers' ability to adapt when management outcomes don't match expectations.

Chuck Quimby, a rangeland program manager for the Forest Service, has suggested making the NEPA process more adaptive management-friendly by including analysis of "foreseeable feasible" management options that may be implemented without additional NEPA review when monitoring results implicate a management change.³¹⁹ The system would entail

building an adaptive management feedback loop into the NEPA process whereby an interdisciplinary team defines the desired conditions for a specific land area, defines the science based design criteria that are believed to be necessary to move resource conditions toward the desired condition, builds in adaptive flexibility to respond to changed conditions or applications that do not work out exactly as planned, and then develops a clean, simple, interdisciplinary monitoring program that will allow the team to determine if adaptive changes are needed over time and if so, which ones.³²⁰

Instead of forcing managers to dedicate themselves to a single management path until the next plan revision with full NEPA review takes place, this reinterpretation of the NEPA process would more effectively facilitate informed decision making in an adaptive management context.³²¹

The "constrained flexibility" granted to decision makers would require a ground-up reanalysis of how planning should work.³²² For example, in the context of grazing management, Quimby notes that "the team needs to focus on what we want the ground to look like and what constraints are necessary to get there, rather than focusing on how many cattle to permit or which fence to

318. See CHUCK QUIMBY, A PRACTICAL APPROACH TO ADAPTIVE MANAGEMENT WITH A SPECIFIC FOCUS ON LIVESTOCK MANAGEMENT NEPA BASED DECISIONS ii (2001).

319. See *id.*

320. See *id.*

321. As Quimby notes:

The bottom line is that practical adaptive management is an excellent tool to help an interdisciplinary team, working closely with their authorized officer, to make best use of science over time by providing mechanisms for feedback and adjustment. This approach will greatly facilitate the application of constantly improving management rather than focusing on rigid processes that can actually inhibit improvement of resource conditions.

Id.; see also Williams, Szaro & Shapiro, *supra* note 258, at 19.

322. Quimby, *supra* note 318, at 1; see also Bruce Fox, Chuck Quimby & Terry Padilla, Rangeland Program Managers, Regions 1, 2 & 4, *Allotment Management Planning and NEPA: A Suggested Change in Thinking*, U.S. FOREST SERV. (June 2, 2004), [http://www.cabnr.unr.edu/swanson/_fpclass/adaptive_amp_nepa%20\(2\)%20410.pdf](http://www.cabnr.unr.edu/swanson/_fpclass/adaptive_amp_nepa%20(2)%20410.pdf).

build.”³²³ The science/management team would be required to identify and analyze a suite of management options as part of the project-level NEPA review process.³²⁴ If monitoring results later suggested a change in practice, a palette of options that have already undergone environmental review would exist to choose from. Although it is impossible to specify every option in advance,³²⁵ this compromise should provide enough flexibility to carry out adaptive management while fully honoring the purpose and process of NEPA.

The feasibility of an adaptive management mandate is bolstered by the fact the Forest Service already frequently engages in it, albeit generally on a smaller scale. For example, the DN/FONSI for the AMP updates in the *NEC* case explains that “livestock will be moved to the next pasture, or removed from the allotment, when certain thresholds (upland forage utilization, stream bank alteration, riparian forage utilization, riparian vegetation stubble height or a shift in preference to woody browse) are met.”³²⁶

Maintaining useful ongoing monitoring programs to assist adaptive management will require long-term commitment of funds and manpower, which may be difficult to come by in hard economic times, so alternative sources of data-gathering (including other agencies and academic scientists) should be explored. Enlisting monitoring help from academic scientists is a promising idea. However, untenured faculty may see significant participation in ongoing monitoring as contributing little to their professional advancement, since, by its very nature, it may not provide enough “new” fodder to fulfill the need to build a record of publication.³²⁷ Tenured faculty and faculty at purely undergraduate institutions looking for research experiences for their undergraduate students might prove to be a more valuable, long-term resource. Additionally, a potentially more stable prospect for ongoing monitoring support is delegating the work of monitoring to an agency like the U.S. Geological Survey, whose main priority is gathering scientific information and whose budget for monitoring, therefore, cannot be shifted easily to other activities.³²⁸

Monitoring for adaptive management must be done at a meaningful scale and with enough frequency to “keep pace with changes in the natural

323. Quimby, *supra* note 318, at 1 (“In terms of [using adaptive management in] natural resource management, the focus is always on meeting or moving toward the desired condition objectives on the ground. This is a pretty major shift in how we think about planning in that the team needs to focus on what we want the ground to look like and what constraints are necessary to get there, rather than focusing on how many cattle to permit or which fence to build.”).

324. *Id.* at 1.

325. If the existing suite of options is lacking, NEPA documents could be supplemented or revised. See discussion *supra* Part II.A.2.

326. DN/FONSI, *supra* note 121, at 2.

327. See Doremus, *supra* note 261, at 422.

328. See, e.g., Eric Biber, *Environmental Law's Monitoring Problem* (U.C. Berkeley Public Law Research Paper No. 1680000, 2010), available at <http://ssrn.com/abstract=1680000>.

system.”³²⁹ Some changes in response to management decisions may occur rapidly, like the early closure of a salmon fishing season based on in-season counts to avoid over-fishing. Others, on the other hand, may not be noticeable for years. For example, because they are such long-lived species, the success of oak restoration efforts may be unclear in the short term due to the effects of natural variability on seedling survival. Therefore, if monitoring activities are to be carried out by a third party as described above, the science/management team making project-based decisions will need to remain in close contact to ensure that relevant data are gathered and analyzed in a timely fashion. In fact, NFMA already requires development and revision of forest plans to be coordinated with state and local governments as well as with other federal agencies.³³⁰

In order to capitalize on the promise of adaptive management, then, the new planning rule must require managers to (1) develop monitoring criteria (triggers) to assess the success or failure of the proposed management activity in maintaining biodiversity (carefully defined)³³¹ and the viability of native species; (2) engage in long-term, ongoing monitoring programs that include collection of relevant data at relevant time scales; and (3) reevaluate and modify their management practices according to enforceable, well defined triggers in response to monitoring results.

CONCLUSION

Although the new draft planning rule is not yet available, proposed changes to the implementation of NFMA’s biodiversity mandate were sounded out at national roundtables during 2010.³³² These included (1) changing the scope of the viability requirement to (on a coarse scale) “provide the ecological conditions for ecosystem and species diversity and to [on a fine scale] support viable populations of native species in the plan area to meet specific goals related to species that are threatened, endangered, at risk, or of concern”;³³³ (2)

329. Williams, Szaro & Shapiro, *supra* note 258, at 15.

330. See 16 U.S.C. § 1604(a) (2006); see also 36 C.F.R. § 219.7 (1982) (requiring the Forest Service to, for example, meet with and seek input from these entities, provide them with notice of “anticipated planning actions,” and review and consider their policies and the “interrelated impacts of these plans and policies”).

331. The definition should be based on current conservation biology concepts and should fully value the services provided by healthy ecosystems. See *supra* notes 8–9 and accompanying text.

332. See *Forest Planning Rule Collaboration & Public Involvement*, U.S. FOREST SERV., <http://tinyurl.com/4cwrspg> (last visited Jan. 23, 2011); see also John Rupe, *Changes Proposed to NFMA Species Viability Requirements*, NEW CENTURY OF FOREST PLANNING (Aug. 3, 2010), <http://ncfp.wordpress.com/2010/08/03/changes-proposed-to-nfma-species-viability-requirements>.

333. See PLANNING RULE TEAM DRAFT DOCUMENT FOR DISCUSSION PURPOSES AT THE FOURTH NATIONAL ROUNDTABLE: PLANT AND ANIMAL DIVERSITY 2–3 (2010), available at <http://www.idrsinc.org/wp-content/uploads/2010/08/Plant-and-Animal-Diversity.pdf>. Expanding the scope of the viability requirement to include invertebrates and plants would be a positive development.

scaling the obligations of the viability requirement back from the 1982 rule's unqualified mandate in order to "recognize and work within the capability of" national forest lands and Forest Service authority,³³⁴ and (3) replacing the MIS concept with a dual system of forest- and landscape-level monitoring that could include tracking a small number of "[f]ocal species . . . identified based on their sensitivity to changing conditions or ability to confirm the existence of the desired ecological conditions."³³⁵ Furthermore, in a nod to adaptive management, the forest planning process would be converted from a front-loaded process to "a collaborative and continuous cycle for refining management activities to achieve species goals," summarized as "assess, revise/amend, and monitor."³³⁶

Without seeing the specific language and overall structure of the draft rule, it is difficult to analyze potential repercussions on the effectiveness and transparency of Forest Service planning and management or the enforceability of NFMA's biodiversity mandate. Much will depend on the strength and clarity of the words and concepts used.

If thoughtfully implemented, my suggestions—replacing the planning rule's MIS requirement with mandates for use of the best available science and a system of adaptive management—would provide Forest Service scientists and managers with the flexibility and structure they need to achieve better management outcomes and fully honor NFMA's biodiversity and sustainability goals. Additionally, this framework would enhance transparency in the Forest Service planning and management process. The public and reviewing courts would be able to see more clearly where data limitations exist and where scientists and managers have made policy decisions as opposed to science decisions, or where the two are inextricably intertwined.

By primarily focusing on whether or not they have been "asked to examine an agency's scientific and technical findings," courts often avoid

334. *See id.* at 1–2. While they sound reasonable, these exceptions could easily be misused. As evidence that factors "outside the control of the agency" could render viability unattainable, the draft discussion document offers that "we have learned that species might not occupy suitable habitat even when it is available for use." *Id.* at 2. However, instead of acknowledging a hard truth, the Forest Service may instead be unintentionally obscuring, and thereby perpetuating, management failures caused by gaps in its understanding of ecosystem function or species needs.

335. *See id.* at 3. Attention to different scales of monitoring and analysis is promising and could contribute to a greater appreciation for cumulative effects. However, if focal species were selected at the forest-wide level, they would perpetuate some of the same problems inherent to MIS, including lack of redundancy, which could lead to project-level problems of absence or rarity. Careful selection of focal species with population trends closely tied to specific ecological conditions—instead of MIS intended to serve as proxies for other species and entire habitat-types—would alleviate some common problems with MIS. Additionally, a requirement for project-related monitoring at the sub-forest level seems to be missing.

336. *See id.* at 3. However, this scheme seems to artificially subdivide a potentially adaptive approach into discrete segments. True adaptive management would require continuous monitoring with frequent assessment triggering revision as needed. The discussion document lacks a description of how this system would interface with NEPA review.

critical inquiries.³³⁷ Instead of reflexively defaulting to an extremely deferential position (or, conversely, unconsciously letting their personal ideologies govern when to depart from it), courts should first be asking:

Which components of an agency's scientific and technical findings implicate policy choices? Do the agency's findings of uncertain, unknowable, or future events use principles consistent with the controlling statutory goal or policy? Has the agency articulated how it interprets the applicable statutory policy as it relates to the implementation under question?³³⁸

While it is no easy task for courts to separate science and policy decisions, attempting to do so is important, and increased transparency will help this process, providing a basis for more meaningful judicial review.³³⁹ Increased clarity about the basis for planning and management decisions will also facilitate more robust, more useful public participation in the decision-making process.

Managing complex biological systems is a difficult prospect based on rapidly evolving science. Collectively, a system that applies the best available science and truly adaptive management to achieve well-defined biodiversity and species viability goals would set up a positive feedback cycle for improving planning and management practices. Today, while the Forest Service engages in the self-evaluative process of revising its planning rule, many of the usual barriers to administrative reform are down. Hopefully the agency will seize this opportunity to make significant, positive changes that promote the truly sustainable use, preservation, and restoration of our federal public lands.

ADDENDUM: RESPONSE TO THE DRAFT PLANNING RULE

As this Note went to press, the Forest Service published its proposed planning rule in the *Federal Register* on February 14, 2011.³⁴⁰ In this Addendum, I attempt to summarize some of the major outstanding issues as I see them.

337. See, e.g., Nelson, *supra* note 284, at 1062–63.

338. *Id.*

339. Professor Holly Doremus notes,

Courts have been quite willing to find that the agency did not adequately explain its evaluation of the scientific evidence or its interpretation of the legal significance of that science, did not point to support for its conclusion in the record, failed to consider available evidence, committed procedural errors in its treatment of scientific information, or failed to correctly interpret or satisfy [statutory] requirements.

Doremus, *supra* note 291, at 431–32. While “[o]nly a few decisions expressly reject the agencies’ substantive scientific determinations . . . even without taking that step, the courts have quite effectively forced the agencies to look hard at the scientific evidence.” *Id.* at 432.

340. See *Proposed Rule*, *supra* note 30.

A. *The Draft Rule's Treatment of NFMA's Biodiversity Mandate*

As expected, the proposed rule drops the MIS monitoring requirement and replaces a mandatory (vertebrate) species viability requirement with a discretionary one that requires maintenance of “viable populations of [plant and animal] species of conservation concern within the plan area” consistent with “Forest Service authority” and “the inherent capability of the plan area.”³⁴¹ Similarly, plan components intended to “maintain or restore” ecosystem diversity are subject to these same limitations.³⁴² While ensuring species viability,³⁴³ full stop, is an impossible proposition and recognizing some limits makes sense,³⁴⁴ there appear to be no judicially enforceable criteria for determining the bounds of Forest Service authority or for analyzing the “inherent capability” of the land. Without further definition of these limitations, NFMA’s biodiversity mandate may be relegated to a wholly discretionary biodiversity suggestion.³⁴⁵ Additionally, limiting the viability requirement to species with pending or active ESA protections and others designated to be of “conservation concern”³⁴⁶ sets up a system that largely ignores undesignated species unless and until they encounter crisis.³⁴⁷ To ensure that this requirement has teeth, the new rule must carefully and narrowly define allowable departures from a species viability mandate, and the viability requirement should extend to native species in general, not just to those of current “conservation concern.”

B. *The Draft Rule's Take on Best Available Science*

Positively, the proposed rule requires the Forest Service to “take into account the best available scientific information throughout the planning process . . . [and to] document this consideration in every assessment report,

341. *Id.* at 8518 (to be codified at 36 C.F.R. § 219.9, (b)(3)). Where such a requirement would somehow exceed Forest Service authority or the land’s capability, the agency must—“to the extent practicable”—include plan components to “provide for the maintenance or restoration of ecological conditions to contribute to . . . maintaining a viable population of a species within its range.” *Id.* at 8518 (to be codified at 36 C.F.R. § 219.9(b)(3)).

342. *Id.* at 8518 (to be codified at 36 C.F.R. § 219.9(a)).

343. The proposed rule defines a “viable population” as one “that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments.” *See id.* at 8525 (to be codified at 36 C.F.R. § 219.19).

344. Even if the Forest Service could devote unlimited resources and scientific expertise to trying to restore or maintain the viability of a species, environmental, genetic, or other factors beyond its control—or an incomplete understanding of the problems facing the species—could thwart that effort. There is no way to guarantee the desired result.

345. *See supra* note 334.

346. “Species of conservation concern” are those “other than federally listed threatened or endangered species or candidate species, for which the responsible official has determined that there is evidence demonstrating significant concern about its capability to persist over the long-term in the plan area.” *Proposed Rule, supra* note 340, at 8525 (to be codified at 36 C.F.R. § 219.19).

347. Like a health care system centered on emergency room response as opposed to preventative care, crisis-focused planning is likely to be much less cost and outcome effective.

plan decision document, and monitoring evaluation report.”³⁴⁸ However, a requirement to document and explain the uncertainty associated with this information is notably absent. The proposed rule notice mentions uncertainty only eight times, all within the confines of the explanation that precedes the rule.³⁴⁹ The proposed rule itself fails to acknowledge the issue of uncertainty. The new planning rule must require a full accounting of uncertainty to help define important informational needs and to begin to distinguish science, mixed policy and science, and policy decisions.³⁵⁰ It should also make clear that decisions must be consistent with the best available science and should define the term in a useful way.³⁵¹

C. *The Draft Rule’s Formulation of Adaptive Management*

The proposed rule’s construction of an adaptive management framework needs significant work.³⁵² Effective adaptive management is premised on ongoing monitoring, reevaluation, and changing management practices as needed. Monitoring criteria (triggers) are essential, because they provide managers with a basis to assess the validity of their assumptions and to determine whether they are meeting management goals. However, the proposed rule’s explanation eschews “pre-determined thresholds or triggers” as “difficult to develop” and potentially taking “years to formulate when there is uncertainty” involved.³⁵³ Instead, the agency relies on biennial evaluation of monitoring information to determine whether monitoring results indicate that

348. *Proposed Rule*, *supra* note 340, at 8515 (to be codified at 36 C.F.R. § 219.3) (parentheticals removed).

349. There are three mentions in the context of the desirability of reducing uncertainty. *See id.* at 8508, 8509, 8510. One mention explains why the best available science must “be used to inform” but is not required to “dictate” Forest Service decisions. *Id.* at 8485 (stating that “competing scientific perspectives or uncertainty in the science” as well as the need to balance “competing values or competing ecological concerns” mean “that science is just one source of information for the responsible official and only one aspect of decisionmaking”). Another mention explains the value of taking into account the best available science. *See id.* at 8485 (stating that it increases “understanding of risks and uncertainties and improve[s] assumptions made in the course of decisionmaking”). One mention describes the scope of the duty to analyze potential risks to sustainability as including the identification of “gaps and uncertainties in the [available] information.” *Id.* at 8495. One mention justifies a biennial instead of annual monitoring reporting requirement *See id.* at 8499. Finally, one mention invokes uncertainty as a reason for allowing planning flexibility. *See id.* at 8509.

350. *See supra* text accompanying notes 294–298.

351. *See* discussion *supra* Part IV.A.

352. *See, e.g.,* Dave Iverson, *New Planning Rule Fails as Adaptive Management*, NEW CENTURY OF FOREST PLANNING (Feb. 13, 2011), <http://ncfp.wordpress.com/2011/02/13/new-planning-rule-fails-as-adaptive-management/> (challenging the artificially hierarchical approach to adaptive management taken by the proposed rule). “We have whole organizations working together to accomplish the work of adaptive management. The task is not left to ‘planning.’ . . . [T]he three levels of administrative decision-making outlined in the proposed rule—national, forest, project or activity—don’t fit the adaptive management model.” *Id.*

353. *Proposed Rule*, *supra* note 340, at 8499; *see also id.* at 8521 (to be codified at 36 C.F.R. § 219.12(d)).

changes in management practices are warranted.³⁵⁴ If changes are indicated and the agency decides to follow through with them,³⁵⁵ the Forest plan will have to be revised or amended, requiring a new bout of NEPA review.³⁵⁶ Instead of an agile and responsive adaptive management system, this framework potentially incentivizes only a burst of procedure-satisfying paperwork every two years.

The specifics of the proposed rule's monitoring requirement also give cause for alarm. In substance, forest plan monitoring programs must meet eight requirements including monitoring the "status" of "select watershed conditions," "select ecological conditions," and "focal species."³⁵⁷ A single "monitoring question[] or indicator[]" will suffice to address each requirement.³⁵⁸ There are no minimum criteria for what constitutes "status" monitoring,³⁵⁹ and the rule offers little guidance for selecting watershed conditions, ecological conditions, and focal species apart from the definitions of these terms.³⁶⁰ Furthermore, while the rule requires each national forest unit to include a monitoring program in its forest plan to test "relevant assumptions, track[] relevant changes, and measur[e] management effectiveness and progress toward achieving or maintaining desired conditions or objectives,"³⁶¹ it

354. *See id.* at 8499. "The agency considered other timeframes for the evaluation. . . . [However,] [t]he agency experience is that an annual evaluation is too frequent to determine trends or to accumulate meaningful information and the 5-year time frame is too long to wait in order to respond to changing conditions." *Id.*

355. Note that there is no requirement to do so. *See id.* at 8521 (to be codified at 36 C.F.R. § 219.12(d)(2)) ("The monitoring report *may* be incorporated into other planning documents if the responsible official has initiated a plan revision or relevant amendment." (emphasis added)).

356. *See id.* at 8521 (to be codified at 36 C.F.R. § 219.13(a)(3)). Significantly, failure to follow through with the changes indicated by the monitoring evaluation carries no penalty, because the "monitoring evaluation report is not a decision document representing final agency action and is not subject to the objection provisions of subpart B." *See id.* at 8521 (to be codified at 36 C.F.R. § 219.12(d)(4)).

357. *Id.* at 8520 (to be codified at 36 C.F.R. § 219.12(a)(5)); *see also supra* note 335.

358. *Id.* at 8520 (to be codified at 36 C.F.R. § 219.12(a)(5)).

359. The rule states that "[a] range of monitoring techniques may be used to carry out the monitoring requirements in paragraph (a)(5) of this section." *Id.* at 8520 (to be codified at 36 C.F.R. § 219.12(a)(6)). However, the explanation preceding the rule describes "population trends for most species" as "extremely difficult to determine within the 15-year life of a plan" and instead encourages the use of focal species status monitoring techniques "such as genetic sampling to estimate [the] area occupied by [a] species." *Id.* at 8499.

360. *See id.* at 8523–25 (to be codified at 36 C.F.R. § 219.19). For example, "focal species" are "[a] small number of species selected for monitoring whose status is likely to be responsive to changes in ecological conditions and effects of management." *Id.* at 8524 (to be codified at 36 C.F.R. § 219.19). According to the explanation preceding the rule, focal species are chosen at the responsible official's discretion to "provide insight into the integrity of ecological systems on which those species depend and the effects of management" decisions on ecological conditions. *Id.* at 8498. "It is not expected that a focal species be selected for every element of ecological conditions." *Id.*

361. *See id.* at 8520 (to be codified at 36 C.F.R. § 219.12(a)(1)–(2)). However, "not every plan component needs to have a corresponding monitoring question." *Id.* at 8520 (to be codified at 36 C.F.R. § 219.12(a)(2)).

explicitly exempts “projects or activities” from the mandate.³⁶² Therefore, even assuming the Forest Service’s attempt at an adaptive management planning system functions as advertised, project-level decisions (such as AMP updates) are likely to remain front-loaded, unmonitored, unevaluated, and unaccountable.³⁶³

The new planning rule needs to mandate the development and use of monitoring criteria (triggers), ongoing decision-relevant monitoring, *frequent* reevaluation, and changed management practices *when indicated*. Follow-through should be mandatory, not optional. Adaptive management can only work when monitoring, evaluation, and decision making occur at the relevant scale, and this cannot always be predetermined at the forest plan-level.³⁶⁴ The rule should require project-level NEPA documents to evaluate a palette of management contingencies that may be turned to as conditions warrant.³⁶⁵

D. *The Draft Rule’s Impact on Transparency and Accountability*

Transparency and accountability are ill served by the lack of strong, judicially enforceable mandates for maintaining species viability, documenting the extent of scientific uncertainty, selecting forest plan-level monitoring targets, and carrying out project-level monitoring and adaptive management. Additionally, procedural changes, including the proposed pre-decisional objection process,³⁶⁶ could dampen the prospects for meaningful public participation, one of the primary means for assuring agency accountability. The proposed rule essentially limits objectors to protesting only those issues they flagged in their own comments³⁶⁷ during sanctioned public comment periods³⁶⁸ and requires objections to be filed within thirty days of publication of “public notice for a plan, plan amendment, or plan revision before approval.”³⁶⁹ Unfortunately, this brief thirty-day period may not leave objectors enough time to fully flesh out their objections, and there is no good reason that “a

362. *See id.* at 8520 (to be codified at 36 C.F.R. § 219.12(a)(7)) (“This section does not apply to projects or activities; project and activity monitoring may be used to gather information, but monitoring is not a prerequisite for carrying out a project or activity.”); *see also supra* notes 335 and 336.

363. While there is no reason to duplicate forest-level or broader-scale monitoring efforts that provide meaningful data for project-level management decisions, these decisions must be made contingent upon monitoring results and criteria developed to trigger reevaluation and subsequent management changes. Otherwise, adaptive management is reduced to a meaningless feel-good label.

364. *See* discussion *supra* Part IV.B.

365. *See supra* notes 318–326 and accompanying text.

366. *See Proposed Rule, supra* note 340, at 8503–04; *see also id.* at 8525–28 (to be codified at 36 C.F.R. §§ 219.50–219.62).

367. *See id.* at 8526 (to be codified at 36 C.F.R. § 219.54(c)(7)) (requiring objections to include “[a] statement that demonstrates the link between prior formal comments attributed to the objector and the content of the objection, unless the objection concerns an issue that arose after the opportunities for formal comment (§ 219.53(a))”).

368. *See id.* at 8525 (to be codified at 36 C.F.R. § 219.52(c)(4)).

369. *Id.* at 8526 (to be codified at 36 C.F.R. § 219.56(a)).

prospective objector [who] filed substantive comments” should be barred from using comments filed by others as the basis for their objections.³⁷⁰ The new rule must both provide the public with enough time to make useful objections and allow good-faith objectors to base their protests on comments filed by others.

In summary, the proposed Forest Service planning rule, while taking some positive steps, fails to achieve meaningful, enforceable changes. However, there is still time for the agency to address these problems and lay the framework for better management of national forest lands.

370. See Mark Squillace, *Updated Look: Draft Forest Planning Rules*, RED LODGE CLEARINGHOUSE (Feb. 26, 2011), <http://rlch.org/blog/2011/14/2/updated-look-draft-forest-planning-rules>.

We welcome responses to this Note. If you are interested in submitting a response for our online companion journal, *Ecology Law Currents*, please contact ecologylawcurrents@boalt.org. Responses to articles may be viewed at our website, <http://www.boalt.org/elq>.