Taking a Hard Look at Agency Science: Can the Courts Ever Succeed

Sara A. Clark

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Taking a Hard Look at Agency Science: Can the Courts Ever Succeed?

Sara A. Clark

In managing the nation's forests, the Forest Service relies on complex scientific information to make decisions about timber harvesting, wildlife habitat, recreational opportunities, and other activities. Courts have struggled to find the proper level of deference owed to the agency in making such decisions, in part because of the difficulties that science poses to the court. Judges are hesitant to overrule decisions based on the perceived scientific expertise of administrative agencies. However, the Forest Service faces constraints in its structure, mission, and culture that tend to bias agency decision making toward resource extraction. In Lands Council v. McNair, an en banc panel of the Ninth Circuit forcefully returns the court to a highly deferential standard of review. This Note argues that this highly deferential standard may encourage the Forest Service to engage in a "science charade," where the agency disguises policy judgments as scientific decisions, in order to avoid both stringent judicial review and political accountability. Such a charade has negative implications for the agency, the courts, the environment, and the public as a whole.

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* J.D. Candidate, University of California, Berkeley, School of Law, 2010; A.B., Harvard College, 2004. I would like to thank Holly Doremus, Bob Infelise, Stefanie Gitler, Christie Henke and Doug Karpa for their excellent assistance throughout the writing process and Judge John T. Noonan, Anne Joseph O'Connell, and Eric Biber for their willingness to provide insights. And as always, I owe my friends and family much gratitude for their continuing support and encouragement.
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**INTRODUCTION**

Lands Council asks this court to act as a panel of scientists that instructs the Forest Service how to validate its hypotheses regarding wildlife viability, chooses among scientific studies in determining whether the Forest Service has complied with the underlying Forest Plan, and orders the agency to explain every possible scientific uncertainty . . . . [T]his is not a proper role for a federal appellate court.¹

By now it’s a familiar story. An environmental organization, concerned about the ecological effects of a federal agency action, pursues a remedy in court, alleging the agency science has failed to adequately protect natural resources. The agency, in response, claims that it deserves deference to its choice of scientific methodology. The court, comprised of scientifically untrained judges, hesitates to overrule the agency in its area of expertise, and refuses to grant the plaintiff’s requested relief.

*Lands Council v. McNair*² is one such case. At the time it was decided, however, the Ninth Circuit had grown increasingly receptive to plaintiffs’ suits against the Forest Service.³ As such, *Lands Council v. McNair* marks the Ninth Circuit’s definitive return to a highly deferential standard of review and as an en banc decision, it is likely to have lasting impact. The shifting standard of review, once again revised in *Lands Council v. McNair*, highlight the difficulties that courts have faced in reviewing agency science.

Like many agencies, the Forest Service’s statutory mandates require the agency to engage in objective decision making grounded in science.⁴ The Forest Service, however, has long faced political, economic and cultural incentives to “get out the cut,” resulting in an institutional bias toward timber harvest over other statutory goals, such as biodiversity protection, water quality and recreation.⁵ However, the Forest Service is not free simply to cut trees to satisfy economic demand, but must ground its decisions in scientific analysis.⁶ This tension pushes many agencies, including the Forest Service, to engage in the “science charade,” or the tendency to disguise policy judgments⁷ as scientific

¹. Lands Council v. McNair, 537 F.3d 981, 988 (9th Cir. 2008).
². Id. at 981.
³. See, e.g., Or. Natural Res. Council Fund v. Goodman, 505 F.3d 884 (9th Cir. 2007); Lands Council v. Martin, 479 F.3d 636 (9th Cir. 2007); Earth Island Inst. v. U.S. Forest Serv., 442 F.3d 1147 (9th Cir. 2006); Ecology Ctr. v. Austin, 430 F.3d 1057 (9th Cir. 2005); Lands Council v. Powell, 379 F.3d 738 (9th Cir. 2004); Earth Island Inst. v. U.S. Forest Serv., 351 F.3d 1291 (9th Cir. 2003); Idaho Sporting Cong. v. Rittenhouse, 305 F.3d 957, 970 (9th Cir. 2002).
⁴. See, e.g., National Forest Management Act, 16 U.S.C. § 1604(b) (2006) (requiring the use of a “systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic and other science”).
⁵. See infra Part II.
⁷. Throughout this Note, I use the term “policy judgment” or “policy decision” broadly. Following Wendy Wagner, the term is used here to
decisions in order to avoid both stringent judicial review and political accountability. Given evidence of potential agency bias, the science charade is particularly troubling—the Forest Service can cloak its bias behind claims of science, leaving the public unaware and the courts unable to act.

This science charade need not be endemic to scientifically grounded policy making. In particular, instead of blindly deferring to agency "science," either Congress or the courts could create a new procedural requirement that agencies separate policy judgments from scientific determinations explicitly. This added transparency may help courts arrive at better decisions than the highly deferential standard set in *Lands Council v. McNair*.

I. THE DECISIONS OF AN "EXPERT" AGENCY: FINDING ROOM FOR BIAS IN FOREST SERVICE DECISION MAKING

The Forest Service has a long and storied history, one that need not be repeated at length here. Understanding this history, however, is essential to understanding concerns about bias in Forest Service decision making. This potential for bias is not endemic to one decision or one administration, but rather is built into the structure of the agency and affected by its culture. The Forest Service bias toward natural resource extraction over other goals illustrates why the opaque mixing of agency science and agency policy is so troubling. If a biased agency can hide its policy decisions behind the façade of science, the agency will repeatedly fail to meet its other statutory goals and the public will be unable to hold it accountable for this failure.

A. A Brief History of the Forest Service

Started as a forest reserve program in 1891, the Forest Service officially took shape in 1905 under the direction of Gifford Pinchot. Operating under the Organic Act of 1897, Pinchot led the Forest Service to meet two key mis-

include virtually every type of decision that is not based on the results of one or more experiments in the natural sciences. ‘Policy’ considerations thus include not only the reasoned weighing of various economic and social outcomes, but also could include the conscious or subconscious biases, guesses, and intuition of decisionmakers.

Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1622 n.28 (1995); see also Holly Doremus, *Listing Decisions under the Endangered Species Act: Why Better Science Isn't Always Better Policy*, 75 WASH. U. L.Q. 1029, 1064 (1997) (“Scientific information is also distinct from value or policy judgments, which are determined by the preferences and ethical beliefs of the individual. Information is scientific only if its validity does not depend on the individual preferences of the holder, that is only if it is supportable in theory if not in fact by universally repeatable observations.”).

8. See Wagner, supra note 7, at 1617.
10. 26 Stat. 1103 (1891) (Congress passed an amendment to the General Revision Act that authorized the president to “set part and reserve, in any State or territory . . . any part of the public land wholly or in part covered with timber and undergrowth.”).
TAKING A HARD LOOK AT AGENCY SCIENCE

visions: ensuring a dependable and continuous supply of both timber and water for a growing nation.\(^\text{12}\) His leadership established a Forest Service culture that would pervade well into the future, one that focused on scientific management and natural resource extraction.

By 1960, however, a growing public awareness about environmental issues, including the consequences of high timber production, led Congress to enact the Multiple Use Sustained-Yield Act (MUSYA).\(^\text{13}\) This statute diversified the Forest Service's mandate to require management for outdoor recreation, wildlife, fish, and range resources.\(^\text{14}\) The corresponding house committee report indicates that no resource was to be "given a statutory priority over the others,"\(^\text{15}\) but MUSYA itself required only that the Forest Service give equal "consideration" to all resources.\(^\text{16}\) Further, the statute contained no substantive standards to enforce this balance. Continued increases in timber production throughout the 1960s illustrated that, without teeth, MUSYA was ineffective at changing a culture firmly rooted in timber production.\(^\text{17}\)

Congress was certainly aware of MUSYA's failures. In 1971, Congress held a number of hearings on the Forest Service's inability to balance timber harvest with the other goals outlined in MUSYA.\(^\text{18}\) The guidelines produced during these hearings included limits on timber harvesting, protection of watersheds and soils, reforestation requirements, and limitations on the size of clearcuts.\(^\text{19}\) The result of these hearings and the corresponding public outcry was the reorganization of forest management under the National Forest Management Act of 1976 (NFMA).\(^\text{20}\)

NFMA was enacted amid a public belief that science could be used effectively to manage natural resources\(^\text{21}\) and constrain agency discretion.\(^\text{22}\) It re-

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17. Timber sales increased from 9.4 billion board feet in 1959 to 13.4 billion board feet in 1970. WILKINSON, supra note 9, at 41 (citing U.S FOREST SERVICE, 1970-71 ANNUAL REPORT OF THE CHIEF 20 (1972)).
18. WILKINSON, supra note 9, at 119, 141-42 (citing "Clear-cutting" Practice on National Timberlands: Hearings Before the Subcomm. on Public Lands of the Senate Comm. on Interior and Insular Affairs, 92d Cong., 1st Sess. (1971)).
19. Id.
21. Other environmental statutes enacted in the 1970s also require natural resource management based in science. For example, the Endangered Species Act of 1973 requires that listing decisions be
quires the use of a "systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic and other science." The statute includes both procedural requirements (such as the creation and revision of Land and Resources Management Plans for each national forest) and substantive requirements (such as regulation of timber harvest and protection of biodiversity, water quality, and soils). NFMA also required the Secretary of Agriculture to appoint a Committee of Scientists to aid in the promulgation of regulations to implement these substantive requirements.

One of the substantive standards of NFMA requires the Forest Service to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land areas," which was challenged in *Lands Council v. McNair*. Plaintiffs argued that the Forest Service had failed to provide adequately for such diversity by relying on certain assumptions when choosing its scientific methodology. Though it is clear that Congress intended to protect biodiversity, no clear legal standard was given in NFMA to measure or ensure diversity. The regulations, particularly those developed by the Committee of Scientists, are important in determining how this biodiversity provision is implemented. According to the chair of the original Committee of Scientists, Arthur Cooper, the members "understood that [they] were helping to resolve policy issues that had been sidestepped by policymakers." Subsequent revisions of the regulations have served as a policy stamp by new administrations.


22. See Madden, supra note 15, at 330 ("The mandated use of an interdisciplinary scientific approach to forest management is one of the strongest examples of Congress’s attempt to regulate Forest Service discretion."); WILKINSON, supra note 9, at 155–58 (noting that the congressional intent in enacting NFMA was to rein in some of the discretion previously granted to the Forest Service).


27. See *Lands Council v. McNair*, 537 F.3d at 987.

28. WILKINSON, supra note 9, at 296.


30. To protect biodiversity, the 1982 regulations required the Forest Service to assess the impact of actions on Management Indicator Species (MIS), believing that population changes to MIS would provide a gauge on other species as well. See 36 C.F.R. § 219.19(a); Andrew Orlemann, *Do the Proposed Forest Service Regulations Protect Biodiversity? An Analysis of the Continuing Viability of "Habitat Viability Analysis,"* 20 J. LAND RESOURCES & ENVTL. L. 357, 361 (2000). In 2000, the Clinton Administration revised the regulations to incorporate ecosystem science, but generally removed requirements that specific populations be monitored. See id. at 382 (citing 64 Fed. Reg. 54,104 § 219.20(a)(8)(i)). In 2005, the Bush administration further gutted the monitoring requirements, requiring only that the Forest Service maintain biological diversity at the ecosystem level, taking into account the
B. Potential for Bias

The enactment of NFMA did not substantially shift the Forest Service's focus toward a more balanced approach to forest management. Indeed, many continued to criticize the Forest Service's focus on timber harvest at the expense of other management objectives, especially the protection of biodiversity.\(^{31}\) Despite a clear statement in the statutory language that the Forest Service must create land management plans to meet these other objectives,\(^{32}\) the Forest Service still has incentives to harvest that discourage compliance with these requirements. Many of these incentives are systemic, rather than due to any malice or improper dealings on the part of individual Forest Service employees. Instead, the structure of the Forest Service, including its budget, its multiple-use mandate, and its pervasive culture, appear to tilt Forest Service decision making toward timber harvest.

1. Economic Incentives to Harvest

In 1988, economist Randall O'Toole published a widely-read book on Forest Service economics, *Reforming the Forest Service*.\(^{33}\) O'Toole noticed that across the United States, the Forest Service was performing timber harvesting operations that cost taxpayers money, rather than bringing in revenue.\(^ {34}\) The Forest Service was spending more money to build roads and restore post-harvest forests than it was generating in timber sale receipts.\(^ {35}\) O'Toole explored why the Forest Service would operate in such an economically irrational way and concluded that Forest Service appropriations and budgeting were to blame. Forest Service managers were allowed to keep the timber sale receipts within their jurisdictions, but could pass off the full costs associated with the cuts to Congress.\(^ {36}\) Congress was complicit in this plan, as the Forest Service provided jobs and incomes to local constituents and kept the powerful timber industry in the black.\(^ {37}\) Simply put, the Forest Service lacked any incentives to refrain from harvest, balance their budget, or thoroughly implement the diverse goals of NFMA.


34. Id. at 11.

35. Id. at 27.

36. Id. at 104–07.

37. Cf. id. at 224–27 (discussing the impacts to jobs and local economies that reform would cause).
While changes have been made to the appropriations system, the economic incentive to harvest continues. As the Ninth Circuit said recently, "it has not escaped our notice that the [Forest Service] has a substantial financial interest in the harvesting of timber in the National Forest."38 So long as Congress allows this incentive to continue, it would be economically irrational for the Forest Service to change its priorities.

2. The Failures of Multiple-Goal Agencies

Despite congressional efforts in MUSYA and NFMA to reorient Forest Service priorities, the conflicts between multiple statutory goals require the Forest Service to make difficult choices between recreation, biodiversity, ecological sustainability, and resource production. Out of these conflicts emerge a bias toward timber harvesting—historically, the primary goal of the Forest Service—at the expense of other goals. Although this bias remains in part because of a cultural resistance to changing values, it also results from the structure of the Forest Service.

First, as noted in economic and political science literature, agencies do not respond to all mandates identically. Instead, "agencies are most likely to underperform on 'secondary goals' that both interfere with the completion of what is perceived to be the agency's primary goals and are not easily measured or monitored by outside parties."39 In the case of the Forest Service, timber production has been perceived as the primary goal of the agency since its inception.40 Timber production is also easily measured, which creates incentives for both individual forest managers and the agency as a whole to meet the goal of increasing the number of board-feet produced.41 On the other hand, secondary goals such as biodiversity and recreation are often overlooked. These goals are much more difficult and controversial to measure and often directly conflict with what the agency views as its primary objective. If an individual manager chooses to focus on protection of biodiversity instead of production of timber, he will often have few concrete successes to show for his work.42 The inability to measure the success of biodiversity management activities combined with the Forest Service's historical focus on harvesting results in an agency-wide bias toward timber production.

Second, public choice theory, which applies economic methods to the study of political science, suggests the Forest Service would be more respon-
sive to its timber production mandate at the expense of other goals.\textsuperscript{43} Public choice theory predicts that "small, well-organized special interest groups will exert disproportionate influence on policymaking," particularly when their economic livelihood is dependent on policy decisions.\textsuperscript{44} At the Forest Service, resource extraction industries and the local economies they support tend to exert a disproportionate influence, making the system "inherently biased toward commodity users."\textsuperscript{45} Politically powerful constituency groups also exert control over agency appointments, agency budgets, and, indirectly, agency decisions.\textsuperscript{46} While environmental organizations have tried to exert their own power over agency policy making, they are still outweighed by the resource extraction industries, and as a result, multiple-goal agencies like the Forest Service continue to fail to meet their "secondary" environmental goals.

The effects explained by public choice theory on Forest Service decision making are exacerbated by the connections of forest managers to local communities. Forest managers regularly live in the communities benefited by timber production. One can imagine how difficult it might be to make decisions that directly and adversely affect the economic well being of one's neighbors. While the Forest Service has attempted to rotate forest managers through different communities, managers may still make a local connection. When the downside of timber production is ecological harm, which is often not well represented at the local level, forest managers may feel local pressure to systematically choose timber production.

### 3. A Culture of Getting Out the Cut

Though perhaps most difficult to study, the culture of the Forest Service also plays a large role in the agency's disposition toward timber production. Early on, this culture was pervasive. In 1960, Herbert Kaufman produced a study of the Forest Service that revealed a culture that both revered and promoted the Forest Service as an agency that produced timber for the nation.\textsuperscript{47} Even though the Forest Service's mandate changed more than thirty years ago toward a multiple-use framework and the cultural lock-step that Kaufman de-

\textsuperscript{43} See Blumm, supra note 31, at 415. Public choice theory takes a critical view of public policymaking in a democracy, asserting that "legislators are self-serving individuals whose chief interest is not the fostering of the public's interests, but rather of their own reelection." \textit{Id.} at 415–16. The special interest groups that can help legislators get reelected are more likely to win in the policy-making process, rather than the general public. \textit{See id.} at 415.

\textsuperscript{44} \textit{Id.} at 407 (citing DANIEL A. FARBER \& PHILIP P. FRICKEY, LAW AND PUBLIC CHOICE: A CRITICAL INTRODUCTION (1991)).

\textsuperscript{45} \textit{Id.} at 415.


\textsuperscript{47} See HERBERT KAUFMAN, \textit{THE FOREST RANGER: A STUDY IN ADMINISTRATIVE BEHAVIOR} (spec. reprint ed. 2006).
scribed has splintered, long-standing traditions of the Forest Service still shape decision making in subtle but important ways.\textsuperscript{48}

II. JUDICIAL DEFERENCE TO AGENCY SCIENCE

Given the Forest Service’s bias toward resource extraction, it is perhaps unsurprising that Forest Service decisions, particularly about science and natural resource management, end up at the center of litigation.\textsuperscript{49} However, since the Supreme Court’s decision in \textit{Skidmore v. Swift & Co.}, courts have been generally deferential to agency decisions for two reasons.\textsuperscript{50} First, to the extent the agency is engaged policy decisions, courts generally defer to decisions made by a more publicly accountable branch—here, the decisions of executive agencies.\textsuperscript{51} Second, courts are hesitant to overrule the decisions of experts. Questions of scientific methodology in particular are given the highest level of deference.\textsuperscript{52} Executive agencies, like the Forest Service, have large staffs with technical backgrounds and on-the-ground experience that cannot be thoroughly communicated in court. Judges, on the other hand, may lack technical expertise\textsuperscript{53} and, as such, generally are not willing to substitute their own judgment for that of an agency,\textsuperscript{54} particularly concerning a scientific question. The Supreme Court has said that courts must be most deferential when reviewing an


\textsuperscript{49} See, e.g., \textit{Or. Natural Res. Council Fund v. Goodman}, 505 F.3d 884 (9th Cir. 2007); \textit{Lands Council v. Martin}, 479 F.3d 636, 641-43 (9th Cir. 2007); \textit{Earth Island Inst. v. U.S. Forest Serv.}, 442 F.3d 1147, 1175 (9th Cir. 2006); \textit{Native Ecosystems Council v. U.S. Forest Serv.}, 428 F.3d 1233, 1250 (9th Cir. 2005); \textit{Earth Island Inst. v. U.S. Forest Serv.}, 351 F.3d 1291, 1304 (9th Cir. 2003); \textit{Idaho Sporting Cong. v. Rittenhouse}, 305 F.3d 957 (9th Cir. 2002); \textit{Idaho Sporting Cong. v. Thomas}, 137 F.3d 1146, 1154 (9th Cir. 1998); \textit{Inland Empire Pub. Lands Council v. U.S. Forest Serv.}, 88 F.3d 754 (9th Cir. 1996); \textit{Sierra Club v. Marita}, 46 F.3d 606 (7th Cir. 1995).

\textsuperscript{50} 323 U.S. 135, 140 (1994) (holding that a statutory interpretation by an agency official was "entitled to respect"). The justifications that underpin deference afforded to agencies in interpreting their own statutes are established in \textit{Chevron v. Natural Res. Def. Council}, 467 U.S. 837 (1984) (noting both agency expertise and political accountability). These justifications are also given for deference to agency decision making when applying their own regulations as well. In timber sales such as those in \textit{Lands Council v. McNair}, the decision is primarily quasi-adjudicative, given that the Forest Service makes site-specific determinations. The agency is supposed to apply facts to rules set out by federal statutes, Forest Service regulations, and forest-specific plans. Deference in quasi-adjudicative settings is still given, so long as the agency does not obviously act counter to these specific rules, because the agency is interpreting the application of its own regulations and statutes. See \textit{Auer v. Robbins}, 519 U.S. 452, 457 (1997). Because many of the rules established to protect biodiversity are vague and general, the Forest Service retains significant deference even in the quasi-adjudicative stage.


\textsuperscript{52} See, e.g., \textit{Colorado Envtl. Coal. v. Dombeck}, 185 F.3d 1162, 1170 (10th Cir. 1999); \textit{Friends of Boundary Waters Wilderness v. Dombeck}, 164 F.3d 1115, 1130 (8th Cir. 1999); \textit{Sierra Club v. U.S. Dep’t Agric.}, 116 F.3d 1482 (7th Cir. 1997) (unpublished table decision); \textit{Inland Empire}, 88 F.3d at 760.


agency determination involving technical issues at the "frontiers of science." In the field of natural resource management, where scientists continually learn more about interdependencies in our environment, this standard can pose a particularly high bar for plaintiffs.

Deference to scientific methodology is reinforced by the "arbitrary and capricious" standard of review of agency action under the Administrative Procedure Act (APA), and the method of review of scientific methodology under the National Environmental Policy Act (NEPA). A. The Administrative Procedure Act’s “Arbitrary and Capricious” Review

Since many federal environmental statutes, including NFMA, lack specific enforcement clauses, suits alleging violations of NFMA or these other environmental statutes are often brought under the APA. The APA delineates the roles that courts have in policing agency actions and requires courts to set aside those actions that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." The court must consider "whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment." An agency violates the APA when it has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

The goal of arbitrary and capricious review is not to determine whether the decision was ultimately correct, but rather whether the agency decision was "rational." B. Scientific Methodology and the National Environmental Policy Act

The goal of NEPA is to ensure that all federal agencies consider the environmental impact of their actions prior to making final decisions. To satisfy

56. See 5 U.S.C. § 706 (2006) (“The reviewing court shall . . . (2) hold unlawful and set aside agency action, findings, and conclusions found to be (A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”).
57. See Kleppe v. Sierra Club, 427 U.S. 390, 410 n.21 (1976) (“The only role for a court is to ensure that the agency has taken a ‘hard look’ at environmental consequences . . . .”) (quoting Natural Res. Def. Council v. Morton, 458 F.2d 827, 838 (D.C. Cir. 1972)).
NEPA, the agency must take a "hard look" at the environmental consequences of its action and must provide the public with enough information to verify that the hard look has been taken. Plaintiffs challenging the Forest Service's environmental analysis under NEPA will typically do so under the APA, as NEPA does not include a private right of action. The review does not guarantee any particular substantive outcome, but rather, ensures that procedural standards are followed. One of the procedural standards that agencies must follow is a requirement to disclose the scientific methodology used to arrive at its decision. The regulations governing NEPA, issued by the Council on Environmental Quality, require the agency to provide "high quality" environmental information, including "[a]ccurate scientific analysis." In considering whether an agency decision based on scientific analysis meets this standard, the court should evaluate "the accuracy and integrity of the scientific evidence before the agency as it [made] decisions which may impact the environment." However, so long as the agency can provide a rational justification for its methodology, the court is unlikely to find that the agency violated NEPA with its choice.

III. SCIENCE AND THE COURTS: AN UNEASY RELATIONSHIP

While the courts have substantial experience applying NEPA and APA standards when reviewing agency actions, science continues to pose problems to reviewing courts. *Lands Council v. McNair* is one example of that difficulty. Since the New Deal, scientific expertise has been regarded as a way to eliminate or reduce the bitter fights over environmental and natural resource policy. Science is "thought to provide an objective source of certain knowledge" that can guide federal agencies toward the one "right" decision. But science has failed to fulfill this promise.

The controversy in *Lands Council v. McNair* illustrates two potential reasons for this failure. First, the uncertainties and complexities of scientific research in general, and natural resource science in particular, render it difficult for forest managers to arrive at a single "right" answer in predicting the environmental effects of their decisions. In the case of *Lands Council v. McNair*, the dispute reflects legitimate scientific uncertainty as to both the quantity and quality of habitat necessary to maintain viable populations of sensitive species, such as the flammulated owl, in the timber sale area of the Idaho Panhandle National Forest. While research on these species had been conducted in similar areas, the Forest Service had not completed research in this particular area of


the forest. The agency assumed that the research adequately described the ecology of the timber sale area as well and so could be used as a proxy for an analysis of the habitat in question, but the plaintiffs disagreed. Second, agencies have various incentives to engage in “the science charade,” a term used to describe agency decisions—conscious or not—to “exaggerate the contributions made by science” in order to downplay the contributions of policy, politics or values. Accordingly, the Forest Service selects the assumptions to guide scientific analysis and management decisions, such as the assumptions that guided the Forest Service’s management of the flammulated owl, to provide cover for its decision to allow harvesting to proceed.

A. The Difficulties of Science

Since its founding, the Forest Service has used science as the touchstone for natural resource management. Despite the longstanding use of science to influence management decisions, “the scientific information available to support environmental and natural resource policy decisions is frequently incomplete, ambiguous, and contested. An array of critical interpretive judgments, not fully determined by the data, are needed to translate that kind of science into policy.” Ecology and conservation biology, particularly at the community or ecosystem level, are highly complex sciences with many uncertainties. The relationship of sensitive species to their habitats and other organisms in the ecosystem is not always well studied. The effects of human interventions on these interactions, such as the disruption of fire regimes, the introduction of exotic species, or the extraction of timber, are even less understood. Given these complexities, science cannot provide an absolute or clear answer to management questions.

Gaps in science can sometimes be filled with more research, but frequently these gaps in knowledge are actually “trans-science” or “questions which can be asked of science and yet cannot be answered by science” because they require judgments that empirical evidence alone cannot address. The idea of trans-science can be illustrated by examining the questions of risk in the protection of endangered species. Consider the Endangered Species Act, which requires federal agencies to “conserve endangered species and threatened spe-

69. See Lands Council v. McNair, 537 F.3d 981, 995 (9th Cir. 2008).
70. See id. at 995–997.
71. Wagner, supra note 7, at 1617.
72. See WILKINSON, supra note 9, at 19–29.
74. See Doremus, Listing Decisions, supra note 7, at 1069 (discussing biology generally).
75. See Cortner, supra note 46, at 497 (pointing out that the Forest Service planning regulations require more data than the Forest Service has available).
76. Wagner, supra note 7, at 1619 (emphasis omitted) (quoting Alvin M. Weinberg, Science and Trans-Science, 10 MINERVA 209, 209 (1972)).
cies." An agency may know from scientific research that certain levels of habitat reduction or degradation would likely reduce the number of flammulated owls by 90 percent. However, data determining the impacts of further reductions may simply be uncollectible. Policy judgments are necessary to translate the known data into the appropriate level of regulation: first the agency must decide how much uncertainty it is willing to tolerate about the risk of harm with further habitat reduction. If it is tolerant of uncertainty, it may assume that the species is resilient and further reductions in habitat will have little effect on the viability of the species. If the agency is precautionary, it may assume that the owl is at a tipping point, and further reductions in habitat will cause extinction. While at first glance the choice of appropriate habitat size and quality appears to be scientific, without data on further degradation, the choice is better described as a value judgment about how much uncertainty the agency is willing to tolerate. Second, the agency must decide how much risk is acceptable. Is a 10 percent risk that further species extinction will result from its activity a "significant risk" worthy of regulation? If that risk is too high, is there any risk greater than zero that is acceptable? Again, the answers to all management questions cannot be found through further ecological studies.

These trans-science questions prove especially cumbersome to understand because they frequently are not clustered around any particular point in the scientific process. Rather, they are found at "numerous, intermittent points, often alternating with questions that science can resolve." Non-scientific questions inform the conduct and conclusions of science at every turn—deciding which questions to focus on, what methods and data used to address them, what assumptions to make in interpreting data, and where to allocate scientific resources. This unavoidable mix of science and policy indicates that it will be consistently impossible for science to provide one optimal answer. As one commenter has noted, the "issue of viability of wildlife species within a particular national forest requires application of both policy and science. Certain issues are necessarily questions of policy, such as how much risk over what period of time is the Forest Service willing to accept in determining whether a species is viable under NFMA." It is unclear whether agencies and legislatures have learned that holding out for such an answer from science will yield no greater results. It is even less clear that courts have the ability to unpack decisions based on both science and policy when reviewing agency determinations.

79. See Wagner, supra note 7, at 1627.
80. Id.
81. Madden, supra note 15, at 345.
B. Using Models in Management: Assumptions and Value Judgments

In the natural resource context, this mix of science and policy is illustrated by the use of proxies and models. These analytical tools are used to extrapolate a limited amount of data to answer additional inquiries and to predict the likely disturbances on a natural system following a given management or condition change. Models and proxies are built on numerous assumptions, often based in scientific principles but also laden with value judgments. Although the empirical data and studies that serve as inputs to these models are arguably scientific findings, the assumptions they are based on do not have a similar grounding in specific empirical results. Nevertheless, these models and proxies, including the assumptions from which they are derived, often appear to non-scientists as products of science. This confusion can pose obstacles to those trying to interpret, analyze, or challenge agency policy decisions. The deceptive appearance of models and proxies as completely scientific makes their frequent use in natural resource management troubling.

C. A Problematic Approach: Habitat Proxy-on-Proxy in Lands Council v. McNair

Lands Council v. McNair provides a concrete example of how “scientific” decisions can be impenetrable mixtures of scientific knowledge, policy decisions, and value judgments. To authorize harvesting, the Forest Service must comply with the general substantive requirements of NFMA to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area,” as well as the more specific requirements of the forest plan for the area. The Idaho Panhandle National Forest Plan requires the Forest Service to “[m]anage the habitat of species listed in the Regional Sensitive Species List [including the Flammulated Owl] to prevent further declines in populations which could lead to federal listing under the Endangered Species Act.” In response to these requirements, the Forest Service used a habitat proxy-on-proxy approach. This management tool is used to show how much

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82. See Cortner, supra note 46, at 495.
85. In prior cases questioning the habitat proxy-on-proxy approach, plaintiffs also challenged the habitat proxy-on-proxy methodology as inconsistent with 36 C.F.R. § 219.19 (2000), which required the Forest Service to manage wildlife habitat “to maintain viable populations of existing . . . species” and to designate management indicator species to monitor and evaluate wildlife viability. See Indiana Forest Alliance v. U.S. Forest Serv., 325 F.3d 851 (7th Cir. 2003); Sierra Club v. Martin, 168 F.3d 1 (11th Cir. 1999); Inland Empire Pub. Lands Council v. U.S. Forest Serv., 88 F.3d 754 (9th Cir. 1996). Challenges under this regulation resulted in the circuit split referenced supra note 123. Section 219.19 is no longer in effect. See Envtl. Prot. Info. Ctr. v. U.S. Forest Serv., 451 F.3d 1005, 1017 n.8 (9th Cir. 2006). While 36 C.F.R. § 219.10(b) (2008), which requires the Forest Service to “provid[e] appropriate ecological conditions to support diversity of native . . . animal species,” is related, it does not provide any additional regulation beyond the Forest Plan.
habitat must be protected for the Forest Service to meet its obligations to protect biodiversity, without requiring on-the-ground verification.\textsuperscript{86} It is premised on several assumptions. First, it assumes that by monitoring the populations of one or more sensitive species (in \textit{Lands Council v. McNair}, the flammulated owl), managers can ensure that activities will not harm other desirable plant or animal species.\textsuperscript{87} This first level of proxy assumes that the designated species react in a way similar to other species, so that information about it provides good information about others.\textsuperscript{88} Second, the habitat proxy-on-proxy approach assumes that by enhancing or maintaining the quantity and quality of flammulated owl habitat, managers can maintain the long-term viability of the flammulated owl.\textsuperscript{89} So long as the habitat remains, managers assume that the owl is viable, without on-the-ground verification of the effects of habitat alteration on the species.\textsuperscript{90} Combining these assumptions, the Forest Service argues that by maintaining habitat, they will fulfill their duty to provide for ecosystem-wide diversity.

The proxy-on-proxy approach served as the bases for the Forest Service’s argument in \textit{Lands Council v. McNair}. The approach saves the Forest Service time and money, as on-the-ground research is either curtailed or eliminated.\textsuperscript{91} Because the disputed project “would promote . . . long-term . . . suitable Flammulated Owl habitat,” and there would be “no decrease in suitable habitat in the short term,” the Forest Service argued that the Project could fulfill the diversity requirements without any on-the-ground analysis.\textsuperscript{92}

As noted by scientists, however, the habitat proxy-on-proxy approach suffers from significant flaws.\textsuperscript{93} Such surrogate techniques “allow agency decision making to substitute for several higher-level forms of data.”\textsuperscript{94} With each proxy step, a habitat model’s accuracy declines, rendering habitat proxy-on-proxy approaches insufficient for effective multispecies conservation.\textsuperscript{95}


\textsuperscript{87} Id. at 495.

\textsuperscript{88} Id. For example, the 1982 Forest Service regulations required the agency to identify management indicator species that were representative of the health of the ecosystem as a whole. See 36 C.F.R. § 219.19(a)(1) (2000) (no longer in effect).

\textsuperscript{89} See Glicksman, \textit{supra} note 86, at 496.

\textsuperscript{90} See \textit{id.} at 497.


\textsuperscript{92} \textit{Id.} at 496–97.

\textsuperscript{93} See, e.g., JOSHUA J. MILLSPAUGH & FRANK R. THOMPSON, III, \textit{MODELS FOR PLANNING WILDLIFE CONSERVATION IN LARGE LANDSCAPES} 58 (2008) (noting that with each proxy step, a habitat model’s accuracy declines, rendering habitat proxy-on-proxy approaches insufficient for effective multispecies conservation); Corbin, \textit{supra} note 91, at 397, 401 (noting that “extrapolation from environmental effects on one species to an entire community or ecosystem,” the first level of proxy, “raises serious questions of uncertainty” and that the Forest Service’s methodology “violates the most basic understanding that to determine population viability of individual species requires data on the population’s status.”); R. Edward Grumbine, \textit{Viable Populations, Reserve Size, and Federal Lands Management: A Critique}, 4 CONSERVATION BIOLOGY 127–29 (1990) (noting that models that designate a minimum habitat quantity to maintain species viability, the second level of proxy, often do not adequately take into account uncertainty, and that this inadequacy leads to higher extinction probabilities within shorter time frames than expected).
TAKING A HARD LOOK AT AGENCY SCIENCE

makers, by simulating reality, to organize available information and plug holes created by unavailable information to reach what appears to be a rational and objective conclusion about the environmental effects of the actions being contemplated." However, those holes are plugged with policy determinations and value judgments, not with science. In effect, there is a clear risk that the assumptions of the model are wrong, and in deciding not to collect information about those assumptions, the Forest Service has decided that that risk to the species is acceptable. The problem here is not necessarily that policy questions are being decided by the agency—indeed, Congress delegated that authority to the agency. Rather, the problem is that those value judgments, often hard choices about the acceptable level of risk or uncertainty, are undisclosed.

IV. THE NINTH CIRCUIT'S STRUGGLE TO REVIEW AGENCY SCIENCE

Like other federal courts, the Ninth Circuit has struggled to navigate between conflicting factors in its review of natural resource management decisions. Evidence indicates that the Forest Service may be biased toward resource extraction at the expense of its other statutory goals. In addition, judicial standards of review provide high levels of deference to agency decisions. Finally, management decisions based on complex scientific models are often difficult for judges to review. How should the court uphold the values that underscore deference, when it is clear that the agency is systematically biased toward only one of its statutory goals? Over time, trends in how courts have addressed this issue are discernable, but by no means clear. In the mid-1990s, the Ninth Circuit generally appeared hostile to claims by environmental organizations that the Forest Service was violating NFMA and the Forest Service was given a wide margin to explain their actions. More recently, the Ninth Circuit has appeared "more willing" to scrutinize Forest Service decisions to ensure their compliance with environmental laws such as NFMA. Lands Council v. McNair, however, marks a sharp departure from these developments.

Despite the appearance of overarching trends, case law reviewing Forest Service decisions in natural resource management has generally been muddled. Difficult questions about the appropriate role of the courts in policing the decisions of expert agencies have been exacerbated by differences amongst judges, leading to inconsistency both between, and within, the circuit courts. Lands

94. Glicksman, supra note 86, at 466 (emphasis added).
95. See supra note 103 (case holding that Congress has delegated policy-making authority to the Forest Service).
96. See e.g., Idaho Sporting Congress v. Thomas, 137 F.3d 1146 (9th Cir 1998); Seattle Audubon Soc’y v. Moseley, 80 F.3d 1401 (9th Cir. 1996); Inland Empire Public Lands Council v. U.S. Forest Serv., 88 F.3d 754 (9th Cir. 1996).
Council v. McNair, as an en banc decision, at the very least helps to clarify the standard that is likely to be applied in Ninth Circuit cases moving forward.

A. We Are Not "A Panel of Scientists": Deference to Agency Decisions on Scientific Methodology

Various circuits have shown deference to the Forest Service's choice of methodology, despite prevailing criticisms of those methodological choices in the scientific community. In Sierra Club v. Marita,98 perhaps one of the strongest examples of this deference, plaintiffs alleged that the Forest Service had failed to comply with its "mandates under the NFMA, NEPA and MUSYA to consider and promote biological diversity . . . ."99 Plaintiffs presented extensive documentary evidence and expert testimony to the Forest Service demonstrating that the Forest Service's plan violated basic principles of conservation biology.100 The Seventh Circuit refused to find that this evidence indicated that the Forest Service had violated any of the statutes, noting that Congress had "declined to adopt any particular means or methodology of providing for diversity."101 Further, the Forest Service offered adequate reasons for not adopting conservation biology principles, including the assertion that the relevance of conservation biology principles to Wisconsin's forests was uncertain.102 The court also noted that the Forest Service had been delegated the policy-making discretion to balance natural diversity with other statutory goals.103 The court refused to question whether the Forest Service had struck the appropriate balance.

The Ninth Circuit has also applied this highly deferential standard to choice of scientific methodology. In Inland Empire Public Lands Council v. U.S. Forest Service,104 the Forest Service chose to use a habitat proxy technique similar to the one used in Lands Council v. McNair to meet NFMA's requirement to provide for diversity of plant and animal communities.105 While the methodology chosen involved assumptions about biodiversity that were controversial in the scientific community,106 the court found the Forest Ser-

98. Sierra Club v. Marita, 46 F.3d 606 (7th Cir. 1995).
99. Id. at 610.
100. See id. at 618.
101. Id. at 620.
102. Id. at 621.
103. See id. ("And to the extent the Service's final choice did not promote 'natural diversity' above all else, the Service acted well within its regulatory discretion. See Sierra Club v. Espy, 38 F.3d 795, 800 (5th Cir. 1994) ('That [NFMA diversity] protection means something less than the preservation of the status quo but something more than eradication of species suggests that this is just the type of policy oriented decision Congress wisely left to the discretion of the experts—here, the Forest Service.')) (emphasis added)).
104. 88 F.3d 754 (9th Cir. 1996).
105. The technique contested in Inland Empire is known as "habitat proxy-on-proxy" or "habitat viability analysis." Id. at 759.
106. See supra note 93 and accompanying text.
vice’s assumptions “eminently reasonable” and declined to find the analysis “arbitrary or capricious.” As is often the case in administrative law, the court found that Congress, through the enactment of NFMA, had left the Forest Service with wide discretion. Because the biodiversity provisions were so vague, the Forest Service could fill the gaps with the scientific methodology of its choice. Inland Empire has been relied on by later courts to support the proposition that agency choice of scientific methodology deserves judicial deference despite questioning of that methodology within the broader scientific community.

B. “Deference Does Not Mean Acquiescence” to Agency Authority

Despite cases like Marita and Inland Empire, which indicate that courts should be deferential to both the agency’s choice of scientific methodology and its resulting decision, the Ninth Circuit has occasionally engaged in a more searching review of Forest Service decision making under NEPA or NFMA. However, only rarely has the Ninth Circuit rigorously reviewed the underlying science. Instead, in successful cases, plaintiffs have argued that the Forest Service has failed to comply with either its own statutes or regulations (in the specific forest plans, NFMA implementing regulations, or in NFMA itself) or with the procedural mandates outlined in NEPA. In this way, the Ninth Circuit has used its own particular expertise—determining when the Forest Service has failed to comply with the law—to overturn scientifically-grounded decisions, rather than engaging in a debate over the merits of the science. When the Forest Service has explicitly failed to comply with its own regulations, plans, or clear statutes, the Ninth Circuit is rightfully less concerned about upsetting the traditional standards of deference—the court is not substituting its own judgment for that of the agency, but merely requiring the agency to be consistent either internally or with its authorizing statute. Consequently, successful challenges to Forest Service decisions have traditionally resulted from a failure to meet the requirements of its own regulations or from

107. Inland Empire, 88 F.3d at 761.
108. Id. at 760.
109. See, e.g., Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1250 (9th Cir. 2005) (“Our case law permits the Forest Service to meet the wildlife species viability requirements by preserving habitat . . . . ”) (citing Idaho Sporting Cong. v. Thomas, 137 F.3d 1146, 1154 (9th Cir. 1998)); Indiana Forest Alliance v. U.S. Forest Serv., 325 F.3d 851, 863 (7th Cir. 2003) (upholding Forest Service decision based on habitat availability data, rather than “going into the field and actually counting all of the birds.”); Idaho Sporting Cong., 137 F.3d at 1154 (“So like Inland Empire, the LMP issue at state is one of scientific methodology, i.e., how best to track trout populations. Therefore, as in Inland Empire, we find that the Forest Service’s decision to use habitat as a proxy for fish populations was not arbitrary and capricious.” (internal citations omitted)).
111. See, e.g., Earth Island Inst. v. U.S. Forest Serv., 351 F.3d 1291 (9th Cir. 2003).
112. See, e.g., Sierra Club v. Martin, 168 F.3d 1 (11th Cir. 1999).
113. See, e.g., Ecology Ctr. v. Austin, 430 F.3d 1057 (9th Cir. 1999).
114. See, e.g., Or. Natural Res. Council Fund v. Goodman, 505 F.3d 884 (9th Cir. 2007).
procedural defects. More recently, the Ninth Circuit has also required the agency to justify its assumptions and methodological choices, though that trend was halted by *Lands Council v. McNair*.

1. **Agency Failure to Comply with Own Regulations**

   NFMA mandates that the Forest Service prepare specific plans for each National Forest in its jurisdiction.\(^{115}\) Once plans are in place, NFMA requires that “[r]esource plans and permits, contracts, and other instruments for the use and occupancy of the National Forest System shall be consistent with the land management plans.”\(^{116}\) If subsequent agency actions fail to comply with land management plans, then the courts have found that such actions are arbitrary and capricious.\(^{117}\) As an example, in *Earth Island Institute v. U.S. Forest Service*, plaintiffs challenged the Forest Service’s use of a habitat proxy-on-proxy for the hairy woodpecker and the Williamson’s sapsucker.\(^{118}\) The Forest Plan at issue expressly required “population monitoring” in the form of “distribution data.”\(^{119}\) The Forest Service’s failure to acquire population trends for either species and its reliance on a proxy approach clearly violated the Forest Plan. As such, the Forest Service acted arbitrarily and capriciously under NFMA.\(^{120}\)

   Similarly, when the Forest Service fails to comply with its own implementing regulations, courts have found that the Forest Service acted arbitrarily and capriciously. In *Sierra Club v. Martin*, the Eleventh Circuit held that the Forest Service violated 36 C.F.R. § 219.19 by failing to collect any population data.\(^{121}\) Section 219.19 required that “population trends of the management indicator species will be monitored and relationships to habitat changes determined.”\(^{122}\) The court held that implicit in this language was a requirement to


\(^{116}\) Id. § 1604(i).

\(^{117}\) See, e.g., *Or. Natural Res. Council Fund*, 505 F.3d at 891 (9th Cir. 2007) (“[G]iven the dearth of information about the local fisher population generally and the Forest Service’s failure to explain adequately how it identified suitable fisher habitat, we hold that the Forest Service’s habitat analysis was insufficient to satisfy the demands of the Rogue River LRMP Biological Evaluation process, and is in violation of the NFMA.”); *Lands Council v. Martin*, 479 F.3d 636, 641–43 (9th Cir. 2007) (finding that an interpretation of “live” trees to exclude dying, as well as dead, trees violated the Forest Plan requirement to maintain all live trees); *Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1304 (9th Cir. 2003) (“[W]e cannot agree that the Forest Service complied with the forest plan when it ignored the confirmed presences of owls and de-listed PAC075.”); *Idaho Sporting Cong. v. Rittenhouse*, 305 F.3d 957, 970 (9th Cir. 2002) (“[W]e hold that the Forest Service failed to comply with the Forest Plan standard for maintaining the viability of old growth dependent species because the Forest Service failed to re-dedicate acres of old growth lost to fire and failed to take adequate steps to insure that compartments identified as containing dedicated old growth do, in fact, contain it.”).

\(^{118}\) *Earth Island Inst. v. U.S. Forest Serv.*, 442 F.3d 1147, 1173–1175 (9th Cir. 2006).

\(^{119}\) Id. at 1175.

\(^{120}\) See id. at 1176.

\(^{121}\) *Sierra Club v. Martin*, 168 F.3d 1, 6–7 (11th Cir. 1999).

\(^{122}\) Id. at 6. 36 C.F.R. § 219.19 was subsequently omitted from the regulations when the Bush Administration revised them in 2002, see *Envtl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 451 F.3d 1005, 1017 n.8 (9th Cir. 2006), and is not at issue in *Lands Council v. McNair*. 
collect population data.\textsuperscript{123} As the agency could not "reliably gauge the impact of the timber projects on the[] species" without monitoring data, the approval of the project was "arbitrary and capricious."\textsuperscript{124}

2. \textit{Agency Failure to Comply with Procedural Mandates}

Environmental plaintiffs have also brought successful cases against the Forest Service when they could demonstrate that the Forest Service had failed to comply with the procedural strictures of NEPA. The most relevant cases are those where the plaintiffs alleged that the Forest Service had not adequately explained its choice of scientific methodology. For example, in \textit{Oregon Natural Resources Council Fund v. Goodman}, plaintiffs alleged that the Forest Service had failed to disclose the potential impact of damaging habitat in a critical wildlife corridor.\textsuperscript{125} The Forest Service acknowledged that a wildlife corridor existed in the region, but summarily concluded that the expansion of a ski area in the corridor would "have an inconsequential effect" on a sensitive species.\textsuperscript{126} The Ninth Circuit held that this conclusion violated NEPA, as the Forest Service had failed to disclose the methodology it used to reach that conclusion.\textsuperscript{127} The court noted that it required "at least some study or analysis" of how the project would affect the species.\textsuperscript{128} Without such information, the Final Environmental Impact Statement was inadequate. The court found a similar failure in \textit{Ecology Center v. Austin}, where the Forest Service had not explained in an Environmental Impact Statement how it reached its conclusion that a certain forest treatment would not adversely affect the black-backed woodpecker’s viability.\textsuperscript{129} Even when the Forest Service adequately explained how it reached a specific conclusion, as it had in \textit{Lands Council v. Powell}, the court held that failure to disclose the shortcomings of the methodology used violated NEPA.\textsuperscript{130} Such procedural hooks are a way for plaintiffs to argue for reversal of agency decisions, without invoking concerns that the judge would need to rely on their own scientific understanding or policy preference over that of an expert agency.

\textsuperscript{123} See \textit{id.} at 6–7. Other courts, however, interpreted section 219.19 more broadly, leading to a circuit split on this issue. Compare \textit{Inland Empire Pub. Lands Council v. U.S. Forest Serv.}, 88 F.3d 754, 761 (9th Cir. 1996) and \textit{Indiana Forest Alliance v. U.S. Forest Serv.}, 325 F.3d 851, 863 (7th Cir. 2003) (upholding the use of habitat proxy-on-proxy approaches under section 219.19) \textit{with Utah Envtl. Cong. v. Bosworth}, 372 F.3d 1219, 1225–26 (10th Cir. 2004) (rejecting the use of habitat proxy-on-proxy approaches under section 219.19).

\textsuperscript{124} \textit{Sierra Club v. Martin}, 168 F.3d at 7.

\textsuperscript{125} \textit{Or. Natural Res. Council Fund v. Goodman}, 505 F.3d 884, 892 (9th Cir. 2007).

\textsuperscript{126} \textit{id.} at 892.

\textsuperscript{127} \textit{id.}

\textsuperscript{128} \textit{id.}

\textsuperscript{129} 430 F.3d 1057, 1067 (9th Cir. 2005).

\textsuperscript{130} See \textit{Lands Council v. Powell}, 379 F.3d 738, 749–50 (9th Cir. 2004) (holding that failure to disclose known shortcomings of a model violated NEPA), \textit{amended} by 395 F.3d 1019 (9th Cir. 2005).
3. Agency Failure to Demonstrate the Reliability of Scientific Methodology

In a string of more recent cases, environmental plaintiffs have also been successful in challenging the Forest Service’s actual choice of scientific methodology as arbitrary and capricious and in violation of either NEPA or NFMA. In some cases, the Forest Service produced contradictory evidence within the record or within an EIS, leaving open to question why it chose to then rely on the scientific methodology that used or produced such data.\textsuperscript{131} For example, in \textit{Idaho Sporting Congress, Inc. v. Rittenhouse}, the Forest Service’s methodology for determining old-growth habitat was “so inaccurate” that the agency overestimated old-growth habitat by 1,280 acres.\textsuperscript{132} The Forest Service attempted to use this data to show that it had provided for viable populations of old-growth dependent species through a habitat proxy-on-proxy modeling approach. The Ninth Circuit determined that since the Forest Service’s evidence was faulty, the decision to use habitat proxy-on-proxy was arbitrary and capricious.\textsuperscript{133}

The Ninth Circuit also has held that a choice of scientific methodology was arbitrary and capricious when the use of that methodology was predicated on an unverified, untested hypothesis. In \textit{Lands Council v. Powell}, the Forest Service used a spreadsheet model to analyze soil conditions that would result from the proposed project, but did not demonstrate the reliability of the model with any on-the-ground analysis.\textsuperscript{134} As such, “[t]he Forest Service, and consequently the public at large, [had] no way to know whether the projection of the Project area’s soils was reliable. Was the Forest Service ‘dead on’ or ‘dead wrong’?”\textsuperscript{135} The court held that reliance on unverified models violated NFMA. Similarly, in \textit{Ecology Center v. Austin}, the Forest Service used a model to conclude that treating old-growth forest through salvage logging was beneficial to dependent species, but did not confirm their hypothesis by any on-the-ground analysis.\textsuperscript{136} The Ninth Circuit ruled against the Forest Service:

[The Service] argues that it must have the “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.” However, this is not a case in which different experts have studied the effects of commercial thinning and prescribed burning in old-growth forests and reached different conclusions. Here, experts have different hypotheses regarding the effects that treating old-growth has on dependent species, yet the Forest Service

\begin{footnotesize}
\begin{enumerate}
\item See, e.g., \textit{Earth Island Inst. v. U.S. Forest Serv.}, 442 F.3d 1147, 1166–67 (9th Cir. 2006) (holding that the Forest Service abused its discretion by using methodology that relied on misunderstood or concealed data).
\item \textit{Idaho Sporting Cong. v. Rittenhouse}, 305 F.3d 957, 972 (9th Cir. 2002).
\item \textit{Id.} at 972–73.
\item \textit{Lands Council v. Powell}, 379 F.3d at 752.
\item \textit{Id.}
\item \textit{Ecology Ctr. v. Austin}, 430 F.3d 1057, 1064 (9th Cir. 2005).
\end{enumerate}
\end{footnotesize}
proposes to continue treating old-growth without first taking time to observe what those effects actually are.\textsuperscript{137} The court found such unverified conclusions arbitrary and capricious.\textsuperscript{138}

Environmental organizations remain concerned that assumptions used by the Forest Service are based in uncertain science and will lead to agency decisions that harm sensitive species. The Ninth Circuit has struggled to balance these concerns with its justifiable hesitancy to question the agency's expert decisions, and as such, the appropriate level of deference owed to the Forest Service's choice of scientific methodology remains controversial. Should the Forest Service be entitled to judicial deference so long as it states its assumptions? Or should the agency be required to demonstrate the reliability of those assumptions? When assumptions contain both the results of scientific research and policy or value judgments, allowing the agency to move forward on untested assumptions can exacerbate the problems posed by the science charade. This type of judicial review of the assumptions behind and justification for methodological choices has proven controversial, in part because \textit{Ecology Center} and \textit{Lands Council v. Powell} are in tension with prior Ninth Circuit decisions that have given the Forest Service greater deference in making such assumptions. It is this conflict that the Ninth Circuit revisited in \textit{Lands Council v. McNair}.

V. \textsc{Resetting a Highly Deferential Standard: Lands Council v. McNair}

In its en banc decision in \textit{Lands Council v. McNair}, the Ninth Circuit clarified the standard of review to be used to determine whether the Forest Service sufficiently demonstrated the reliability of its scientific methodology.\textsuperscript{139} In doing so, the court overruled its previous decision in \textit{Ecology Center, Inc. v. Austin},\textsuperscript{140} which held that on-the-ground analysis was necessary to verify the reliability of its assumptions.\textsuperscript{141} The court held that this requirement was not supported by the language of NFMA or NEPA, nor was it supported by the traditional standard of deference given to agencies in making technical decisions.\textsuperscript{142}

\textbf{A. Facts and Plaintiffs' Claims}

In late 2002, the Forest Service proposed the Mission Brush Project (the Project) in the Idaho Panhandle National Forest (IPNF).\textsuperscript{143} In addition to road

\begin{itemize}
  \item \textsuperscript{137} Id. at 1064–65 (quoting Marsh v. Or. Natural Res. Council, 490 U.S. 360, 378 (1989)).
  \item \textsuperscript{138} Id. at 1065.
  \item \textsuperscript{139} Lands Council v. McNair, 537 F.3d 981 (9th Cir. 2008) (en banc).
  \item \textsuperscript{140} Ecology Ctr. v. Austin, 430 F.3d 1057 (9th Cir. 2005), cert. denied, Mineral County v. Ecology Ctr., 549 U.S. 1111 (2007).
  \item \textsuperscript{141} Id. at 1064–65.
  \item \textsuperscript{142} Id.
  \item \textsuperscript{143} Lands Council v. McNair, 537 F.3d at 986.
\end{itemize}
and facility improvements and stewardship treatments, the proposed project included 3,829 acres of silvicultural treatments with commercial thinning.144 A history of fire suppression in the area resulted in a forest composition that was “crowded with stands of shade-tolerant, younger Douglas-firs and other mid-to-late successional species.”145 The silvicultural treatments were intended to restore the forest structure to its historic composition, in order to improve forest health and wildlife habitat, and reduce the risk of catastrophic wildfire.146 Such treatments were predominantly proposed for areas that had been logged previously, but 277 acres of old-growth forests were also proposed for treatment.147 The Lands Council and the Wild West Institute (collectively “plaintiffs” or “Lands Council”) were concerned that treatment to these old-growth acres would destroy or disturb habitat for the flammulated owl, a regionally sensitive species, and after appropriate administrative proceedings, filed suit against the Forest Service in 2006.148 The district court denied the plaintiffs’ request for a preliminary injunction, and they appealed.149 A three-judge panel at the Ninth Circuit reversed the denial and remanded back to the district court.150 Following the issuance of a preliminary injunction on remand, the Ninth Circuit voted to hear the case en banc.151

B. Ninth Circuit En Banc Analysis

Lands Council advanced a variety of ultimately unsuccessful arguments. Relying on Ecology Center, the plaintiffs first argued that the Forest Service had violated NFMA’s requirement to “provide for diversity of plant and animal communities”152 by failing to verify its prediction regarding the effect of treatment on flammulated owl with observation or on-the-ground analysis.153 Ecology Center had established a clear rule: the Forest Service must demonstrate the reliability of its assumptions with on-the-ground analysis, rather than just making a general assertion that the assumptions used were correct.154 Plaintiffs in Lands Council v. McNair alleged the Forest Service failed to demonstrate the reliability of the methods it used with actual data.155 Instead of applying the on-point precedent, however, the en banc panel overruled Ecology

144. Id. at 985.
145. See id. The court also noted that, in addition to fire suppression, past logging practices and disease contributed to this forest composition. Id.
146. Id.
147. See id. at 986.
148. See id. at 986, 987 n.4.
149. See id. at 986.
150. See Lands Council v. McNair, 494 F.3d 711 (9th Cir. 2007), rev’d, Lands Council v. McNair, 537 F.3d 981 (9th Cir. 2008).
151. Lands Council v. McNair, 512 F.3d 1204, 1204 (9th Cir. 2008).
153. Lands Council v. McNair, 573 F.3d at 990.
154. See Ecology Ctr. v. Austin, 430 F.3d 1057, 1971 (9th Cir. 2005).
155. Lands Council v. McNair, 537 F.3d at 988.
Center, pointing to three flaws in its reasoning. First, the court in Ecology Center had applied the holding in an earlier case too broadly, because it had failed to respect the opinion's limitations to "the circumstances of [the] case." 156 Second, NFMA and NEPA contain no statutory language that requires the Forest Service to complete on-the-ground analysis. 157 Finally, requiring a specific methodology for determining wildlife viability goes against the deference that should be given to the agency in questions of technical expertise. 158

After finding that the Forest Service was not required to conduct on-the-ground analysis, the court held that Forest Service had not acted arbitrarily or capriciously in its analysis of the effects of treating old-growth habitat on the flammulated owl. The court approved of the use of the a habitat proxy-on-proxy model for determining wildlife viability, so long as the Forest Service described the quality and quantity of habitat necessary to sustain the viability of the species. 159 This holding gives the Forest Service particularly wide discretion. So long as the agency explains the general assumptions that it has made (here, assumptions about how much acreage is necessary to support biodiversity), it does not need to demonstrate that those assumptions are reliable. In addition to going against Ninth Circuit precedent, this decision runs contrary to the Tenth and Eleventh Circuits, which have held that habitat proxies cannot be used to assure the viability of species. 160

Second, the plaintiffs argued that the Forest Service had violated NFMA because it was out of compliance with standard 10(b) of the IPNF's Forest Plan and would continue to be out of compliance upon completion of the project. Standard 10(b) requires the Forest Service to maintain at least ten percent old-growth habitat throughout the forest. 161 The plaintiffs based their claim on their own report, Lost Forests, which had been conducted by a forest pathologist. 162 The Forest Service however, relied on two independent monitoring tools to determine that the IPNF contained twelve percent old-growth and was in compliance prior to the project. 163 The court held that the Forest Service had not acted arbitrarily or capriciously in relying on its own qualified experts, rather than the report offered by the Lands Council. 164 It also held that since the Project would not harvest any old-growth trees-only younger trees in old-growth areas—it would not change the percentage of old-growth after completion. 165

156. Id. at 991.
157. Id. at 991–92.
158. Id. at 993–94.
159. Id. at 996–97. Habitat proxy-on-proxy approaches are discussed supra Part III.C.
160. See supra note 123.
161. See Lands Council v. McNair, 537 F.3d at 987–88; see also U.S. FOREST SERV., supra note 84, at II-29.
162. Lands Council v. McNair, 537 F.3d at 999–1000.
163. Id. at 999.
164. Id. at 1000.
165. Id.
The last claim brought by the plaintiffs alleged that the Forest Service did not adequately address scientific uncertainty about its proposed treatment as a strategy to maintain the viability of old-growth species, and therefore violated NEPA.\textsuperscript{166} The court, however, noted that NEPA does not require the Forest Service to affirmatively discuss every uncertainty, but only must respond to uncertainties raised in public comments or those supported by scientific authorities.\textsuperscript{167} The court examined the two studies that the plaintiffs presented as evidence of alleged scientific uncertainty and determined that the studies actually lent support to the Project.\textsuperscript{168}

On each of the three claims, the court concluded that the district court had not abused its discretion in concluding that the plaintiffs were not likely to succeed on the merits of their claims. As such, the denial of the preliminary injunction was appropriate.\textsuperscript{169}

\section*{VI. THE SCIENCE CHARADE}

In deferring to the Forest Service’s determinations to use the habitat proxy-on-proxy approach to ensure species viability, the court allowed the agency to present underlying policy decisions as reasoned scientific analysis. This approach shields agency decision making from public scrutiny and challenge, contrary to the purpose of the APA to open up agency decision making to public review. As such, the habitat proxy-on-proxy approach is an example of agency decision making using the science charade. The agency is under pressure from “multiple political, legal, and institutional” sources to disguise its policy choices in “science.”\textsuperscript{170} The general public is highly trusting of science and by passing off value judgments as science, an agency can erect some political cover. The courts, as evidenced by \textit{Lands Council v. McNair}, also remain highly deferential to science, such that policy decisions cloaked as science escape strong judicial review.\textsuperscript{171} Institutionally, the Forest Service is an agency whose basic historical premise is the triumph of science in natural resource management. This culture predisposes the agency to provide justifications in scientific terms, regardless of the true character of the decision. Last, and perhaps most troubling, is the agency’s internal bias toward natural resource extraction, discussed in Part I.B. If the Forest Service has this underlying bias toward timber harvesting, it can use the science charade to disguise this bias as a rational, scientific determination that additional harvesting will not adversely

\begin{footnotesize}
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\item\textsuperscript{166} Id. at 1002.
\item\textsuperscript{167} Id. at 1001.
\item\textsuperscript{168} Id. at 1002.
\item\textsuperscript{169} Id. at 1004.
\item\textsuperscript{170} Wagner, \textit{supra} note 7, at 1650–51.
\item\textsuperscript{171} See generally \textit{Native Ecosystems Council v. U.S. Forest Serv.}, 428 F.3d 1233 (9th Cir. 2005); \textit{Indiana Forest Alliance v. U.S. Forest Serv.}, 325 F.3d 851 (7th Cir. 2003); \textit{Idaho Sporting Cong. v. Thomas}, 137 F.3d 1146 (9th Cir. 1998); \textit{Inland Empire Pub. Lands Council v. U.S. Forest Serv.}, 88 F.3d 754 (9th Cir. 1996); \textit{Sierra Club v. Marita}, 46 F.3d 606 (7th Cir. 1995).
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TAKING A HARD LOOK AT AGENCY SCIENCE

affect biodiversity. Given these overlapping incentives, it is not surprising that the Forest Service tries to pass policy off as science. The implications of this science charade, however, are problematic and diverse.

The holding of *Lands Council v. McNair* does little to address the difficulties presented by this science charade. According to the holding, courts should defer to agencies that use "scientific" assumptions to make management decisions, regardless of whether these assumptions also contain undisclosed value judgments. While the Ninth Circuit's earlier holding in *Ecology Center* required the agency to prove the reliability of these assumptions with on-the-ground analysis, the holding in *Lands Council v. McNair* gives the Forest Service far more discretion. In doing so, the court 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 judgments were reliable.

A. Difficulties for Judges

One of the fundamental problems with the Forest Service's use of the science charade in *Lands Council v. McNair* is readily apparent: when the agency fails to disclose background policy judgments, the courts have difficulty reviewing its decisions. Congress has delegated authority to the Forest Service in both science and policy realms. However, when the Forest Service disguises policy decisions, the courts are unable to properly review them under the standards of the APA. Instead, they get swept into the broad framework of agency "science," and the court may be unable to discern an improper policy decision lying behind it, namely one without an underlying rational basis. Under *Lands Council v. McNair*, the Ninth Circuit essentially permits the agency to make any decision it likes, as long as it generates "scientific" conclusions to support it. Further, when "science" also includes policy or value judgments, it may be difficult to distinguish between the types of judgments being made. This problem is sharpened by the fact that most judges are not scientifically trained. As commentators have noted, it can be difficult for non-scientists, such as judges, to separate out science and policy judgment without additional assistance. When these get conflated, courts will not be able to determine when a management decision is rationally supported by scientific evidence.

B. Difficulties for the Public

When policy decisions are hidden in scientific assumptions, it can also be difficult for the public to discern how decisions at the agencies are being made. The general public serves the important role of holding the Forest Service accountable through two mechanisms. First, concerned individuals or organiza-

172. See *Lands Council v. McNair*, 537 F.3d at 996–997.
tions can bring citizen suits under the APA alleging that the agency has violated NFMA or NEPA. Second, as an executive agency that reports to the President, the Forest Service may be responsive to political pressure. Both of these methods of holding agencies accountable are disserved when the Forest Service engages in the science charade. The use of habitat proxy-on-proxy approach and other models makes it difficult or impossible for citizens to understand if and when policy decisions are being made. Without a differentiation between science and policy, citizen groups may be unable to access the relevant scientific or policy information necessary to hold the agency accountable either politically or in court. And without knowing how the agency weighed environmental considerations against other legitimate or illegitimate policy interests, the general public cannot know if the agency balanced its different mandates appropriately. Thus, the science charade prevents the public from determining if bias has crept into analysis, which is of particular importance in reviewing Forest Service decisions.

C. Difficulties for Scientists

The scientific community is not immune to the problems that confront the general public and judges when the Forest Service engages in the science charade. For natural resources scientists and ecologists, our national forests represent a potential laboratory for experimentation. The Forest Service frequently alters conditions on its land, generating a potential wealth of data that can be used to better understand how management decisions affect species or ecosystems. However, to engage in such study, scientists require clear and reliable information on assumptions made throughout the scientific process. Information, such as the treatment of uncertainty, the use of sources of information, or the margin of error considered, can be unclear in Forest Service reports. Without this information, the broader scientific community cannot review the actions of Forest Service scientists. This barrier interferes with the scientific community’s ability to increase its understanding of ecosystem and the effects of human disturbance. The scientific process relies on the peer review system to build the credibility of new hypotheses. By engaging in the science charade, the Forest Service both prevents its scientific analysis from being peer reviewed and discourages the broader scientific community from building on Forest Service data.

D. Difficulties for the Forest Service

Beyond the effects on outside parties, the Forest Service’s science charade may also make it more difficult for the agency to fulfill its statutory duties. If

175. Cf. Wagner, supra note 7, at 1673 (describing this nondisclosure in agency reports more generally).
the incentives to engage in the scientific charade are particularly strong, the Forest Service may develop a myopic view toward finding "scientific" justifications for their decision-making process. This singular focus hurts the agency in two ways. First, by focusing exclusively on science, the Forest Service may overlook the other values that Congress intended them to consider in making decisions. NFMA, unlike other environmental statutes, does not require the Forest Service to rely exclusively on science to make its decisions. The Forest Service is required to consider other factors, such as demands for outdoor recreation or the economic efficiency of a project. To the extent that the Forest Service focuses exclusively on science in an effort to evade review, these other factors would likely be underrepresented, either in the actual decision-making process, or more likely, in disclosures to the public about how the decision was actually made.

Second, by focusing on how to create the appearance of science that is both certain and reliable, the Forest Service may fail to expand their own scientific knowledge. An example of this phenomenon can be seen in the use of habitat proxy-on-proxy methods. When the Forest Service first considered how to meet the substantive biodiversity provisions of NFMA, it relied on management indicator species. This first-level proxy used individual species, like the flammulated owl, as a surrogate for how other species were faring. This method required on-the-ground monitoring of those indicator species. However, the Forest Service later discarded the use of management indicator species, in part because the production of this data exposed the uncertainty of this proxy methodology and opened up the Forest Service to criticism. The move toward habitat proxy-on-proxy analysis, which is more generalized, may have been in part to avoid disclosure of scientific uncertainty that might be challenged. However, this move leaves the Forest Service decision-making process worse off. By using habitat proxy-on-proxy analysis, the Forest Service is less rigorous in collecting data about how species react to different management scenarios. The lack of data precludes adaptive management, and in the long run, will likely prevent the Forest Service from achieving the substantive goals of NFMA.

176. For a similar view on the ESA, see Doremus, Listing Decisions, supra note 7, at 1035.
177. The Endangered Species Act, as one example, requires that listing decisions be made solely on the basis of "best scientific and commercial information available." 16 U.S.C. § 1533(b)(1)(A) (2006).
178. See id. § 1604(e).
179. See Glicksman, supra note 86, at 495.
181. See Glicksman, supra note 86, at 497.
182. Adaptive management involves "the systematic acquisition of reliable information," which is then is used to make informed decisions. George F. Wilhere, Adaptive Management in Habitat Conservation Plans 16 CONSERVATION BIOLOGY 20, 21–22 (2002). Management activities are conducted as deliberate experiments to establish cause-and-effect relationships between management activities and changes in ecological conditions. See id.
E. Exacerbating the Controversy

The promise of science includes the possibility of reducing the intense fights over allocation of natural resources. By relying on a “rational” scientific decision-making system, policy makers hoped to avoid the essential policy questions that fuel natural resource disputes, such as how to allocate benefits between economic and ecological concerns, how to prioritize the use of limited resources, or how to incorporate risk into decision making. However, as discussed in Part III, science is unable to answer these questions completely, either because of lack of necessary scientific information or because trans-science questions arise in the course of decision making. Further, when decision makers fail to acknowledge that these gaps in the scientific process exist, the controversy that science was supposed to resolve is exacerbated.

This effect can be seen when both sides call for “better” science in the decision-making process. Environmental organizations have accused the Forest Service of using “bad” science and come to court armed with evidence of better scientific methods. In part, these arguments are based in a belief that the Forest Service is not fully committed to honest science. However, environmental organizations may also make calls for “better” science not because the agency science is inherently faulty, but because they would prefer the inevitable management decisions “to be more closely aligned with their policy preferences.” But instead of being honest about their policy preferences in the courthouse, plaintiffs are forced to engage in the science charade as well—any claim that the Forest Service has failed to make the correct policy judgment is likely to be rejected, given the agency’s multi-use mandate. So environmental organizations bring in evidence of “better” science, leaving the court to grapple with whether their evidence, or the agency’s evidence, is more persuasive. This is a battle environmental organizations usually lose. These defeats, however, are not the most disconcerting aspect of claims against the Forest Service; rather, by engaging in the science charade, the Forest Service forces their opponents to focus solely on arguments about the adequacy of agency science, leaving the underlying policy dispute not discussed and unresolved. While the courts are not the proper forum for resolving policy disputes, the courts’ unintentional support of this practice prevents the information necessary for engaging in a proper policy debate from reaching the public’s eyes. In this way, the

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183. This litigation technique is seen in Lands Council v. McNair, where plaintiffs relied on their own reports in an attempt to show that the Forest Service science was incomplete or misleading. See Lands Council v. McNair, 537 F.3d 981, 999, 1002 (9th Cir. 2008). See also Rick Weiss, Data Quality Law is Nemesis of Regulation, WASH. POST, Aug. 16, 2004, at A1 (discussing how industry uses the Data Quality Act, Pub. L. No. 106-554, 114 Stat. 2763 app at 153 (2000), to challenge the scientific validity of decisions made by agencies aimed at protecting the environment or human health).


185. See, e.g., Lands Council v. McNair, 537 F.3d 981; Inland Empire Pub. Lands Council v. U.S. Forest Serv., 88 F.3d 754 (9th Cir. 1996); Sierra Club v. Marita, 46 F.3d 606 (7th Cir. 1995).
science charade fuels controversy between the agency and environmental groups.

F. The Potential for Bias

Last, and perhaps most importantly, engaging in the science charade allows the Forest Service to hide any bias toward resource extraction from review by the public and the courts. As noted in Part I.B, the Forest Service has many incentives to make biased decisions. The Forest Service can sidestep the traditional congressional appropriations process when it generates funds through timber harvest. A long-standing agency culture has favored timber harvest over the other statutory mandates of NFMA. And both public choice theory and political science theory indicate that an agency is likely to favor the achievement of measurable goals that benefit small, strongly organized interest groups such as the commodity industry. These biases can creep into the agency's policy decisions and be disguised by their choice of scientific methodology. Though the court is not particularly well suited to deal with bias even when it is apparent, it is even less able to do so when the bias is hidden by the science charade.

VII. CREATING TRANSPARENCY THROUGH JUDICIAL REVIEW

Given the detriments of the science charade to political accountability, judicial review, the scientific community and the general public, it seems necessary to find a mechanism to either prevent this charade from occurring or to control the effects once it does. Currently, the courts are a complicit player in the science charade; "[b]y insisting on technical justifications on the one hand, and pledging not to scrutinize the accuracy of the technical explanations on the other, the courts not only fail to prevent the science charade, they make it almost obligatory."

While there may be other avenues to remedy the problems created by the science charade, the courts' role in creating incentives makes judicial review a logical place for intervention. By changing either how the courts review agency science, or by changing what the agency must provide to the courts in their record, the science charade can be exposed.

A. Separating Science from Policy

As suggested above, it would be impossible for the Forest Service to make its management decisions based solely on scientific information. At some point in the process of translating scientific information into management decisions, the Forest Service encounters policy questions that must be answered. For this reason, it would not be logical for the courts or the legislature to require the Forest Service to base its decisions entirely on scientific information, as Con-

186. See infra Part VII.A.2.
gress has required for other environmental statutes.\textsuperscript{188} Given that policy judgments are a necessary part of the Forest Service's decision-making process, the remaining question is how the courts should review mixed decisions of science and policy. Currently, the primary effect of the science charade in the courts is that policy bases for these decisions are largely hidden from judicial review. Instead, the courts should review agency decisions in such a way that forces the agency to distinguish policy judgments from scientific facts. This separation can be accomplished by requiring the agency to describe in their NEPA documents what part of their scientific methodology is best characterized as policy judgments. This requirement could be imposed in a number of different ways.

1. \textit{Strengthening Judicial Review}

As one option, the courts could use the existing tools of the APA and NEPA to require transparency in the Forest Service's NEPA documentation. This method would require the judges to read a procedural requirement into these statutes that is not already explicitly mentioned in NEPA, the APA, NFMA, or the Forest Service's regulations. Nevertheless, this separation is necessary to facilitate effective judicial review. Judges must be able to assess which aspects of the decision are based in rigorous scientific data and which aspects are actually grounded in trans-scientific policy decisions. This judicially-created solution would require a court willing to depart from current deferential practice and to take a true "hard look" at agency action. However, in the Ninth Circuit at least, such a show of judicial muscle is unlikely to occur in the near future. \textit{Lands Council v. McNair} seemingly resolved the level of deference that is due to the Forest Service in its choice of scientific methodology. Other circuits may still be fertile ground for this type of argument, but given that about half of the 155 national forests fall within the Ninth Circuit's jurisdiction,\textsuperscript{189} it would be difficult to effectuate wholesale change without convincing the Ninth Circuit to change its approach.

An alternative approach might be to trigger more stringent judicial review upon a showing by the plaintiff that bias has affected the Forest Service's decision-making process. While the science charade creates problems regardless of the motivations for invoking it, the effects are particularly troublesome when the Forest Services uses the science charade to hide its internal bias toward timber extraction. When there is evidence that an agency is using scientific assumptions as a post hoc rationale for policy decisions that are driven by evident bias, the courts should hesitate to approve of the agency action and engage in a more circumspect review. Judge John T. Noonan of the Ninth Circuit has de-

\textsuperscript{188} For example, listing decisions under the Endangered Species Act must be made "solely on the basis of the best scientific and commercial data available." 16 U.S.C. § 1533(b)(1)(A) (2006).

scribed the rationale for heightened scrutiny of decisions where the agency has a financial stake:

The financial incentive of the Forest Service in implementing the forest plan is as operative, as tangible, and as troublesome as it would be if instead of an impartial agency decision the agency was the paid accomplice of the loggers.

In the instant case the decision-makers are influenced by the monetary reward to their agency, a reward to be paid by a successful bidder as part of the agency’s plan.

Independently of the groups set out in my opinion for the court, I would hold this defect in the process to vitiate entirely the ultimate questions and to require judicial setting aside of the implementation of the process.\footnote{190}

Relying on \textit{Tumey v. Ohio}, where the Supreme Court held it unlawful for judges to supplement their salaries by imposing fines on those convicted, Judge Noonan argues that the financial incentives to harvest timber improperly bias Forest Service decision making. Prior case law held that the principle in \textit{Tumey} applied to administrative adjudicators,\footnote{191} and Judge Noonan extends this reasoning to bias that enters into an agency’s decision-making process.\footnote{192}

This judicial review of agency bias has some appealing characteristics for remedying the science charade. It scrutinizes one of the charade’s most troubling aspects: the fact that science can be used to shield evidence of improper bias from judicial review. Further, this review rests on the premise of a familiar concept to courts—judicial impartiality—and avoids the confusion that surrounds the review of science under the APA and NEPA. Plaintiffs bringing this type of claim would not run into \textit{Land Council v. McNair}’s highly deferential standard.

However, relying on claims of adjudicative partiality to solve the science charade may not be feasible. In practical terms, Judge Noonan’s arguments have not yet gained traction with other judges on the Ninth Circuit and have

\footnotesize{\begin{quote}
\footnote{190. \textit{Sierra Forest Legacy} v. \textit{Rey}, 526 F.3d 1228, 1236 (9th Cir. 2008) (Noonan, J., concurring). \textit{Accord} \textit{Earth Island Inst.} v. \textit{U.S. Forest Serv.}, 442 F.3d 1147, 1178 (9th Cir. 2006) (Noonan, J., concurring), \textit{Earth Island Inst.} v. \textit{U.S. Forest Serv.}, 351 F.3d 1291, 1309 (9th Cir. 2003) (Noonan, J., concurring).}
\footnote{193. This extension of reasoning may prove problematic. Executive agencies such as the Forest Service perform legislative, executive and judicial functions. While the case law is clear that judicial functions cannot be biased, \textit{see Tumey}, 273 U.S. at 532–34, it is less obvious that legislative or executive functions must stand up to the same rigor. While Judge Noonan argues that the connection between adjudicative and legislative functions is tight enough to warrant a finding that a legislative decision is invalid, it is unclear that this reasoning will hold up. \textit{Sierra Forest Legacy}, 526 F.3d at 1236 (Noonan, J., concurring). Bias enters the legislative process at many steps, perhaps rightfully so, as the use of incentives and persuasion seems to be a fundamental part of the democratic process. Judge Noonan’s opinions offer no clear limit on where invalidating agency legislative action should stop.}
\end{quote}}
been advanced only in concurring opinions. In addition, this type of judicial review is not likely to remedy all of the difficulties presented by the science charade. Indeed, it might even create the wrong incentive: if the Forest Service can fully conceal its bias behind the veil of science, a claim of improper adjudicative bias will find no support in the record. Nevertheless, with the right set of facts and the appropriate panel at the Ninth Circuit, this argument may gain traction and could provide some relief from the science charade.

2. Statutory or Regulatory Solutions

Given the difficulties presented by the judge-made rules suggested above, a better solution may come from Congress. The benefits of legislative action include both a clear statement of the problems created by the science charade as well as a swift and uniform solution. First, Congress could amend the APA to specifically require that administrative agencies reveal when policy judgments are intertwined with science. Professor Wendy Wagner has suggested that such an amendment should expressly require the agencies to separate science from policy and task the courts with the responsibility for ensuring that the agency does so in an accurate and accessible way. The amendment should also specify that once the court has taken a “hard look” to ensure that the agency has adequately separated science from policy, the court should accord the content of the policy and science decisions great deference provided that the agency has given some nonarbitrary basis for its conclusions. Such an amendment would send a strong message to agencies and the courts that disguising policy decisions as science is no longer acceptable. Further, by expressly acknowledging that some decisions regarding scientific methods or assumptions require policy judgments, agencies may feel safer in acknowledging the reasons for the decisions they have made. Although this solution would leave a portion of agency decision making unreviewable as a delegation to the political branches, those policy decisions at least would be visible to the public. Unlike the other suggestions, an amendment to the APA would solve the science charade across numerous agencies, rather than just the Forest Service, and could be enacted under the politically popular slogan of forcing “good science.” It would, however, require immense political will to enact an amendment to the APA. The rule would apply across the board to many agencies and it may be difficult to garner enough support to overcome the likely resistance.

As a better alternative, Congress could reconvene the Committee of Scientists under NFMA with the express purpose of suggesting a revision to the im-

194. See Sierra Forest Legacy, 526 F.3d at 1236 (Noonan, J., concurring); Earth Island Inst., 442 F.3d at 1178 (9th Cir. 2006) (Noonan, J., concurring), Earth Island Inst., 351 F.3d at 1309 (9th Cir. 2003) (Noonan, J., concurring).
195. Wagner, supra note 7, at 1711–12.
implementing regulations to incorporate a transparency requirement. The Committee, comprised of non-Forest Service experts in the fields of natural resources science and ecology, could determine guidelines and procedures for the agency to follow in creating NEPA documents. While the Committee can only make recommendations to the agency to implement the regulations, in the past the Committee has successfully influenced the promulgation of new regulations. The regulations should instruct the Forest Service how to optimally identify science and policy, in a way that increases transparency and reduces the amount of time and effort necessary to complete the needed review. Any new regulations would be judicially enforceable, but their adoption would be less politically charged than revising the APA. Further, any report created by the Committee of Scientists becomes part of both public and agency record, allowing the courts to use the recommendations of non-agency scientists when evaluating Forest Service decisions.

Nevertheless, the appropriate review of agency science and policy, either through an amendment to the APA or a change to NFMA’s implementing regulations, is procedural, rather than substantive. The court should not be asked to serve as a “panel of scientists” that “instructs the Forest Service how to validate it hypotheses regarding wildlife viability, chooses among scientific studies . . . , and orders the agency to explain every possible scientific uncertainty,” the concern of the court in *Lands Council v. McNair*. Nor should the court be encouraged to substitute its own policy preference for those of the more politically-accountable administrative agency. Instead, the court would function better in this context if asked to determine procedural or interpretive matters.

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197. *See supra* note 26–28 and accompanying text.

198. In most cases involving review of agency decisions under the APA, the court is constrained to reviewing the record before the agency. *See* S. Utah Wilderness Alliance v. Bureau of Land Mgmt., 425 F.3d 735, 750 (10th Cir. 2005). This standard serves a useful purpose, in that it allows the court to focus more narrowly on reviewing the agency decision-making process, rather than on attempting to find the substantively correct answer. However, extra-record information may play an important role in reviewing compliance with policy disclosure. One of the distinct problems with the science charade is that policy decisions are hidden within the administrative record and cannot be seen by the court or the general public without a deep understanding of the science involved. The Committee of Scientists report may contain useful information, but plaintiffs also should be allowed to introduce extra-record evidence that helps illustrate for the court how the agency failed to properly disclose their policy judgments.

199. *Lands Council v. McNair*, 537 F.3d 981, 988 (9th Cir. 2008).

200. NEPA, a fundamental federal environmental law, is based entirely on procedural review. *See* Strycker’s Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223 (1980) (“[O]nce an agency has made a decision subject to NEPA’s procedural requirements, the only role for a court is to insure that the agency has considered the environmental consequences; it cannot ‘interject itself within the area of discretion of the executive as to the choice of the action to be taken.’” (quoting Kleppe v. Sierra Club, 427 U.S. 390, 410, n.21 (1976))).
Judge Bazelon noted this strength in his concurring opinion in *Ethyl Corp. v. EPA*:

[I]n cases of great technological complexity, the best way for courts to guard against unreasonable or erroneous administrative decision is not for the judges themselves to scrutinize the technical merits of each decision. Rather, it is to establish a decisionmaking process that assures a reasoned decision that can be held up to the scrutiny of the scientific community and the public.\(^{201}\)

The courts, when reviewing Forest Service decisions, should remand to the agency when there is evidence that it has failed to disclose the policy decisions used to fill gaps in scientific knowledge or to translate scientific data to policy.\(^{202}\) In particular, new regulations should help the courts understand when Forest Service decisions may contain mixtures of science and policy. At minimum, plaintiffs challenging Forest Service decisions would be better able to identify what the scientific decisions actually were, as well as giving them an additional procedural hook for requiring the agency to disclose the policy considerations underlying a decision. The standard should be used to ensure transparency and not any particular environmental result.

**B. The Strengths and Weakness of Requiring a Separation of Science and Policy**

This new procedural review could afford many benefits to the agency, the courts, and the general public. Increased transparency in agency decision making opens the door to the public, who can hold the agency politically accountable for their policy decisions and provide the agency with the ability to make more informed outcomes.\(^{203}\) Increased transparency also opens up agency science to the scientific community, which, with a clearer picture of agency science, can better review and critique this information to the benefit of both the agency and the scientific community. Additionally, requiring the Forest Service to disclose its policy choices could conceivably lead to better decision making within the agency, an idea that parallels one purpose of NEPA review: requiring the agency to gather more information will lead to more informed agency decisions.\(^{204}\) Once the Forest Service knows that it cannot use the science charade, internal actors may feel less pressure to conceal their policy decisions when presenting their decisions to the public. Open discussion of why specific policy choices are made may serve to counter some of the bias.

The divorcing of science from policy in the administrative record may also make it easier for courts to review the "scientific" decisions. The record will

\(^{201}\) Ethyl Corp. v. EPA, 541 F.2d 1, 66 (D.C. Cir. 1976) (Bazelon, C.J., concurring).


\(^{204}\) See, e.g., Dept. of Transp. v. Pub. Citizen, 541 U.S. 752, 754 (2004) (noting that one of the purposes of NEPA is to ensure the agency has sufficient information to make a decision).
arguably be clearer and less intimidating to judges who lack training in the scientific process given that decisions are unpacked into their scientific and policy components. A clear procedural review requirement, either in the APA or new regulations designed by a Committee of Scientists, would make outcomes in this arena more consistent.205

The creation of a new procedural standard also gives environmental organizations one more hook on which to build a successful suit. As seen in Part IV.B, courts are reluctant to overturn agency decisions without some procedural, regulatory, or statutory violation. This new standard would provide one additional avenue for plaintiffs. As someone who is concerned about some of the decisions made by the Forest Service in recent decades, an additional mechanism by which the public can hold the agency accountable strikes me as a good thing.

However, the application of this new procedural review requirement is not without drawbacks. The agency is likely to be highly recalcitrant to the application of any new procedural requirement and may fight to retain their discretion. The Forest Service has good reason for this stubbornness: by opening up its decision-making process, it is likely to run into more trouble in the courts. By admitting that its science is uncertain, or that it based its "scientific" decision on policy judgments, the agency may open itself up to additional lawsuits.206 Given this risk, the Forest Service may also engage in a certain amount of manipulation in labeling aspects of its decisions as policy or science. Nevertheless, a clear statement of the new standard, either in regulations or the APA, might go far to assuage some of these concerns. If the law is clear that the court is only to review whether or not the Forest Service properly disclosed their information, and not the impact of such disclosure on the substantive issues in the case, then separation of policy and science may seem less troublesome to the agency.

Further, forcing the agency and the courts to review the details of whether science and policy have been properly identified takes resources away from the broader, more important questions about how to balance timber production with environmental protection.207 What concerns litigating parties is not the proper classification, but rather ensuring that environmental resources are adequately protected or that local economies continue to have jobs and income. While the science charade masks the value judgments being made by the agency, bringing transparency may still leave these bigger questions unanswered.

The last problem is more difficult to solve. While the application of a new standard may make the record more clear, courts may be hesitant to add to their workload in administrative law decisions. Already, the records in Forest Ser-

206. See Doremus, Science, Judgment, and Controversy, supra note 73, at 29.
207. Cortner, supra note 46, at 514.
vice cases are quite large and require significant effort on the part of the judges to review. It is easier for courts to simply defer when science (or even trans-science) is involved. This practical concern, however, does not outweigh the issues at stake. Currently, the Forest Service is able to hide potentially bad policy decisions behind the guise of science. The courts have an obligation to review these decisions to determine whether the Forest Service has complied with their duty under NFMA. The difficulty of that process should serve as no excuse.

CONCLUSION

Courts continue to face difficulties in reviewing agency science. Judges lack scientific training and are hesitant to substitute their judgment for that of an expert agency. Further, the tendency of agencies to engage in the science charade can render the administrative record incomplete, in the sense that policy judgments are hidden or not fully explained. However, the difficult task of a true hard look should not deter the courts from giving agency science the thorough review it necessitates. The stakes are too high—evidence of systematic bias toward natural resource extraction raises questions of whether the Forest Service is able to meet its other statutorily mandated goals.

However, like most difficult problems in environmental law, there is no quick fix to the difficulties that agency science presents in the courtroom. While there are signs that the Obama Administration will counter the politicization of science that occurred under President Bush, the inherent interplay between science and value judgments discussed in this Note leave me feeling less optimistic. I believe that good environmental decision making requires accurate scientific information. However, in the translation of science into policy, the public sometimes loses the ability to understand and influence how broader policy questions are answered. Further, the science charade is a strong tool for the executive branch to wield over both Congress and the courts, effectively insulating their decisions from both political pressure and judicial review. As this Note demonstrates, bias at the Forest Service seems especially difficult, if not impossible to eradicate. Given this basic fact, we must find alternative ways to temper or control its effects. Muscular judicial review and a robust public interest community willing and able to bring citizen suit challenges, while not without difficulties, could provide one mechanism for stopping the charade.

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.