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PROTECTING BIODIVERSITY ON NATIONAL FORESTS: THE EVOLUTION AND
IMPLEMENTATION OF FOREST PLANNING REGULATIONS

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Protecting Biodiversity on National Forests: The Evolution and Implementation of Forest Planning Regulations

Chairperson: Len Broberg

In 2012, the U.S. Forest Service (USFS) promulgated new forest planning regulations that significantly altered national forest management. One of the most controversial and important advancements was the inclusion of what were meant to be stronger biodiversity protections. An analysis of USFS's rationale in revising the biodiversity regulations provides insights into how to interpret the substantively and procedurally new ecosystem and species protections. Examining this regulatory history reveals three key changes to the manner in which national forests are required to manage and monitor biodiversity: 1) a greater reliance on science to inform planning, 2) a new emphasis on ecological integrity, and 3) more comprehensive protections for at-risk species. The specific substantive and procedural provisions that establish this revised conservation framework are summarized in Section III, Part G. Overall, the new "ecosystem-species" approach seeks to ensure the persistence of most native species through "coarse-filter" measures that maintain or restore ecological integrity and diversity, accompanied by "fine-filter" measures that provide the additional specific ecological conditions needed by imperiled populations of at-risk species.

However, the 2012 rule allows the responsible official to determine whether such species-specific plan components are necessary. This discretion results in a set of protections for at-risk species that are likely to be applied inconsistently across the National Forest System. While the language in the rule itself can be vague, the administrative record contains additional context that provides useful guidance in interpreting these biodiversity provisions. More specifically, evidence from the administrative record suggests that the fine-filter provision should apply to species facing discrete threats or with unique needs.

The recently revised Rio Grande National Forest Land Management Plan provides a case study of how one national forest is implementing the new conservation framework poorly. By applying the aforementioned regulatory analysis to a case study, this paper highlights the potential avenues for strengthening or challenging forest plans that fail to adequately protect biodiversity. Ultimately, by exploring the evolution and implementation of the biodiversity provisions in forest planning regulations, this analysis serves to inform efforts to more effectively apply and uphold USFS's new approach to conserving biodiversity on our national forests.

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I. INTRODUCTION

A. *Background: The Imperative to Conserve Biodiversity*

1. *Biodiversity Trends and Values*

Biodiversity is declining precipitously. Globally, we are experiencing what some scientists are calling a “sixth mass extinction.”¹ The rate of species extinction is accelerating dramatically, with a current extinction rate that is already hundreds of times greater than the background rate.² One million animal and plant species (approximately a quarter of the total) are now on the verge of going extinct.³ The primary driver of this alarming trend is changing patterns of land use.⁴ For forest ecosystems, the associated habitat loss, fragmentation, and degradation reduces the biodiversity “by disrupting migration patterns, reducing habitat area (usually older growth) and by increasing edge habitats and predation.”⁵ This crisis has prompted legal scholars, policy experts, and natural resource managers to question why we value biodiversity and what our responsibility is to forestall further “loss in the overall richness of life on the planet.”⁶

The Convention on Biological Diversity defines biological diversity (popularly referred to as “biodiversity”) as the “variability among living organisms” at the ecosystem, species, population, and genetic levels.⁷ Biodiversity has substantial value to agriculture, medicine, and biotechnology, while also providing important ecosystem services, both directly and indirectly.⁸ Beyond these utilitarian values, biodiversity has important aesthetic, spiritual, and recreational values. Moreover, there is a moral argument that biodiversity has an intrinsic value because all living beings “have a right to inhabit, evolve, and shape the planet.”⁹ Finally, biodiversity has “option value,” in that each species has evolved unique adaptations to withstand the test of time, weathering enormous challenges similar to those that humans face in a changing climate.¹⁰ The genetic information of each species may provide us with natural solutions to some of our greatest problems. The many values Americans place on biodiversity are reflected in protections enshrined in bedrock environmental statutes, such as the Endangered Species Act (ESA),¹¹ the

¹ JAMES RASBAND ET AL., NATURAL RESOURCES LAW AND POLICY 367 (3rd ed. 2015).

² See SANDRA DÍAZ ET AL., INTERGOVERNMENTAL SCIENCE-POLICY PLATFORM ON BIODIVERSITY AND ECOSYSTEM SERVICES, SUMMARY FOR POLICYMAKERS OF THE GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES 12 (2019) <https://ipbes.net/global-assessment> (click on “Summary for policymakers” and select the PDF in the appropriate language).

³ *Id.*

⁴ *See id.*

⁵ RASBAND ET AL., *supra* note 1, at 1409.

⁶ *Id.* at 367.

⁷ Convention on Biological Diversity, Jun. 5, 1992, 1760 U.N.T.S. 79, art. 2.

⁸ See RASBAND ET AL., *supra* note 1, at 1374.

⁹ *Id.* at 379.

¹⁰ *Id.*

¹¹ Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2006).

Migratory Bird Treaty Act,¹² the Marine Mammal Protection Act,¹³ and the National Forest Management Act (NFMA).¹⁴

The 193 million acres of land within the National Forest System (NFS) provide the foundation for much of our nation’s biodiversity.¹⁵ National forests support some of the most important wildlife habitat in the country, containing the vast majority of our remaining old-growth forests,¹⁶ millions of acres of habitat for waterfowl and migratory birds, and some of the highest quality habitat for rare plants, reptiles, amphibians, and iconic species such as grizzly bear (*Ursos arctos horribilis*) and Canada lynx (*Lynx canadensis*).¹⁷ Indeed, national forests host more than 430 federally listed threatened and endangered species and an additional 3,500 rare and sensitive species.¹⁸ Relatedly, more than 12 million acres of land and 22,000 river miles in the National Forest System (NFS) serve as federally designated critical habitat for federally-listed species.¹⁹ Consequently, the manner in which the U.S. Forest Service (USFS, “Forest Service,” or “Agency”) manages habitat, and the species therein, significantly influences the biodiversity present on our national forests and grasslands, and the ability of vulnerable species to persist on the American landscape.

2. *The Statutory Mandate to Create Forest Plans that Protect Biodiversity*

In the 1970s, American policymakers began to realize that rampant clear-cutting of our national forests presented a serious threat to the nation’s habitat, along with water quality, recreation, and other non-timber natural resources.²⁰ Citizens, conservation groups, and, eventually, the courts raised concerns that USFS had suffered mission creep, evolving from a “custodian and protector of the forests . . . to a timber production agency.”²¹

In response, the U.S. Congress passed NFMA to “better balance timber management, resource use, and environmental protection.”²² The statute limited the broad discretion USFS previously

¹² 16 U.S.C. §§ 703–712 (2006).

¹³ Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361–1421h (2006).

¹⁴ National Forest Management Act of 1976, 16 U.S.C. §§ 472a, 521b, 1600, 1611–1614 (2006) (amending Forest and Rangeland Renewable Resources Planning Act of 1974, Pub. L. No. 93- 378, 88 Stat. 476 (1974)).

¹⁵ JONATHAN HABER & PETER NELSON, DEFENDERS OF WILDLIFE, PLANNING FOR DIVERSITY: A GUIDE TO NATIONAL FOREST PLANNING TO CONSERVE AMERICA’S WILDLIFE 2 (2015) <https://defenders.org/sites/default/files/publications/planning-for-diversity.pdf>.

¹⁶ Due to decades of widespread logging in the United States, “only 6% of our remaining forests are over 175 years old.” RASBAND ET AL., *supra* note 1, at 1454. This is an alarming statistic, given the number of at-risk species that depend on old-growth forest habitat.

¹⁷ U.S. Dep’t of Agric., U.S. Forest Serv., National Forest System Land Management Planning Final Programmatic Environmental Impact Statement, 15 (Jan. 2012) [hereinafter Final PEIS].

¹⁸ 77 Fed. Reg. 21,173 (Apr. 9, 2012); Final PEIS, *supra* note 17, at 115.

¹⁹ Final PEIS, *supra* note 17, at 115.

²⁰ See Martin Nie et al., *Fish and Wildlife Management on Federal Lands: Debunking State Supremacy* 47 ENVTL. L. 4, 59 (2017).

²¹ West Virginia Div. of Izaak Walton L. of Am., Inc. v. Butz, 522 F.2d (1975).

²² Nie et al., *supra* note 20, at 59.

enjoyed under the Organic Administration Act of 1897²³ and the Multiple-Use Sustained-Yield Act of 1960 (MUSYA).²⁴ NFMA placed new substantive and procedural constraints on the Agency and imbued forest management with a new set of goals.²⁵ More specifically, the statute required each national forest to write a land and resource management plan (“forest plan”) intended to balance the “multiple uses”²⁶ of natural resources within the NFS.²⁷ The Act established a three-tiered planning framework in which federal NFMA regulations (top tier) guide the development and revision of plans for each forest (middle tier).²⁸ Forest plans, in turn, make zoning and suitability decisions dictating the permissible activities and resource uses within a national forest (bottom tier).²⁹ By establishing management direction for all activity taking place within the plan area, forest plans act as gateways through which subsequent project proposals must pass.³⁰ Thus, any activity that happens on the forest floor must be consistent with the plan, which must be consistent with the planning regulations, which must, in turn, be consistent with NFMA. In sum, while forest plans do not authorize specific permits or projects, they do address important overarching issues, such as prioritizing certain multiple uses in certain areas of a given unit of the NFS.³¹

Given the important role of national forests in biodiversity conservation, NFMA included a provision specifically mandating that forest planning “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”³² This requirement has been highly controversial because it changed the dominant forest management paradigm, establishing biodiversity conservation as a priority equal to timber production.³³ In the words of Senator Hubert H. Humphrey, the primary drafter of the NFMA “diversity mandate,”

The days have ended when the forest may be viewed only as trees, and trees viewed only as timber. The soil and water, the grasses and shrubs, the fish and wildlife, and the beauty that is the forest must become integral parts of resource managers’ thinking and actions.³⁴

3. *NFMA Regulations: USFS Interpretation of the Diversity Mandate*

²³ Act of June 4, 1897, ch. 2, 30 Stat. 11, 34–36 (codified as amended at 16 U.S.C. §§ 473–482, 551 (2006)).

²⁴ Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. §§ 528–531 (2006).

²⁵ See generally CHARLES F. WILKINSON & H. MICHAEL ANDERSON, *LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS* (1987).

²⁶ NFMA requires forest plans to “provide for *multiple use* ... and, in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.” 16 U.S.C. § 1604(e)(1) (emphasis added).

²⁷ See Nie et al., *supra* note 20, at 60.

²⁸ *Id.*

²⁹ *Id.*

³⁰ Scott W. Hardt, *Federal Land-Use Planning and Its Impact on Resource Management Decisions*, 46B *RMMLF-INST* 4, 4-7 (1997).

³¹ See generally WILKINSON & ANDERSON, *supra* note 25.

³² National Forest Management Act of 1976, 16 U.S.C. § 1604(g)(3)(b).

³³ See WILKINSON & ANDERSON, *supra* note 25, at 296.

³⁴ 122 CONG. REC. 5619 (1976).

In 1982, USFS promulgated the first set of regulations (the “1982 rule”) guiding the development and revision of plans for each national forest, including instructions for implementing NFMA’s diversity mandate.³⁵ USFS subsequently issued new regulations in 2000, 2005, and 2008. However, none of these rules endured. The Bush Administration deemed the ecological sustainability requirements of the 2000 planning rule unattainable and overly complex³⁶ and issued new versions of the rule in 2005 and 2008. These two versions were then overturned by the courts³⁷ for violating the Administrative Procedure Act,³⁸ the National Environmental Policy Act,³⁹ and NFMA. When the Obama Administration took office, it too revised the forest planning regulations, promulgating a new rule in 2012 (the “2012 rule”). A coalition of industry groups challenged the 2012 rule as violating NFMA and MUSYA by privileging ecological sustainability over other multiple uses of national forests.⁴⁰ However, the court determined that the 2012 rule did not imminently threaten the economic interests of the plaintiffs, and they therefore lacked standing to sue USFS.⁴¹ The 2012 rule therefore still stands and guides the revision of all forest plans that are more than 15 years old.⁴² With more than half of all existing forest plans past due for revision,⁴³ these new regulations are shaping the revision of the vast majority of forest plans throughout the NFS.

The most contested issue in the 2012 rule is USFS’s interpretation of the NFMA diversity mandate. The Agency openly acknowledges this in the Record of Decision (ROD) for the 2012 rule, asserting that “[p]erhaps no other aspect of the proposed planning rule has sparked as much interest or generated as much debate as the requirement to provide for plant and animal diversity.”⁴⁴ Some public comments on the proposed planning rule allege that “managing for species diversity and viability is the responsibility of State agencies, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service,” not USFS.⁴⁵ This sentiment reflects the misconception that USFS only has the authority to manage habitat on national forests and lacks the authority to directly manage the species occupying that habitat.⁴⁶ That notion, which “leads to fragmented approaches to wildlife conservation, unproductive battles over Agency turf, and an abdication of federal responsibility over wildlife,” has been proven false by legal and

³⁵ 36 C.F.R. § 219.26 (1982).

³⁶ See 67 Fed. Reg. 72,770, 72,772 (2002).

³⁷ See *Citizens for Better Forestry v. U.S. Dep’t of Agric.*, 481 F. Supp. 2d 1059 (N.D. Cal. 2007).

³⁸ Administrative Procedure Act, 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5362, 7521 (2006).

³⁹ National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4347 (2006).

⁴⁰ See *Fed. Forest Resource Coalition v. Vilsack*, 100 F. Supp. 3d 21 (2015).

⁴¹ See *id.*

⁴² According to NFMA, forest plans must be revised every 15 years, or sooner, if conditions on the forest have significantly changed, according to the Secretary of Agriculture. National Forest Management Act of 1976, 16 U.S.C. § 1604(f)(5).

⁴³ Martin Nie & Emily Schembra, *The Important Role of Standards in National Forest Planning, Law, and Management*, 44 ENVTL. L. REP. NEWS & ANALYSIS, 10281, 10282 (2014).

⁴⁴ 77 Fed. Reg. 21,174 (Apr. 9, 2012). This Federal Register notice contains the rule along with “the preamble, which states the basis and purpose of the rule, includes the responses to comments received on the proposed rule, and serves as the *record of decision* for this rulemaking.” *Id.* at 21,162 (emphasis added).

⁴⁵ *Id.* at 21,215.

⁴⁶ See Nie et al. *supra* note 20, at 1.

policy scholars.⁴⁷ USFS itself also explicitly debunked that myth by asserting that it is well within the Agency’s “authority to require that plans provide ecological conditions to maintain viable populations.”⁴⁸ The NFMA diversity mandate not only establishes this authority, but creates an “*obligation*” for USFS to protect species.⁴⁹

Other segments of the public acknowledged this authority but were interested in *how* the new regulations would “maintain viable populations of species, manage habitats for fish and wildlife, and monitor the effectiveness of Agency actions in maintaining the biological diversity within plan areas.”⁵⁰ Under the 1982 rule, USFS’s approach had been to maintain viable populations of desired species within the plan area by managing habitat to “support, at least, a minimum number of reproductive individuals.”⁵¹ To evaluate whether these habitat management measures were sufficient to ensure species persistence, the agency monitored “management indicator species” (MIS).⁵² These species were selected on the basis of purportedly allowing the Agency to make inferences about the impacts of management actions on populations of interest within the plan area.⁵³ Rather than monitor the status of MIS directly, many forests opted to monitor MIS habitat.⁵⁴ The use of MIS and the practice of managing habitat to maintain species viability were the subject of scientific scrutiny and protracted legal battles.⁵⁵ In particular, the “proxy-on-proxy” approach—the “use [of] habitat as a proxy to measure a species’ population, and then to use that species’ population as a proxy for the population of other species”⁵⁶—has been the source of much litigation. In promulgating the 2012 rule, USFS abandoned the use of MIS, acknowledging that “[t]he concept of a MIS as a surrogate for the status of other species is not supported by current science.”⁵⁷

The 2012 rule takes a substantively and procedurally new approach to implementing the NFMA diversity mandate in three key ways.⁵⁸ The current forest planning framework requires that “best

⁴⁷ *Id.*

⁴⁸ 77 Fed. Reg. 21,216 (Apr. 9, 2012).

⁴⁹ *Id.* at 21,214.

⁵⁰ Final PEIS, *supra* note 17, at 115.

⁵¹ GREGORY D. HAYWARD ET AL., U.S. DEP’T OF AGRIC., U.S. FOREST SERV., APPLYING THE 2012 RULE TO CONSERVE SPECIES: A PRACTITIONER’S REFERENCE 8 (2016).

⁵² 36 C.F.R. § 219.12(a)(6) (1982).

⁵³ *Id.* § 219.19(a)(1).

⁵⁴ Courtney A. Schultz et al., *Wildlife Conservation Planning Under the United States Forest Service’s 2012 Planning Rule*, 77 J. WILDLIFE MGMT. 1 (2013).

⁵⁵ *See id.* at 2.

⁵⁶ *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88, 761 F.3d. (approving USFS’s “habitat as a proxy approach”).

⁵⁷ 77 Fed. Reg. 21,175 (Apr. 9, 2012).

⁵⁸ Rasband et al. characterize the advancements in the following manner: “In several ways, the 2012 rules break new ground. The mission is strongly worded—to ‘promote the ecological integrity’ of forests through management practices that are ‘ecologically sustainable.’ 36 C.F.R. § 219.1(c). The substance of the rules appears to support this mission. All planning must be science-based: the [Agency] must use ‘the best available scientific information to inform the planning process’ and document how that information guided the planning process. 36 C.F.R. § 219.3. In addition, the 2012 rules reaffirm the Agency’s commitment to preserving species viability.” RASBAND ET AL., *supra* note 1, at 1444.

available scientific information” (BASI)⁵⁹ guide the planning process, it establishes ecological integrity as a priority in managing national forests, and it creates a framework for balancing ecosystem conservation with species-specific conservation. More specifically, the 2012 regulations codify an “ecosystem-species approach” to biodiversity conservation, involving a combination of 1) “coarse filter” provisions to maintain and restore ecological integrity and diversity via “ecosystem plan components” and 2) “fine filter” provisions to provide the specific ecological conditions necessary to recover, conserve, and maintain at-risk species via “species-specific plan components.”⁶⁰

The concept of “ecological conditions” can be traced back to the Committee of Scientists, who issued a report in 1999 with recommendations for improving forest planning.⁶¹ In the 2012 rule, ecological conditions are defined as “the biological and physical environment,” including “habitat and other influences ... that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems.”⁶² Ecological conditions therefore include not just habitat but also factors such as ecological connectivity, roads, invasive species, and “human uses” (e.g., recreation, grazing, and mining).⁶³ Providing for ecological conditions entails an expanded management responsibility compared to habitat management under the 1982 rule.

In order to evaluate the ability of the ecosystem and species-specific plan components to maintain biodiversity and the persistence of native species, forest plans are required to monitor the status of the ecological conditions necessary to support ecological integrity, ecosystem diversity, and at-risk species.⁶⁴ Monitoring programs must also include questions and indicators related to the status of “focal species,” meant to provide information regarding the health of the

⁵⁹ BASI is defined as the information that is “most accurate, reliable, and relevant to the issues being considered.” 36 C.F.R. § 219.3 (2012).

⁶⁰ 36 C.F.R. § 219.9 “adopts a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area.” Section 219.9(a) outlines the requirements for “[e]cosystem plan components” and Section 219.9(b) outlines the requirements for “[a]dditional, species-specific plan components.” More broadly, plan components include the desired conditions, objectives, standards, guidelines, and land suitability determinations. 36 C.F.R. § 219.7. These plan components are to “establish the vision of a plan, set forth the strategy to achieve it, and provide the constraints on subsequent management.” Susan Jane M. Brown & Martin Nie, *Making Forest Planning Great Again? Early Implementation of the Forest Service’s 2012 National Forest Planning Rule* 33 NAT. RESOURCES & ENV’T 1, 1-2 (2019).

⁶¹ The Committee of Scientists recommended following management standard for species viability: “The decisions of resource managers must be based upon the best available scientific information and analysis to provide ecological conditions needed to protect and, as necessary, restore the viability of focal species and of threatened, endangered, and sensitive species.” U.S. DEP’T OF AGRIC., COMMITTEE OF SCIENTISTS, SUSTAINING THE PEOPLE’S LANDS: RECOMMENDATIONS FOR STEWARDSHIP OF THE NATIONAL FORESTS AND GRASSLANDS INTO THE NEXT CENTURY 151 (1999) [hereinafter 1999 COMMITTEE OF SCIENTISTS REPORT].

⁶² 36 C.F.R. § 219.19 (2012).

⁶³ *Id.* FS Directive FSH 1909.12.23.13, Land Management Planning Handbook (U.S.D.A. 2015). See Appendix A for full definition.

⁶⁴ 36 C.F.R. § 219.12(a)(5) (2012).

ecosystems to which they belong.⁶⁵ In drafting these monitoring provisions, USFS sought to find middle ground between those who argued that “species population trends must be monitored” and those who argued that simply monitoring habitat conditions should be sufficient.⁶⁶ Arguments in favor of the latter stem from a belief that species monitoring is too “expensive, does not provide information to inform management actions, and has been the source of ‘legal gridlock’ for USFS.”⁶⁷ On the other hand, USFS recognized that “some amount of direct species measurement may be needed to assess the effectiveness of the ecological conditions . . . in achieving the goal of conserving biological diversity of the area.”⁶⁸ The 2012 rule strikes a balance between these positions by focusing the majority of biodiversity monitoring on the status of ecological conditions, but requiring at least one monitoring question related to the status of focal species. While the 2000 rule required some species-specific monitoring, the 2005 and 2008 rules did not.⁶⁹ Instead, the rules promulgated under the Bush Administration relied entirely on the coarse-filter approach, based on the assertion that maintaining and monitoring ecosystem diversity broadly was sufficient to comply with the NFMA diversity mandate.⁷⁰

Despite the inclusion of fine-filter provisions (i.e., the species-specific plan component requirements), the conservation framework codified in the 2012 rule, like its predecessors, still relies *primarily* on the maintaining biodiversity via the coarse filter. Forest plans are only required to include species-specific plan components if the ecological conditions provided by ecosystem plan components are insufficient to sustain viable populations of at-risk species.⁷¹ It is up to the responsible official to determine whether those ecosystem plan components are adequate.⁷² Allowing the responsible official to choose whether and when to include species-specific plan components introduces substantial discretion into the conservation framework. As a result, some responsible officials may attempt to take advantage of this leeway to only apply the fine filter when doing so is convenient. This may leave some populations of at-risk species in need of stronger and more tailored protections. However, the responsible official must document their use of BASI in revising the plan, and, in particular, explain how the plan components meet the biodiversity requirements.⁷³ This provisions provide at least some checks on Agency discretion by requiring the responsible official to articulate a coherent and scientifically

⁶⁵ *Id.* § 219.19

⁶⁶ “People disagree as to what type and intensity of monitoring will provide adequate information to assess whether management actions are affecting the persistence of species within the plan area. . . . Many believe that species population trends must be monitored. Others believe that the rule should not require any species monitoring because it is expensive, does not provide information to inform management actions, and has been the source of ‘legal gridlock’ for the Forest Service. The people who share this opinion often support habitat monitoring in lieu of species monitoring. Some people believe that a combination of habitat and species monitoring should be required and that monitoring of key ecosystem characteristics and selected species to assess the ability of particular ecological conditions to support plant and animal populations would provide the information needed to ensure accountability.” Final PEIS, *supra* note 17, at 14.

⁶⁷ *Id.*

⁶⁸ *Id.* at 124.

⁶⁹ Schultz et al., *supra* note 54, at 2.

⁷⁰ *Id.*

⁷¹ 36 C.F.R. § 219.9(b)(1) (2012).

⁷² *Id.*

⁷³ *Id.* §§ 219.3 (2012), 219.14(a)(2).

justifiable strategy for maintaining and restoring biodiversity in the plan area. The administrative record contains guidance for further interpreting this language and defining the bounds of that discretion. Ultimately, an analysis of the regulatory history of the forest planning biodiversity provisions reveals useful insights for those seeking to strengthen or challenge inadequate ecosystem or species protections.

Now, eight years after the 2012 rule was promulgated, national forests are finally finishing revising their forest plans under the new rule. This development provides the opportunity to assess how national forests are implementing the new biodiversity conservation framework and how responsible officials are exercising their discretion. In order to evaluate whether newly revised forest plans fully comply with the biodiversity regulations, it is important to take a step back and examine how and why USFS changed its approach to implementing the NFMA diversity mandate between the former (1982) and new (2012) version of the rule.

B. Research Overview

1. Research Questions & Audience

Environmental groups are eager to determine whether the newly revised forest plans comply with the 2012 biodiversity regulations. Many conservationists worry that responsible officials are “attempting to minimize conservation obligations” in developing their plan components.⁷⁴ Of particular concern is the perceived failure of some of the revised plans to adequately implement the fine-filter component of the new biodiversity approach to protect imperiled wildlife populations.⁷⁵ The clients of this paper therefore want to know what the new biodiversity provisions entail and how they are different from the provisions in the 1982 rule under which forest plans were previously challenged.

Historically, under the 1982 rule, some courts have granted deference⁷⁶ to USFS regarding appropriate methods for managing and monitoring species viability.⁷⁷ In response to challenges

⁷⁴ Martin Nie et al., *The Forest Service’s 2012 Planning Rule and its Implementation: Federal Advisory Committee Member Perspectives* 33 J. OF FORESTRY 68 (2019).

⁷⁵ While this paper analyzes all of the key biodiversity provisions in the 2012 rule, greater attention is given to the requirements related to at-risk species than the requirements for ecological sustainability, diversity, and integrity. The reason for this focus is that the clients are most concerned with protecting vulnerable wildlife populations on national forests.

⁷⁶ The question of how much deference is due to an agency in interpreting their statutory mandates, and how much discretion responsible officials possess when deciding how to implement regulatory requirements, is the subject of much legal controversy. Exploring that debate is beyond the scope of this paper. For a discussion of how federal land agencies, including USFS, have attempted to insulate planning actions and inactions from judicial review, see Michael Blumm & Sherry Bosse, *Norton v. SUWA and the Unraveling of Federal Public Land Planning*, 18 DUKE ENVTL. L. & POLI’Y F. 105 (2007).

⁷⁷ The Ninth Circuit in particular has repeatedly upheld the validity of the “proxy-on-proxy” approach. See *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d at 761 (9th Cir. 1996) (approving Forest Service’s “habitat as a proxy approach”); see also *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1066 (9th Cir. 2004) (ruling that USFS was not required to actually count

under the 2012 rule, USFS may claim that the Agency should enjoy equal deference. More specifically, the USFS may argue that it should be allowed to continue managing and monitoring habitat conditions—rather than species themselves—as a means of ensuring wildlife diversity and population viability. Similarly, USFS may contend, for as many species as possible, that the ecosystem plan components are sufficient and that species-specific plan components are unnecessary. Understanding the extent to which the new biodiversity requirements compel USFS to more directly address the needs of individual species, particularly at-risk species, will be critical to developing a rebuttal to potential Agency claims that simply managing and monitoring habitat remains a sufficient means of ensuring population viability.

As clients of the University of Montana Bolle Center Policy Research Clinic, the Western Environmental Law Center and Defenders of Wildlife have requested an analysis of the regulatory history of the 2012 rule as it relates to the new biodiversity provisions. They have also requested a case study of the biodiversity plan components in the recently revised Rio Grande National Forest Land Management Plan (RGNF Plan),⁷⁸ which they fear has failed to offer adequate protections for wildlife, particularly species of conservation concern (SCC).⁷⁹ Specifically, the clients have requested a professional paper addressing the following questions:

1. What is USFS’s current approach to implementing the NFMA diversity mandate (under the 2012 rule)?
2. How does this new approach differ from the approach outlined in the 1982 rule?
3. Why did USFS change its approach, according to the administrative record?
4. How has the RGNF Plan implemented the new biodiversity requirements for SCC and do the relevant plan components fully comply with the regulations?

2. Objectives

The aim of this research is to answer in detail the questions enumerated above. Specifically, the objectives are to:

1. Highlight the key changes to USFS’s approach to implementing the NFMA diversity mandate between the 1982 and 2012 version of the planning rule.
2. Summarize the rationale behind the revisions USFS made to the way that forest plans must manage and monitor biodiversity, as outlined in the administrative record.

MIS, so long as habitat proved to be a reasonable indication of population viability); *see also* Native Ecosystems Council v. U.S Forest Serv., 428 F.3d 1233, 1250 (9th Cir. 2005) (ruling that the proxy-on-proxy approach was appropriate, so long as USFS’s methods for measuring habitat were reasonably reliable and accurate); *see also* Lands Council v. McNair, 537 F.3d 981, 996 (9th Cir. 2008) (ruling that it was reasonable to assume that a project would not threaten viable MIS populations if it would not decrease MIS habitat); *see also* Ecology Ctr. v. Castaneda, 562 F.3d 986 (9th Cir. 2009) (ruling that USFS’s “use of the proxy-on-proxy approach was not arbitrary or capricious”).

⁷⁸ U.S. Dep’t of Agric., U.S. Forest Serv., Rio Grande National Forest Land Management Plan, 82-83 (Aug. 2019) [hereinafter RGNF Plan].

⁷⁹ An SCC is defined as “a species, other than federally recognized threatened, endangered, proposed or candidate species, that is known to occur in the plan area and for which the regional forester has determined that BASI indicates substantial concern about the species’ capability to persist over the long term in the plan area.” 36 C.F.R. § 219.9(c) (2012).

3. Assess the extent to which the SCC plan components in the newly revised RGNF Plan comply with the new ecosystem-species conservation approach established in the 2012 planning regulations.

3. *Methods & Products*

1. Conduct a comparative analysis of the 1982 and 2012 biodiversity regulations.
 - a. Create a table comparing the biodiversity provisions in the 1982 versus 2012 regulations (Appendix A).
 - b. Summarize the key changes in narrative form.
2. Analyze the regulatory history that describes the evolution of the biodiversity regulations between the former (1982) and new (2012) version of the rule.
 - a. Review the administrative record, including the 2012 National Forest System Land Management Planning Final Programmatic Environmental Impact Statement,⁸⁰ the 2012 Record of Decision,⁸¹ the 2015 Response to Comments on the Proposed Land Management Planning Directives,⁸² the 1999 Committee of Scientists report,⁸³ and the 2011 Science Review.⁸⁴
 - b. Identify the science USFS relied upon to revise the biodiversity regulations and the desired improvements to the forest planning process.
 - c. Produce a narrative detailing the rationale behind the revisions to USFS's approach to implementing the NFMA diversity mandate.
3. Evaluate the SCC plan components⁸⁵ and monitoring questions in the revised RGNF plan.
 - a. Identify plan components related to SCC (Appendix B).
 - b. Identify monitoring questions and indicators related to SCC (Appendix E).
 - c. Assess the explanation provided by the responsible official regarding how the plan components meet the biodiversity requirements (i.e., provide the ecological conditions necessary to maintain viable populations of SCC in the plan area), as required by 36 C.F.R. § 219.14(a)(2).
 - d. Identify the concerns the clients raised in their objection letter⁸⁶ regarding these SCC plan components and recommendations for improvement (Appendices B-D).

⁸⁰ Final PEIS, *supra* note 17.

⁸¹ National Forest System Land Management Planning, Final Rule and Record of Decision, 77 Fed. Reg. 21,162-21,276 (Apr. 9, 2012) (codified at 36 C.F.R. pt. 219).

⁸² U.S. Dep't of Agric., U.S. Forest Serv., Response to Comments on the Proposed Land Management Planning Directives 13 (Jan. 2015) [hereinafter Response to Comments on the 2015 Directives].

⁸³ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61.

⁸⁴ SCIENCE REVIEW OF THE UNITED STATES FOREST SERVICE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR NATIONAL FOREST SYSTEM LAND MANAGEMENT: SUMMARY REPORT (2011) [hereinafter 2011 SCIENCE REVIEW].

⁸⁵ The reason for focusing on the SCC plan components is that the clients particularly concerned that the protections for that subset of at-risk species in the RGNF Plan are inadequate.

⁸⁶ The 2012 rule outlines a process by which the public may raise objections to a forest plan before the decision to approve it is made final. Previously, this administrative review process took the form of a post-decisional appeal. 77 Fed. Reg. 21,247 (Apr. 9, 2012). Under the 2012 rule, an objection is defined as: "The written document filed with a reviewing officer by an individual or entity seeking pre-decisional

- e. Summarize USFS’s response to these objections.
- f. Evaluate the extent to which the SCC plan components and monitoring indicators comply with the 2012 regulations and guidance in the administrative record regarding the intended implementation of the ecosystem-species conservation approach.

Given the complexity of the 2012 rule, and the vague language used in some of the key biodiversity provisions, there is great need to determine precisely what the new biodiversity requirements entail. Conservation organizations and concerned citizens also want to understand potential avenues for challenging forest plans that provide weak protections for the species and ecosystems within their units. By identifying and evaluating relevant context from the administrative record, this paper provides the clients with an in-depth understanding and nuanced interpretation of the current biodiversity provisions in forest planning regulations. Additionally, the case study provides a model for assessing the compliance of plan components in recently revised forest plans with the new biodiversity requirements.

II. BIODIVERSITY CONSERVATION UNDER THE 1982 RULE: THE SHORTCOMINGS OF THE FORMER APPROACH

A. The Forest Planning Framework

The 1982 rule required that forest plans contain the following key elements: 1) an assessment of the management situation in the plan area; 2) desired future conditions and associated goals, objectives, standards, guidelines, and management prescriptions for selected management indicators; and 3) a monitoring program to determine the effects of management practices on the resources within the plan area.⁸⁷ More specifically, the planning process entailed “the design, formulation, and evaluation of [plan] alternatives” based on a set of planning criteria, including “ecological factors.”⁸⁸ With regards to biodiversity, each alternative was to “establish objectives for the maintenance and improvement of habitat for MIS.”⁸⁹ In addition, the ecological effects of each alternative were to be evaluated based on the estimated impacts on population trends of MIS and the impacts to the amount and quality of their habitat.⁹⁰

B. Maintaining Biodiversity and Viable Populations of Vertebrate Species

administrative review of a plan, plan amendment, or plan revision.” 36 C.F.R. § 219.59 (2012). The objections process “allows interested individuals to voice objections and point out potential errors or violations of law, regulations, or agency policy prior to approval and implementation of a decision.” 77 Fed. Reg. 21,247 (Apr. 9, 2012).

⁸⁷ 36 C.F.R. §§ 219.11-219.12 (1982). The overarching planning framework, along with all of the biodiversity requirements in the 1982 rule, are included in Appendix A.

⁸⁸ *Id.* § 219.12(c).

⁸⁹ *Id.* § 219.19(a). For a discussion of MIS, see *infra* Part II.D.

⁹⁰ *Id.* § 219.19(a)(2).

The diversity requirements in the 1982 rule mandated that management prescriptions “preserve and enhance the diversity of plant and animal communities . . . so that it is at least as great as that which would be expected in a natural forest.”⁹¹ However, “reductions” in that diversity were permitted if “needed to meet overall multiple-use objectives.”⁹² Diversity was defined as “the distribution and abundance of different plant and animal communities and species within the [plan] area.”⁹³ Thus, maintaining diversity consisted of providing habitat to support adequate abundance and distribution of species, their populations, and their individuals. A viable population of a particular species was one with “the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area.”⁹⁴ The main means of ensuring population viability was to provide adequate habitat. The 1982 rule required habitat to “be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.”⁹⁵ The focus on managing habitat, rather than managing species directly is also reflected in the requirements to provide the habitat conditions necessary to maintain the viability of all native and desired non-native vertebrate species⁹⁶ and prevent the destruction or adverse modification of critical habitat for threatened and endangered species.⁹⁷

The conception of viability under the 1982 rule was limiting in a variety of ways. First, the term “well distributed” was never quantified and was therefore interpreted inconsistently.⁹⁸ One sense in which the term was inaccurately interpreted was in a geographical context, rather than biological context.⁹⁹ A geographic interpretation of “distribution” is problematic because the boundaries of national forests are administrative rather than ecological, with species’ ranges often extending beyond the plan area.¹⁰⁰ Second, the emphasis on maintaining the minimum number of individuals necessary for the population to persist is problematic. According to USFS, setting a threshold number of reproductive individuals “provides managers a target that, by definition, rests on the verge of failure (loss of viability or, at the extreme, extinction) – a proposition that motivates substantial expenditure of resources and political controversy.”¹⁰¹

The central viability provision in the 1982 rule is the requirement that “[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.”¹⁰² This includes management prescriptions that “[p]rovide for adequate fish and wildlife habitat to maintain viable populations of existing native vertebrate species . . .”¹⁰³ USFS has identified a number of shortcomings with this requirement.

⁹¹ *Id.* § 219.27(g).

⁹² *Id.*

⁹³ 36 C.F.R. § 219.3 (1982).

⁹⁴ *Id.* § 219.19.

⁹⁵ *Id.*

⁹⁶ *See id.*

⁹⁷ *Id.* § 219.27(a)(8).

⁹⁸ 77 Fed. Reg. 21,217 (Apr. 9, 2012).

⁹⁹ *Id.*

¹⁰⁰ *See id.*

¹⁰¹ HAYWARD ET AL., *supra* note 51, at 7.

¹⁰² 36 C.F.R. § 219.19 (1982).

¹⁰³ *Id.* § 219.27(a).

First, the focus on vertebrates ignored the needs of invertebrates and plants, which are important elements of biodiversity.¹⁰⁴ Second, USFS found it was unrealistic to ensure the viability of all vertebrates, given both the sheer number of them in a given plan area and the paucity of information available regarding the habitat requirements of some species.¹⁰⁵ For instance, “the national forests within the Sierra Nevada ecosystem provide habitat for more than 500 vertebrate species, many with poorly known life histories and distribution patterns.”¹⁰⁶ Third, USFS determined that the requirement was not attainable in some situations due to stressors outside of the Agency’s control, such as degradation of a species’ habitat occurring beyond the boundaries of the NFS.¹⁰⁷ Similarly, limitations on the “inherent capability of the land” at times prevented forest plans from ensuring viable populations of a species.¹⁰⁸ For instance, in some cases, the plan area was too small to provide enough habitat for a wide-ranging species.¹⁰⁹ Given the impracticality of maintaining viable populations of all vertebrate species, many forest plans failed to fully meet the viability requirements under the 1982 rule.¹¹⁰

C. Protecting At-Risk Species

The 1982 rule contained distinct requirements for protecting at-risk species. Specifically, the rule required forest plans to include management prescriptions that would prevent degradation of federally-designated critical habitat for threatened and endangered species.¹¹¹ The regulations also required forest plans to identify objectives and associated “conservation measures” to assist in the recovery of threatened and endangered populations.¹¹²

Additionally, the directives associated with the 1982 rule protected another category of at-risk species that were not federally listed under the ESA: “sensitive species.” The USFS Manual (FSM) directed the regional forester to identify species “for which population viability is a concern, as evidenced by [s]ignificant current or predicted downward trends in population numbers or density . . . or . . . habitat capability that would reduce a species' existing distribution.”¹¹³ The directives then required forest plans to “[d]evelop and implement management objectives for populations and/or habitat of sensitive species.”¹¹⁴ The directives also required plans to include “standards and guidelines that ensure conservation when an activity or project is proposed that would affect the habitat of a sensitive species.”¹¹⁵ Forest plans

¹⁰⁴ See Final PEIS, *supra* note 17, at 141.

¹⁰⁵ See 77 Fed. Reg. 21,216 (Apr. 9, 2012).

¹⁰⁶ Dr. Barry R. Noon, *USFS Draft Programmatic EIS for National Forest Land Management Planning Science Review*, in SCIENCE REVIEW OF THE UNITED STATES FOREST SERVICE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR NATIONAL FOREST SYSTEM LAND MANAGEMENT: SUMMARY REPORT 60, 63 (2011).

¹⁰⁷ See 77 Fed. Reg. 21,216 (Apr. 9, 2012).

¹⁰⁸ *Id.* at 21,218.

¹⁰⁹ *Id.*

¹¹⁰ See Final PEIS, *supra* note 17, at 141.

¹¹¹ 36 C.F.R. § 219.19(a)(7) (1982).

¹¹² *Id.* § 219.27(a)(8).

¹¹³ FS Directive FSM 2670.5, Wildlife, Fish, and Sensitive Habitat Management (U.S.D.A. 2005).

¹¹⁴ *Id.* FSM 2670.22.

¹¹⁵ *Id.* FSM 2622.01.

were also supposed to establish a monitoring program to ensure that protections for at-risk species were effective. Specifically, the directives required forest plans to include management indicators that “best represent the issues, concerns, and opportunities to support recovery of Federally-listed species [and] provide continued viability of sensitive species.”¹¹⁶

D. Management Indicator Species

The monitoring program under the 1982 rule was designed to assess the efficacy of forest plan standards, guidelines, and management prescriptions.¹¹⁷ The primary means of assessing a plan’s progress towards meeting its biodiversity objectives was to monitor “management indicator species” (MIS), species that were “selected because their population changes [were] believed to indicate the effects of management activities.”¹¹⁸ MIS could be 1) state or federally endangered or threatened species; 2) species with particular habitat needs likely to be affected by management activities in the plan area; 3) commonly hunted, fished, or trapped species; 4) “non-game species of special interest”; or 5) species whose population changes could provide relevant information on the effects of management activities on other species.¹¹⁹ The directives further defined MIS as “any species, group of species, or species habitat element selected to focus management attention for the purpose of resource production, population recovery, maintenance of population viability, or ecosystem diversity.”¹²⁰ The 1982 rule required that “population trends of the management indicator species . . . be monitored and relationships to habitat changes determined.”¹²¹

Implementation of the MIS requirement was legally and scientifically fraught. Given the complexity and cost of monitoring wildlife populations, USFS staff were often unable to adequately establish population trends for MIS within the lifespan of a forest plan.¹²² Many national forests therefore “interpreted the regulations as providing the option to monitor habitat relationships in lieu of direct population trends.”¹²³ USFS concedes that in several of these cases, the courts have “highlighted the importance of monitoring population trends of MIS in land management plan implementation,”¹²⁴ rather than just monitoring habitat.¹²⁵

¹¹⁶ *Id.* FSM 2621.1.

¹¹⁷ *See* 36 C.F.R. § 219.9(a)(6) (1982); *see also id.* § 219.11(d); *see also id.* § 219.12(k); *see also* FS Directive FSM 2621.5, Wildlife, Fish, and Sensitive Habitat Management (U.S.D.A. 2005).

¹¹⁸ 36 C.F.R. § 219.19(a)(1) (1982).

¹¹⁹ *Id.* § 219.19(a)(1).

¹²⁰ FS Directive FSM 2605, Wildlife, Fish, and Sensitive Habitat Management (U.S.D.A. 2005).

¹²¹ 36 C.F.R. § 219.19 (a)(1) (1982).

¹²² *See* Final PEIS, *supra* note 17, at 143.

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ *See* *Sierra Club v. Martin*, 168 F.3d 1 (11th Cir. 1999) (ruling that MIS must be monitored to determine the effects of projects such as timber sales on their habitat); *see also* *Utah Env'tl. Cong. v. Bosworth*, 372 F.3d 1219, 1230 (10th Cir. 2004) (ruling that USFS must make "good faith efforts to confirm" the presence or absence of a species in order to adequately fulfil its MIS monitoring obligations). In some cases, the Ninth Circuit has also invalidated USFS’s application of the proxy-on-proxy approach due to a failure to accurately identify and assess relevant habitat. *See* *Idaho Sporting Cong. v. Rittenhouse*, 305 F.3d 957, 970 (9th Cir. 2002); *see also* *Lands Council v. Forester of Region One of the U.S. Forest Serv.*,

Even if USFS were to monitor MIS populations directly, rather than simply their habitat conditions, the approach would not escape scrutiny. USFS has finally reached the conclusion that the notion that MIS “adequately represent all associated species that rely on similar habitat conditions is now largely unsupported in the scientific literature.”¹²⁶ Given that the use of MIS as a surrogate is flawed,¹²⁷ so too is the practice of monitoring MIS to assess the viability of other species in the plan area.¹²⁸ Because “monitoring the population trend of one species should not be extrapolated to form conclusions regarding the status and trends of other species,” no credible inferences can be drawn from MIS data.¹²⁹ The concept was even more problematic in action because responsible officials were given wide latitude in identifying MIS. As law professor Oliver Houck describes, “The diversity regulations fail when they allow the selection of common species or species of convenience, obviously selected to continue a high level of locally popular ‘outputs,’” to serve as MIS.¹³⁰ Therefore, USFS now recognizes the use of MIS population trends—to the extent that they were ever even established—“as a signal for amending or revising plan components is impractical, and often scientifically unjustified.”¹³¹ Indeed, the final programmatic environmental impact statement (PEIS) for the 2012 rule cited 11 studies dating back to 1983 that discredit the MIS concept and its application in managing biodiversity.¹³² The scientific consensus is that notion of MIS being capable of “reflect[ing] the status and trends of a large number of unmeasured species” is “untenable.”¹³³

Overall, USFS found that its former approach to implementing the NFMA diversity mandate was ineffective and outdated. The Agency therefore adopted a new framework consisting of assessing ecological integrity and the status of at-risk species, developing plan components to maintain ecosystem and species diversity, and monitoring the impacts on ecological conditions and species.

III. BIODIVERSITY CONSERVATION UNDER THE 2012 RULE: THE RATIONALE OF THE NEW APPROACH

A. *The Overall Purpose of Revising the 1982 Rule*

The planning approach under the 1982 rule focused largely on “producing outputs (for example, board feet of timber, recreation visitor days, and animal months of grazing) and mitigating the

395 F.3d 1019, 1036 (9th Cir. 2004); *see also* Earth Island Inst. v. U.S. Forest Serv., 442 F.3d 1147 (9th Cir. 2006), cert. denied, 549 U.S. 1278, 127 S. Ct. 1829, 167 L. Ed. 2d 318 (2007).

¹²⁶ 77 Fed. Reg. 21,169 (Apr. 9, 2012).

¹²⁷ Noon, *supra* note 106, at 63.

¹²⁸ 77 Fed. Reg. 21,169 (Apr. 9, 2012).

¹²⁹ *Id.* at 21,233; *see also* Final PEIS, *supra* note 17, at 143.

¹³⁰ Oliver A. Houck, *On the Law of Biodiversity and Ecosystem Management*, 81 MINN. L. REV. 923, (1997).

¹³¹ Final PEIS, *supra* note 17, at 144.

¹³² *Id.* at 128-129.

¹³³ Noon, *supra* note 106, at 63.

effects of management activities on other resources.”¹³⁴ However, USFS has since acknowledged that the 21st century ushered in a “vastly different context for management and improved understanding of science and sustainability.”¹³⁵ These shifts “created a need for an updated planning rule that [would] help the Agency respond to new challenges in meeting management objectives.”¹³⁶

A primary impetus of revising the forest planning regulations was the recognition that USFS “needs plans that do more than mitigate harm.”¹³⁷ The Agency therefore sought to establish a set of guidelines that would lead to plans that “contribute to ecological, social, and economic sustainability to protect resources on the unit.”¹³⁸ By incorporating key tenants of current conservation biology and environmentally responsible land use planning,¹³⁹ the 2012 rule “is designed to ensure that plans provide for the sustainability of ecosystems and resources” and, in particular, “meet the need for wildlife conservation” and “species diversity and conservation.”¹⁴⁰ These statements expand the interpretation of USFS’s environmental obligations from its previously narrow focus on simply *mitigating* the adverse impacts of resource production on national forests. Thus, the 2012 rule embraces a more “*proactive* approach for maintaining or restoring terrestrial and aquatic ecosystems and watersheds,” according to USFS.¹⁴¹

Another reason USFS revised the forest planning regulations was to create a planning process that “reflect[s] current science.”¹⁴² This is perhaps most apparent in the section of the 2012 rule entitled “Role of science in planning,” which requires the responsible official to “use the best available scientific information to inform the planning process.”¹⁴³ The commitment to a science-based approach was also evidenced by the decision to solicit feedback on the development of new forest planning regulations from panels of independent scientists. First, in 1997, the Secretary of Agriculture convened a “Committee of Scientists” (or “Committee”) to review the forest planning process and provide recommendations for improvement.¹⁴⁴ A key recommendation from the Committee that is reflected in the 2012 rule is the emphasis on ecological sustainability. The Committee had called for making the effort to sustain healthy ecological processes and conditions, such as biodiversity, “the overarching objective of national forest stewardship.”¹⁴⁵ Additionally, in 2011, USFS commissioned an external review of the draft PEIS for the 2012 rule.¹⁴⁶ The purpose of the review was to “ensure that the science behind the proposed rule and environmental analysis [was] current, relevant, accurate, and appropriately

¹³⁴ 77 Fed. Reg. 21,168 (Apr. 9, 2012).

¹³⁵ *Id.* at 21,163.

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.* at 21,163.

¹⁴⁰ 77 Fed. Reg. 21,173 (Apr. 9, 2012).

¹⁴¹ *Id.* at 21,174 (emphasis added).

¹⁴² *Id.* at 21,168, 21,169, 21,175.

¹⁴³ 36 C.F.R. § 219.3 (2012).

¹⁴⁴ 1999 COMMITTEE OF SCIENTISTS REPORT *supra* note 61, at xiii.

¹⁴⁵ *Id.* at xiv.

¹⁴⁶ 2011 SCIENCE REVIEW, *supra* note 84, at i.

applied.”¹⁴⁷ One of the key findings to emerge from this “2011 Science Review” was the need to better incorporate best practices for conserving biodiversity on federal lands.¹⁴⁸ The final version of the 2012 adopts these best practices through explicitly implementing the coarse-filter/fine-filter or “ecosystem-species” biodiversity conservation approach.¹⁴⁹ As a result, according to USFS, the biodiversity conservation framework codified in the final 2012 rule constitutes a strategic, “strong, [and] implementable approach to providing for the diversity of plant and animal communities and the persistence of native species in the plan area, and is supported by the scientific literature and community.”¹⁵⁰ Sections B-F of Part III discuss in greater detail how USFS incorporated the scientific recommendations of both the 1999 Committee of Scientists report and the 2011 Science Review.

A related rationale for revising the forest planning regulations was to “increas[e] the transparency of decision-making.”¹⁵¹ The Agency attempted to accomplish this by including provisions requiring the responsible official to justify the rationale behind their decisions in publicly available documents.¹⁵² For instance, the 2012 rule requires the responsible official to document how the BASI was used to inform the initial assessment, subsequent plan decision, and the ensuing monitoring program.¹⁵³ According to the Agency, “the intent of this requirement is to ensure that the responsible official uses BASI to inform planning, plan components, and other plan content, that decisions are based on an understanding of the BASI and that the rationale for decisions is transparent to the public.”¹⁵⁴

Finally, practical considerations were another driver for revising the forest planning regulations. Many argued that the planning procedures under the 1982 rule were “too complex, costly, lengthy, and cumbersome.”¹⁵⁵ In selecting between the alternative planning rules proposed in the final PEIS, USFS chose the alternative that was relatively less expensive, “more effective, efficient, and implementable.”¹⁵⁶ Additionally, the revised planning framework was “intended to provide the *flexibility* to respond to the various social, economic, and ecologic needs across a very diverse system, while including a *consistent* set of process and content requirements for NFS land management plans.”¹⁵⁷

¹⁴⁷ 77 Fed. Reg. 21,181 (Apr. 9, 2012).

¹⁴⁸ See generally 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61.

¹⁴⁹ 36 C.F.R. § 219.9 “adopts a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area.” For further discussion, see Part I, Section A, Sub-section 3 and Part III, Section E, Sub-section 2.

¹⁵⁰ 77 Fed. Reg. 21,176 (Apr. 9, 2012).

¹⁵¹ *Id.* at 21,162.

¹⁵² This is perhaps most evident in 36 C.F.R. § 219.3, which requires that documentation “[i]dentify what information was determined to be the best available scientific information, *explain the basis for that determination*, and explain how the information was applied to the issues considered” (emphasis added).

¹⁵³ See 36 C.F.R. § 219.3 (2012); see also 77 Fed. Reg. 21,162, 21,166 (Apr. 9, 2012).

¹⁵⁴ 77 Fed. Reg. 21,192 (Apr. 9, 2012).

¹⁵⁵ *Id.* at 21,164.

¹⁵⁶ *Id.* at 21,217.

¹⁵⁷ *Id.* at 21,166 (emphasis added).

Overall, the revisions made to the biodiversity assessment, planning, and monitoring requirements reflect an attempt by USFS to create a forest planning process that is scientifically credible yet feasible. Additionally, the framework attempts to ensure consistent implementation of the planning requirements across the NFS, while retaining the flexibility for responsible officials to cater the management approach to the unique needs of their unit. Finally, in certain circumstances, the 2012 rule requires that responsible officials document the basis for their determinations to the public in order to increase the transparency of decision making.¹⁵⁸ However, the priorities of efficacy, efficiency, feasibility, consistency, flexibility, scientific rigor, and transparency are often in competition with one another. This results in regulatory language that is, at times, vague and even contradictory. An examination of the administrative record of the 2012 rule uncovers USFS's explanations of each provision, thereby providing a more nuanced and in-depth understanding of the most complex and confusing aspects of the biodiversity requirements.

B. The New Overarching Viability Provisions

1. The Revised Definition of Viability and its Relationship with Diversity

The 2012 rule takes an updated approach to managing the three central components of population viability: persistence, distribution, and abundance. The 2012 rule defines a viable population as one “that continues to *persist* over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments.”¹⁵⁹ This definition marks a departure from the 1982 rule's definition of viability in terms of the minimum numbers of individuals (i.e., the lowest tolerable *abundance*), an approach that USFS has recognized as limiting.¹⁶⁰ As previously mentioned, the stated intent of the 2012 rule was to take a proactive approach to conservation goes beyond merely averting extinction.¹⁶¹ The concept of persistence in the new definition “motivates analyses that compare alternatives” regarding the probability of survival “to determine if there is reason for conservation concern.”¹⁶² However, USFS stopped short of requiring forest plans to ensure that there would be a high likelihood of persistence over a defined time period. Given the uncertainties inherent in estimating such probabilities, particularly within the context of potential future stressors such as climate change, USFS opted to adopt less prescriptive regulations.¹⁶³ Finally, under the new definition of viability, a population's *distribution* is adequate if the population is able survive through a disturbance. This revised definition reflects contemporary scientific understandings of climate change as an

¹⁵⁸ The 2012 rule requires that, “[i]f the responsible official determines that it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions necessary to maintain a viable population of species of conservation concern in the plan area, then, the responsible official shall . . . [d]ocument the basis for that determination (§ 219.4(a)).” 36 C.F.R. § 219.9(2) (2012).

¹⁵⁹ *Id.* § 219.19 (emphasis added).

¹⁶⁰ See HAYWARD ET AL., *supra* note 51, at 7. For further discussion, see Part II, Section B.

¹⁶¹ See 77 Fed. Reg. 21,163, 21,174 (Apr. 9, 2012). For further discussion, see Part II, Section A.

¹⁶² HAYWARD ET AL., *supra* note 51, at 7.

¹⁶³ See 77 Fed. Reg. 21,247 (Apr. 9, 2012). For further discussion, see Part II, Section B.

ecological stressor and the importance of ecological characteristics such as resilience.¹⁶⁴ USFS explains that the new “definition is intended to focus the development of plan components on providing ecological conditions where they will be most useful and important to the species, which may or may not lead to habitat that is evenly or ‘well’ distributed across the plan area for every species.”¹⁶⁵ In practice, this could take the form of creating wildlife corridors to reconnect fragmented habitat or proactively restoring habitat where a species range is expected to shift as conditions change.¹⁶⁶ In concert, these revisions to the definition of viability under the 2012 rule reflect a desire by USFS to incorporate an enhanced understanding of the “dynamic nature of ecosystems” and to provide more regulatory clarity.¹⁶⁷

Like the 1982 rule, the 2012 rule focuses on maintaining ecosystem diversity as the primary means of achieving population viability, rather than pursuing direct species conservation as a first resort. The 2012 rule defines ecosystem diversity as the “variety and relative extent of ecosystems.”¹⁶⁸ The final PEIS for the 2012 rule contends that “providing the diversity of habitat conditions throughout the plan area [will] allow for a distribution of individuals or local populations to occupy suitable habitat conditions across the plan area and minimize the possibility for a single local population decline to cause an extirpation from the plan area.”¹⁶⁹ In other words, providing a variety of habitat types across the forest (i.e., providing for ecosystem diversity) should allow populations to distribute more widely, thereby increasing the probability of persistence (i.e., population viability), which in turn maintains species diversity.

While ecosystem diversity is necessary to sustain species viability, it may not be sufficient. As will be discussed in Section E of Part III, USFS intentionally chose to include species-specific conservation requirements in the 2012 rule as a necessary complement to the coarse-filter requirements to maintain ecosystem diversity and integrity. The explicit inclusion of the fine filter in the 2012 planning framework therefore creates an obligation to undertake species-specific management under certain circumstances.

2. *New Exceptions to the Viability Requirement*

As previously mentioned, USFS found that it was unrealistic to comply with the viability requirement as written in the 1982 rule.¹⁷⁰ The 2012 rule therefore contains the caveat that plans must provide for biodiversity only to the extent that doing so is “within Forest Service authority and consistent with the inherent capability of the plan area.”¹⁷¹ The 2012 rule defines “inherent capability of the plan area” as the “ecological capacity or ecological potential of an area characterized by the interrelationship of its physical elements, its climatic regime, and natural

¹⁶⁴ *See id.* at 21,217.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ Final PEIS, *supra* note 17, at 84-90.

¹⁶⁸ 36 C.F.R. § 219.19 (2012).

¹⁶⁹ Final PEIS, *supra* note 17, at 139.

¹⁷⁰ 77 Fed. Reg. 21,216-21,218 (Apr. 9, 2012). For further discussion, see Part II, Section B.

¹⁷¹ “The plan must provide for the diversity of plant and animal communities, within Forest Service authority and consistent with the inherent capability of the plan area. . .” 36 C.F.R. § 219.9 (2012).

disturbances.”¹⁷² The ROD for the 2012 rule suggests that limitations on the inherent capability of the land could include circumstances such as insufficient area to provide the amount of habitat necessary to maintain a viable population of a particular species.¹⁷³ With regards to “Forest Service authority,” the ROD clarifies that biodiversity stressors beyond the Agency’s control consist mainly of habitat degradation that occurs beyond the boundaries of the national forest.¹⁷⁴

Additionally, if “the responsible determines that it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population” of SCC, forest plan is permitted to merely include plan components that will “to *contribute* to maintaining a viable population of the species within its range.”¹⁷⁵ In its response to comments on the 2015 directives, USFS declined a request to define “contribute to” and the term therefore remains vague.¹⁷⁶ The Agency contended that “setting forth a national standard would remove flexibility for plans to reflect the different unique circumstances across the” NFS.¹⁷⁷ Given that USFS has stated that “the Agency needs plans that do more than mitigate harm,”¹⁷⁸ contributing to maintaining a viable population of SCC presumably entails proactive conservation measures, rather than simply mitigating adverse impacts to habitat. The vague language in the provision highlights the tension between the Agency’s stated intent to ensure that all forest plans take proactive conservation measures that will reliably maintain viable populations, and their desire to allow responsible officials to enjoy considerable flexibility and discretion.

¹⁷² *Id.* § 219.19.

¹⁷³ 77 Fed. Reg. 21,169 (Apr. 9, 2012). The FSH provides the following examples of “circumstances that are not within the inherent capability of the plan area to provide the ecological conditions needed to maintain or restore a viable population of a species within the plan area”: a “species that is inherently rare because its individuals naturally occur at low numbers and are wide-ranging”; a “plan area that lacks sufficient ecological capacity to produce the habitat or ecological conditions necessary to maintain a viable population”; “[c]urrent or projected changes in climate that may affect a National Forest or grassland’s ability to maintain or even contribute to the ecological conditions necessary to maintain viable populations of some species”; and “[w]here water quality conditions in Appalachian Mountain streams that provide habitat for eastern brook trout have been altered through acid deposition.” FS Directive FSH 1909.12.23.13c(4), Land Management Planning Handbook (U.S.D.A. 2015).

¹⁷⁴ *See* 77 Fed. Reg. 21,169 (Apr. 9, 2012). The FSH provides the following examples of “circumstances when ecological conditions necessary for the long-term persistence of a species are outside the National Forest System lands and, therefore, outside Forest Service control for providing ecological conditions to maintain viable populations of species of conservation concern within a plan area”: “[f]orest clearing in South America”; “[h]ydropower and flood control facilities in the Pacific Northwest and recreational and commercial fish harvest practices”; “[l]and use patterns on private lands intermixed with or adjacent to National Forest System lands”; and “[d]omestic sheep grazing on private lands intermixed with or adjacent to National Forest System lands in the west.” FS Directive FSH 1909.12.23.13c(3), Land Management Planning Handbook (U.S.D.A. 2015).

¹⁷⁵ 36 C.F.R. § 219.9(b)(2)(ii) (2012) (emphasis added). The responsible official does, however, have to a “document the basis for that determination.” *Id.* § 219.9(b)(2)(i).

¹⁷⁶ Response to Comments on the 2015 Directives, *supra* note 82, at 40.

¹⁷⁷ *Id.*

¹⁷⁸ 77 Fed. Reg. 21,163 (Apr. 9, 2012). For further discussion, see Part III, Section A.

The constraints on the Agency’s ability to fully restore and maintain biodiversity were originally recognized in the 1999 Committee of Scientists report. Given the reality that “other landowners and agencies often control key elements of the habitats and ecological systems,” the Committee acknowledged that contributing to ecological sustainability—rather than ensuring it—may be a more realistic objective.¹⁷⁹ Additionally, the Committee advised broadening habitat conservation efforts to encompass all native species (rather than just vertebrates), while recognizing that *ensuring* the viability of each of those species within their respective habitats would be impossible.¹⁸⁰

These caveats were criticized in public comments as allowing the Agency to shirk its responsibility to fully implement the NFMA diversity mandate under an excessively wide variety of circumstances.¹⁸¹ In response, the Agency contended that it was merely acknowledging real-world limitations.¹⁸² Explicitly recognizing these realities was intended to increase transparency while “allowing responsible officials to adjust, adapt, and work more collaboratively with other land managers to protect species in the context of the broader landscape.”¹⁸³ USFS could also likely argue that the exceptions are scientifically defensible, given the assertions by the Committee of Scientists (discussed in the paragraph immediately above) regarding the inherent limitations on the Agency’s ability to ensure viability.

C. *The Adaptive Management Planning Framework*

Before diving into how USFS manages and monitors diversity and viability as defined above, it is important to describe the broader regulatory context in which the biodiversity requirements are embedded.¹⁸⁴ The 2012 rule establishes a planning framework that is designed to promote adaptive management and science-based decision-making. The framework consists of a three-step learning cycle: a) the assessment phase, during which conditions in the planning area are evaluated to determine management needs and necessary changes; b) the plan development, revision, or amendment phase, in which various plan alternatives and their effects are assessed; and c) the monitoring phase, during which feedback is gathered on progress towards achieving the management objectives.¹⁸⁵ This framework was recommended by the Committee of Scientists, who asserted that that “[b]y approaching planning not as a ‘cookbook’ for making decisions, but as an opportunity to learn, to test new ideas, and to continuously evolve based on new understandings, USFS will meet the expectations for ‘conservation leadership’ set forth in”

¹⁷⁹ According to the Committee,

In some situations, national forests and grasslands by themselves are unable to conserve native species and ecological productivity. . . [O]ther landowners and agencies often control key elements of the habitats and ecological systems. Thus, in some cases, the national forests and grasslands can contribute to, but not ensure, the achievement of ecological sustainability.

1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at xix.

¹⁸⁰ *Id.*

¹⁸¹ See 77 Fed. Reg. 21,218 (Apr. 9, 2012).

¹⁸² See *id.*

¹⁸³ *Id.*

¹⁸⁴ All of the relevant requirements of the 1982 rule and its directives, as well as the proposed and final 2012 rule and its directives, are compiled in Appendix A.

¹⁸⁵ See 77 Fed. Reg. 21,166 (Apr. 9, 2012); see also 36 C.F.R. § 219.5 (2012).

NFMA.¹⁸⁶ This management philosophy is reflected in the framework of the 2012 rule, which is intended to “provid[e] a process for planning that is adaptive and science based.”¹⁸⁷

According to the 2015 directives, the “assessment phase identifies and evaluates information,” including “conditions and trends” that are “relevant to the issues that will be considered later in the development of plan components.”¹⁸⁸ The monitoring program is then used to test assumptions and evaluate the effectiveness of the plan components in achieving the desired conditions. Monitoring also provides an “understanding of changing conditions, key uncertainties, and risks,” information which enables adaptive management.¹⁸⁹

D. The Assessment Phase: Evaluating the Status of Ecological Integrity and At-Risk Species

In order to begin developing a new or revised plan, the responsible official must use BASI to conduct an assessment of existing conditions in the plan area.¹⁹⁰ This includes evaluating information regarding 1) at-risk species; 2) ecological integrity and resilience; and 3) “system drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change.”¹⁹¹

At the ecosystem level, the USFS Handbook (FSH) requires the interdisciplinary team¹⁹² to “determine the extent to which terrestrial and aquatic ecosystems relevant to the plan area have integrity.”¹⁹³ This includes not only ecosystems within the plan area, but the integrity of the “broader” ecosystems as well.¹⁹⁴ Assessing ecological integrity involves the following steps: identifying the ecosystems to be analyzed, selecting the “key ecosystem characteristics that can be used to predict whether future conditions will have ecological integrity,” identifying “possible system drivers and stressors,” and describing the natural range of variation “for selected key ecosystem characteristics . . . to establish a context for whether ecosystems are functioning properly.”¹⁹⁵

At the species level, the FSH also requires the interdisciplinary team to “evaluate the status” of at-risk species and “understand the ecological conditions necessary to sustain them and identify potential risks both inside and outside the plan areas to those species and ecological conditions.”¹⁹⁶ In particular, the responsible official is required to “compare the current ecological conditions to those that supported the historical persistence of the species within the

¹⁸⁶ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at xlii.

¹⁸⁷ 77 Fed. Reg. 21,173 (Apr. 9, 2012).

¹⁸⁸ FS Directive FSH 1909.12.42.11, Land Management Planning Handbook (U.S.D.A. 2015).

¹⁸⁹ *Id.*

¹⁹⁰ 36 C.F.R. § 219.6 (2012).

¹⁹¹ *Id.* § 219.6(b).

¹⁹² The interdisciplinary team is the set of Forest Service staff established by the responsible official to “prepare assessments; new plans, plan amendments, and plan revisions; and plan monitoring programs.” *Id.* § 219.5(b).

¹⁹³ FS Directive FSH 1909.12.1, Land Management Planning Handbook (U.S.D.A. 2015).

¹⁹⁴ *Id.*

¹⁹⁵ *Id.*

¹⁹⁶ *Id.* FSH 1909.12.53; *see also id.* FSH 1909.12.55.

plan area.”¹⁹⁷ The responsible official is also required to consider potential future conditions, in light of climate change.¹⁹⁸

These provisions reflect several key scientific concepts explained in the 1999 Committee of Scientists report. Most importantly, the requirements embody the finding that assessing ecological integrity is the first step in providing for diversity under NFMA.¹⁹⁹ The Committee of Scientists defined ecological integrity as the “completeness of the composition, structure, and processes that are characteristic of the native states of that system.”²⁰⁰ The 2012 rule similarly recognizes that ecosystem composition, structure, and function are the building blocks of ecological integrity, but adds that ecological resilience and connectivity are also key components.²⁰¹

The Committee recommended conducting a “scientific assessment of the characteristic composition, structure, and processes of the ecosystems” within a given plan area to understand the current baseline of ecological integrity.²⁰² The Committee highlighted that a key element of ecological *composition* is diversity at the genetic, species, and landscape scales.²⁰³ Related important elements of ecological *structure* include land cover at the regional scale, habitat distribution at the watershed scale, and other physical or biological attributes at the scale of the project site (e.g., snags and woody debris).²⁰⁴ Ecological *processes* include disturbances, nutrient cycling, and habitat connectivity, among others, all of which also occur at a variety of scales.²⁰⁵

¹⁹⁷ *Id.* FSH 1909.12.55; *see also id.* FSH 1090.12.23.11.

¹⁹⁸ *Id.*

¹⁹⁹ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 150.

²⁰⁰ *Id.*

²⁰¹ The 2012 rule defines ecological integrity as the “quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.” 36 C.F.R. § 219.19. The 2012 rule defines connectivity as the “[e]cological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movement of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change. *Id.* The 2012 rule does not explicitly define resilience. However, the 2015 directives define it as “[t]he ability of an ecosystem and its component parts to absorb, or recover from the effects of disturbances through preservation, restoration, or improvement of its essential structures and functions and redundancy of ecological patterns across the landscape.” FS Directive FSH 1909.12.05, Land Management Planning Handbook (U.S.D.A. 2015).

²⁰² 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at xviii.

²⁰³ The 1999 Committee of Scientists report provides the following definitions,

Genetic diversity is the variation in inheritable characteristics within and among individual organisms and populations. *Species diversity* is the number of different kinds of species present in a given area. *Landscape diversity* is the variety of plant communities (including their identity, distribution, juxtaposition, and seral stage) and habitats evaluated at the landscape scale.

Id. at 19 (original emphasis).

²⁰⁴ *Id.* at 28, Table 3.2.

²⁰⁵ *Id.*

Therefore, ecological assessments require analyzing data from “a set of indicators measured at different spatial, temporal, and hierarchical levels of ecological systems.”²⁰⁶

Ecological integrity is important not only for the health of the ecosystem, but for the health of species populations as well. According to the Committee, providing the “variety of components, structures, and processes” within and among ecosystems, provides the “essential elements for sustaining individual species.”²⁰⁷ In other words, maintaining ecological integrity and diversity is critical to maintaining species viability. Conversely, ecological integrity and diversity are “sustained only when individual species persist.”²⁰⁸ If the first step of maintaining biodiversity is maintaining ecological integrity and diversity, the second step, according to the Committee, is to assess the “the ecological conditions needed to protect and, as necessary, restore the viability of” at-risk species.²⁰⁹ Overall, the 2012 rule reflects the recommendations in the 1999 Committee of Scientists report that the forest planning begin by assessing the status of ecological integrity and identifying the ecological conditions necessary to support at-risk species.

E. The Planning Phase: The Ecosystem-Species Conservation Approach

In developing forest plans under the 1982 rule, responsible officials were not required to apply conservation biology principles. In *Sierra Club v. Marita*, the court found that USFS should be afforded discretion in determining the most appropriate method of maintaining species diversity, agreeing with the Agency that the responsible official need not necessarily apply best practices in conservation biology.²¹⁰ In contrast, in developing the 2012 rule, USFS relied heavily on conservation biology in developing regulations meant to support “the abundance, distribution, and long-term persistence of native species.”²¹¹ After surveying the literature, USFS determined that the most scientifically credible method of ensuring biodiversity and the persistence of native species would be a combined “coarse-filter/fine-filter” approach. This conservation practice has emerged as the prevailing biodiversity conservation strategy.²¹²

1. Theoretical Basis for a Combined Coarse-Filter/Fine-Filter Conservation Framework

A purely coarse-filter conservation strategy is “based on providing a mix of ecological communities across a planning landscape rather than focusing on the needs of specific individual species, with the goal of providing for ecological integrity or biological diversity at an appropriate landscape scale.”²¹³ The underlying assumption is that providing a range of habitat conditions similar to those that supported species in the past offers the best means of protecting

²⁰⁶ *Id.* at 35.

²⁰⁷ *Id.* at 150.

²⁰⁸ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 130.

²⁰⁹ *Id.* at 150.

²¹⁰ 46 F.3d 606 (7th Cir. 1995).

²¹¹ 77 Fed. Reg 21,212 (Apr. 9, 2012).

²¹² See Final PEIS, *supra* note 17, at 122.

²¹³ *Id.* at 123.

biodiversity.²¹⁴ One advantage of this “broader ecological approach” is that is more cost effective and practical than a “species-by-species” approach to conservation.²¹⁵

However, relying on the coarse-filter approach alone has several pitfalls in practice. The final PEIS for the 2012 rule recognizes that, “if coarse-filter conditions are defined only as characteristics of vegetative patches in terms of their dominant vegetation (cover-type) and successional stages, their ability to provide for native species will be limited and insufficient for many species.”²¹⁶ Indeed, scientists suggest that using vegetation as a “surrogate for a species’ habitat (i.e., the coarse filter)” is problematic because “a conservation strategy focused exclusively on maintaining the attributes of the coarse filter is unlikely to provide habitat for all species of management responsibility.”²¹⁷ Thus, certain species will likely fall through the cracks of the broad-scale coarse-filter approach. For this reason, USFS acknowledges that “some amount of direct species measurement may be needed to assess the effectiveness of the ecological conditions provided under the coarse-filter approach in achieving the goal of conserving the biological diversity of the area.”²¹⁸

Fine-filter approaches, on the other hand, seek to provide the specific “habitat elements” needed by individual species or group of species.²¹⁹ The underlying assumption is that biodiversity is best achieved by directly meeting the needs of individual species or groups of species, given that the coarse-filter does not always provide the ecological conditions necessary for every species.²²⁰ However, it can be very difficult to determine the full habitat requirements of every species in a given area.²²¹ Another limitation of the fine-filter approach is that it is not designed to incorporate information regarding ecosystem function and disturbance regimes, both of which can have a significant impact on biodiversity.²²²

The scientific consensus is therefore that comprehensive multi-species conservation planning efforts, particularly on federal lands, require a combination of the coarse- and fine-filter approaches.²²³ In fact, the Committee of Scientists championed this combined approach back in 1999.²²⁴ Their report recommends that “the initial goal of a sustainability policy should be the retention of those ecological structures and processes that support and retain ecological diversity and integrity at a landscape scale.”²²⁵ According to the Committee, “the closer the management

²¹⁴ *See id.* at 124-125.

²¹⁵ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 19.

²¹⁶ Final PEIS, *supra* note 17, at 124 (citation omitted).

²¹⁷ Noon, *supra* note 106, at 61.

²¹⁸ Final PEIS, *supra* note 17, at 124.

²¹⁹ *Id.*

²²⁰ *See id.*

²²¹ *Id.* at 125.

²²² *See id.*

²²³ *See id.* at 123.

²²⁴ In particular, the Committee’s report highlighted a case study of “Coarse- and Fine-Filter Approaches to Habitat Assessment in the Southern Region” used to successfully “address issues of biological diversity and species viability.” 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 149, Sidebar 6-2.

²²⁵ *Id.* at 20.

scenario comes to maintaining ecosystem conditions within the historic range of variability, the more likely it is that the ‘coarse filter’ will achieve the objectives for ecological sustainability and the less likely that ‘fine-filter’ strategies will be needed for individual species.”²²⁶ Thus, “the first step in providing for ecological sustainability is to sustain the variety and functions of ecosystems across multiple spatial scales.”²²⁷ The second step is to provide the “ecological conditions needed to protect and, as necessary, restore the viability of focal species and of threatened, endangered, and sensitive species.”²²⁸ As will be discussed in Section E of Part III, the central aim of the coarse-filter/fine-filter framework in the 2012 rule is to “provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of native species,” including at-risk species.²²⁹

The combined “coarse-filter/fine-filter” approach was also recommended in the 2011 Science Review (“Review”). Some scientists contributing to the Review criticized the 2005 version of the Forest Planning Rule for employing only the coarse-filter approach, highlighting the relatively high error rates of coarse-filter models used to infer species’ occurrence, distributions, and status.²³⁰ One scientist concluded that “the coarse-filter approach is a necessary component of the assessment of biological diversity but it is not sufficient on its own—it needs to be accompanied by some degree of direct species assessment.”²³¹ An integrated approach allows federal agencies to manage for a desired set of ecological conditions on a broad scale and “the more costly and information-intensive fine-filter strategies can be focused on the few species of special concern whose habitat requirements are not fully captured by coarse-filter attributes.”²³² The ROD for the 2012 rule recognizes that the “coarse-filter/fine-filter approach for maintaining biological diversity over large landscapes is a well-developed concept in the scientific literature, and is generally supported by the science community for application on Federal lands.”²³³ However, incorporating the approach into the forest planning framework and implementing it within a given plan area has not been straightforward.

2. *Applying the Coarse-Filter/Fine-Filter Conservation Framework to Forest Planning*

Given the scientific support for a combined coarse-filter/fine-filter approach to biodiversity conservation, the 2012 rule explicitly “adopts a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area,” including at-risk species.²³⁴ The coarse-filter requirements of the 2012 rule require that forest plans include “ecosystem plan components” to maintain or restore ecological integrity (including ecosystem structure, composition, and connectivity) and

²²⁶ *Id.*

²²⁷ *Id.* at 150.

²²⁸ *Id.* at 151.

²²⁹ 36 C.F.R. § 219.9 (2012).

²³⁰ Noon, *supra* note 106, at 63 (citations omitted).

²³¹ *Id.* at 63 (citation omitted).

²³² Final PEIS, *supra* note 17, at 124.

²³³ 77 Fed. Reg. 21,213 (Apr. 9, 2012).

²³⁴ 36 C.F.R. § 219.9 (2012).

ecosystem diversity.²³⁵ As a result, USFS “expects habitat quantity to increase and habitat quality to improve for most native species.”²³⁶

The complementary fine-filter element of the species conservation framework is enacted through “additional species-specific plan components.”²³⁷ This provision requires that the responsible official determine whether the ecosystem plan components will provide the ecological conditions necessary to adequately support at-risk species.²³⁸ If the responsible official determines that the ecosystem plan components are inadequate, then the plan must include species-specific plan components to provide the necessary ecological conditions.²³⁹ USFS explicitly acknowledges that this requirement was included to provide “the fine-filter complement for species not conserved by the coarse-filter approach.”²⁴⁰ The biodiversity conservation framework codified in the 2012 rule therefore recognizes that species-specific plan components may be necessary in order to adequately address the threats to or needs of at-risk species.²⁴¹ As described in the ROD for the 2012 rule, “[t]he fine-filter provisions are intended to provide a *safety net* for those species whose specific habitat needs or other influences on their life requirements may not be fully met under the coarse-filter provisions.”²⁴² The ROD then provides the following hypothetical scenarios that might trigger the need to apply the fine filter:

For example, while coarse-filter requirements to restore longleaf pine ecosystems may provide most of the necessary ecological conditions for the endangered red-cockaded woodpecker, additional fine-filter species-specific plan components may also be needed, for example, a plan standard to protect all known red-cockaded woodpecker cavity trees during prescribed burning activities. Examples for other species might include requiring proper size and placement of culverts to allow for aquatic organism passage on all streams capable of supporting eastern brook trout, or requiring closure devices on all cave and mine entrances to prevent the spread of white-nose syndrome to bat populations in the plan area.²⁴³

The 2015 directives elaborate that the responsible official should²⁴⁴ “design an evaluation process for the emerging set of plan components for each at-risk species to determine the degree to which the set of emerging plan components meet the requirements of the planning rule for at-

²³⁵ *Id.* § 219.9(a).

²³⁶ 77 Fed. Reg. 21,176 (Apr. 9, 2012); *see also* Final PEIS, *supra* note 17, at 58.

²³⁷ 36 C.F.R. § 219.9(b) (2012).

²³⁸ *Id.* § 219.9(b)(1).

²³⁹ *Id.*

²⁴⁰ Final PEIS, *supra* note 17, at 133.

²⁴¹ *See id.*

²⁴² 77 Fed. Reg. 21,175 (Apr. 9, 2012) (emphasis added).

²⁴³ *Id.* at 21,212.

²⁴⁴ According to the FSH, the verb “shall” means that the prescribed “[a]ction is mandatory and full compliance is required,” whereas the verb “should” means the prescribed “[a]ction is mandatory, unless a justifiable reason exists for not taking action. Employees must fully consider, but may depart from based on a written finding as applied to specific circumstances that the deviation will enhance program management efficiency or better achieve desired results or other objectives.” FS Directive FSH 1909.12.05.1 Land Management Planning Handbook (U.S.D.A. 2015).

risk species.”²⁴⁵ That evaluation should incorporate information on the status of the species, threats to their persistence, “key habitat relationships,” and the effects of land management beyond the plan area “at the scale in which biological populations of the species operate.”²⁴⁶ While the directives contain no requirement that the evaluation process be documented, the rule itself does require that the “decision document” (typically a ROD)²⁴⁷ include “an explanation of how the plan components meet . . . the diversity requirements of § 219.9.”²⁴⁸

It is important to note that the 2012 rule does not require forest plans to *directly* recover, conserve, or maintain viable populations of at-risk species. Rather, it requires that the plan components to “provide the *ecological conditions* necessary to” accomplish those conservation objectives.²⁴⁹ The final PEIS for the 2012 rule claims that “the Agency is capable of maintaining or restoring ecological conditions, such as late seral ponderosa pine forests for northern goshawks, but it cannot guarantee or compel goshawks to occupy the habitat.”²⁵⁰ Given that USFS has a greater ability to influence habitat than species themselves, the logic goes, management should focus on the ecosystem rather than the wildlife therein. Indeed, “factors beyond Agency control might affect actual population size or occupation of available habitat independent of the existing ecological conditions provided (e.g., weather, disease, climate change, competition, or broad-scale population declines).”²⁵¹ Rather than target absolute species outcomes that could be thwarted by exogenous factors, USFS chose to focus on requiring the *conditions* necessary to support viability. These ecosystem characteristics should be attainable even if guaranteeing the survival of a particular species is not. This underscores the Agency’s preference for setting realistic conservation goals and creating a planning framework for achieving them that is feasible to implement.

Even so, the protections for at-risk species established in the species-specific plan component requirements of the 2012 rule are meant to be “more comprehensive” than the previous rule and “be proactive in the recovery and conservation of” at-risk species.²⁵² The requirements reflect an approach to conservation that goes beyond merely mitigating adverse impacts to habitat.²⁵³ Indeed, the 2012 rule requires that plan components “contribute to the recovery” of not only threatened and endangered species, but also those that are proposed or are candidates for listing

²⁴⁵ *Id.* FSH 1909.12.23.13.

²⁴⁶ *Id.*

²⁴⁷ Decision documents approve plans, plan amendments, and plan revisions. 77 Fed. Reg. 21,241 (Apr. 9, 2012). According to the ROD for the 2012 rule, “The plan only provides the management direction approved by the decision, while the decision document provides the rationale for the decision. . . .” *Id.* at 21,240.

²⁴⁸ 36 C.F.R. § 219.14 (2012).

²⁴⁹ *Id.* § 219(b)(1) (emphasis added).

²⁵⁰ Final PEIS, *supra* note 17, at 135.

²⁵¹ *Id.*

²⁵² 77 Fed. Reg. 21,215 (Apr. 9, 2012); *see also, generally* Memorandum from Leslie A. Weldon, Deputy Chief, Nat’l Forest Sys. to Regional Foresters Re. Clarification of Implementation of the 2012 rule Directives, and Species of Conservation Concern (June 6, 2016) [hereinafter Memo from Washington Office].

²⁵³ As discussed in Section A of Part II, USFS has stated that the Agency “needs plans that do more than mitigate harm.” 77 Fed. Reg. 21,163 (Apr. 9, 2012).

under the ESA.²⁵⁴ Thus, species-specific plan components are intended to serve as a mechanism to meet the needs of all at-risk species to the extent that listing is no longer necessary.²⁵⁵ Additionally, the fine-filter provisions protect a new category of at-risk species called “species of conservation concern” (SCC).

The protections in the 2012 rule for SCC replace the former “sensitive species” requirements outlined in the directives associated with the 1982 rule.²⁵⁶ The 2012 rule defines an SCC as “a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species’ capability to persist over the long-term in the plan area.”²⁵⁷ As with all other at-risk species, forest plans must include species-specific plan components to maintain a viable population of each SCC in the plan area if the ecosystem plan components fail to provide the necessary ecological conditions.²⁵⁸

In response to public complaints that the SCC requirements were too “expensive,” “cumbersome,” “unattainable,” and “procedurally impossible to demonstrate,” USFS contended that “the management emphasis on species of conservation concern is more focused than the viability provisions under the 1982 rule, which included all vertebrate species whether there was concern about their persistence in the plan area or not.”²⁵⁹ Moreover, as discussed in Section B above, the Agency retains the flexibility to merely make efforts to *contribute* to viability of a particular SCC if *ensuring* the viability of the population within the plan area is unattainable, given biophysical constraints or other factors beyond the Agency’s control.²⁶⁰ Thus, the Agency defends the SCC requirements as being both more attainable and flexible than the viability requirements under the 1982 rule.

In developing the 2012 rule, USFS chose to change the line officer who identifies SCC from the responsible official to the regional forester in order to “provide additional consistency and promote efficiency in identifying species of conservation on and among national forests and grasslands within a region.”²⁶¹ Similarly, the regional forester is also the official responsible for developing a broad-scale monitoring strategy for SCC,²⁶² as will be discussed in Section F below. This language implies a desire to coordinate conservation across NFS administrative boundaries, in recognition of the transboundary biological scale at which species and ecosystem processes operate.

In identifying SCC, the directives require consideration of species recently de-listed under the ESA and species with NatureServe status ranks of G/T1 (critically imperiled globally) or G/T2

²⁵⁴ 36 C.F.R. § 219.9(b)(1) (2012).

²⁵⁵ 77 Fed. Reg. 21,215 (Apr. 9, 2012).

²⁵⁶ Memo from Washington Office, *supra* note 252, at 1.

²⁵⁷ 36 C.F.R. § 219.9(c).

²⁵⁸ *See id.* § 219.9(b); *see also* 77 Fed. Reg. 21,214 (Apr. 9, 2012).

²⁵⁹ 77 Fed. Reg. 21,175 (Apr. 9, 2012).

²⁶⁰ 36 C.F.R. § 219.9(b)(2) (2012).

²⁶¹ 77 Fed. Reg. 21,218 (Apr. 9, 2012).

²⁶² 36 C.F.R. § 219.12(b) (2012).

(imperiled globally).²⁶³ Additionally, the directives recommend considering the following categories of species: 1) species with NatureServe status ranks of G/T3 (vulnerable globally), S1 (critically imperiled at the state level), or S2 (imperiled at the state level); 2) SCC on adjacent national forests; species that are listed as threatened, endangered, or a high priority for conservation by states or tribes; 3) “species that have been petitioned for Federal listing and for which a positive ‘90-day finding’ has been made;” and 4) “species for which the best available scientific information indicates there is local conservation concern about the species' capability to persist over the long-term in the plan area due to . . . stressors on and off the plan area,” restricted range, or a low or declining population.²⁶⁴ Guidance issued in 2016 from the Washington Office to Regional Foresters clarifies that “[i]dentification of SCC must be based on current conditions in the plan area.”²⁶⁵ Thus, future potential threats or current threats that exist elsewhere across the species range need not be considered when identifying SCC, so long as the species is currently “secure within the plan area.”²⁶⁶

In response to comments expressing concern over the degree of discretion afforded to the regional forester “in deciding which species will receive protection,” USFS added language to make “the criterion for identifying the species narrower and more scientific than the definition in the proposed rule.”²⁶⁷ Specifically, the Agency added the provision that SCC must be “known to occur in the plan area” and specifying that “evidence” upon which the determination is based must be “the best available scientific information.”²⁶⁸ This revision demonstrates that the Agency is willing to curtail the discretion of responsible officials to some degree in order to ensure that planning decisions—particularly those regarding species conservation—are based on BASI.

Overall, the fine-filter provisions in the 2012 rule represent more comprehensive and proactive approach to protecting at-risk species than the conservation measures outlined in the 1982 rule. USFS made several key revisions to the draft version of the 2012 rule that reflect feedback from the 2011 Science Review emphasizing that robust species-specific protections are an essential element of an effective coarse-filter/fine-filter approach. First, USFS added language at the very beginning of 36 C.F.R. § 219.9 (“Diversity of plant and animal communities”) to make explicit that the rule “adopts a complementary ecosystem and species-specific approach. . . .” The original version of the rule required that plan components provide for both ecosystem diversity and species conservation but did not explicitly require the inclusion of species-specific plan components to accomplish species conservation aims.²⁶⁹ The Agency added the “additional

²⁶³ FS Directive FSH 1909.12.52(d)(2)(a)(b), Land Management Planning Handbook (U.S.D.A. 2015).

²⁶⁴ *Id.* FSH 1909.12.52(d).

²⁶⁵ Memo from Washington Office, *supra* note 252, at 1.

²⁶⁶ 77 Fed. Reg. 21,212 (Apr. 9, 2012).

²⁶⁷ *Id.* at 21,218.

²⁶⁸ The definition of SCCs in the original version of the 2012 rule was “[s]pecies other than federally listed threatened or endangered species or candidate species, for which the responsible official has determined that there is evidence demonstrating significant concern about its capability to persist over the long-term in the plan area.” Final PEIS, *supra* note 17, at A-29. See Appendix A.

²⁶⁹ The relevant provisions of the original version of the 2012 rule are included in Appendix A. The original version of the 2012 rule included the following diversity requirements:

species-specific plan components” requirement to provide “the complementary fine-filter approach to maintaining the biological diversity on each NFS unit” and “identify specific ecological conditions for species with known conservation concerns for which there continues to be concern that their requisite ecological conditions will not be fully provided under the coarse-filter approach.”²⁷⁰ The final version of the rule also makes clear that both ecosystem and species-specific plan components must “includ[e] standards or guidelines,” not just desired conditions or objectives.²⁷¹ Relatedly, the Agency modified section 219.7(e)(1)(iv) and section 219.15(d)(3) to clarify that compliance with both standards and guidelines is mandatory.²⁷² The result is that ecosystem and species protections under the 2012 rule are enforceable, not just aspirational.

However, the contingent nature of the species-specific plan component requirement reveals USFS’s preference for relying on the coarse-filter as the primary mechanism for achieving biodiversity, and to apply the fine-filter only when absolutely necessary. Ultimately, the responsible official retains the discretion to determine whether the ecological conditions

Within Forest Service authority and consistent with the inherent capability of the plan area, the plan must include plan components to maintain the diversity of plant and animal communities, as follows:

- (a) *Ecosystem Diversity*. The plan must include plan components to maintain or restore the structure, function, composition, and connectivity of healthy and resilient terrestrial and aquatic ecosystems and watersheds in the plan area, consistent with § 219.8(a), to maintain the diversity of native species.
- (b) *Species Conservation*. The plan components must provide for the maintenance or restoration of ecological conditions in the plan area to:
 - (1) Contribute to the recovery of threatened and endangered species;
 - (2) Conserve candidate species; and
 - (3) Maintain viable populations of species of conservation concern within the plan area. . . .

Final PEIS, *supra* note 17, at A-29.

²⁷⁰ *Id.* at 132.

²⁷¹ 36 C.F.R. §§ 219.8(a)(1), 219.9(a)(1) (2012). The definition of each type of plan component is as follows:

- (i) *Desired conditions*. A desired condition is a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates.
- (ii) *Objectives*. An objective is a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets.
- (iii) *Standards*. A standard is a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.
- (iv) *Guidelines*. A guideline is a constraint on project and activity decision making that allows for departure from its terms, so long as the purpose of the guideline is met. (§ 219.15(d)(3)). Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

Id. § 219.7 (2012).

²⁷² *See* 77 Fed. Reg. 21,172 (Apr. 9, 2012).

provided by the coarse filter are sufficient and thus whether species-specific plan components are necessary at all. Given that, according to the 2011 Science Review, “the coarse filter is unlikely to provide habitat for all species of management responsibility,”²⁷³ a determination to not include *any* species-specific plan components would be difficult to justify based on BASI, as required by 36 CFR §§ 219.3 and 219.14. Still, as will be discussed in Part IV, some environmental groups contend that the forest plan revisions that have been finalized since the adoption of the 2012 rule fail to include plan components that provide the necessary ecological conditions for at-risk species.²⁷⁴

F. The New Monitoring Approach

USFS overhauled the 1982 monitoring requirements in order to establish a framework for monitoring that would be more “systematic and unified” and more “consistent and effective” across the NFS.²⁷⁵ The primary purposes of the monitoring program outlined in the 2012 rule are to “evaluate the effectiveness of management approaches, ensure the reliability of implementation, and validate the assumptions used in predicting the consequences of the management approaches.”²⁷⁶ This is achieved by basing the monitoring questions and indicators on plan components so that the information “enable[s] the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed.”²⁷⁷ While each monitoring question should have a corresponding plan component, not every plan component needs a corresponding monitoring question.²⁷⁸

More specifically, the purpose of biodiversity monitoring questions and indicators is to “assess the degree to which ecological conditions are supporting the diversity of plant and animal communities.”²⁷⁹ The biodiversity monitoring requirements mandate that plan monitoring programs must contain at least one monitoring question and associated indicator addressing the following: 1) “The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems;”²⁸⁰ 2) “The status of focal species to assess the ecological conditions required under § 219.9;”²⁸¹ 3) “The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered

²⁷³ Noon, *supra* note 106, at 61. For further discussion, see text accompanying *supra* notes 216-218.

²⁷⁴ See generally Defenders of Wildlife et al., Objection to the Rio Grande National Forest Land Management Plan and Final EIS (Oct. 1, 2019) [hereinafter Defenders of Wildlife et al. Objection].

²⁷⁵ Final PEIS, *supra* note 17, at 138; see also 77 Fed. Reg. 21,256 (Apr. 9, 2012).

²⁷⁶ Final PEIS, *supra* note 17, at 127.

²⁷⁷ 36 C.F.R. § 219.12(a)(1) (2012).

²⁷⁸ See *id.* § 219.12(a)(2).

²⁷⁹ Final PEIS, *supra* note 17, at 136. For instance, if the *ecological conditions* for the objective of restoring native longleaf pine forest ecosystems are “open, park-like stands eventually dominated by native, fire-dependent longleaf pine communities,” related *indicators* could include the “presence, abundance, and spatial distribution of large (>12”) old (>80 years) pine trees.” FS Directive FSH 1909.12.32.1, Exhibit 01, Land Management Planning Handbook (U.S.D.A. 2015). The monitoring program could also detect “changes in active cavity tree cluster sites” for the red-cockaded woodpecker as a focal species. *Id.*

²⁸⁰ 36 C.F.R. § 219.12(a)(5)(ii) (2012).

²⁸¹ *Id.* § 219.12(a)(5)(iii).

species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.”²⁸²

The language limiting the monitoring to a “select set” of conditions is meant to incorporate USFS’s desire to focus monitoring efforts on those ecological conditions that can be monitored most efficiently.²⁸³ Additionally, the monitoring program under the 2012 rule is meant to be “broader in scope” than under the 1982 rule, according to the Agency, with monitoring to take place at a variety of scales.²⁸⁴ The 2012 rule directs the regional forester to “develop a broader-scale monitoring strategy for plan monitoring questions that can best be answered at a geographic scale broader than one plan area.”²⁸⁵ This requirement to integrate plan-level monitoring efforts with a broader-scale monitoring strategy is intended to better “detect effects of management within unit boundaries as well as track risks, stressors, and conditions beyond unit boundaries that affect, or are affected by, unit conditions and actions.”²⁸⁶ The 2012 rule does not specify what constitutes a “broad” scale, and states that “the responsible official has the discretion to set the scope and scale of the plan monitoring program.”²⁸⁷

1. Monitoring Requirements for Focal Species

USFS substituted the monitoring requirements for MIS, which had been scientifically discredited, with monitoring requirements for focal species.²⁸⁸ The 2012 rule defines focal species as a “small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area.”²⁸⁹ The original version of the 2012 rule simply stated that the plan monitoring program should include at least one question regarding “the status of focal species.”²⁹⁰ The final version of the 2012 rule elaborated that the intent of monitoring the status of focal species was “to assess the ecological conditions required under § 219.9.”²⁹¹ This language was added in response to public comments requesting that the final version of the 2012 rule include monitoring requirements to assess progress towards meeting the diversity requirements.²⁹² The 2015 directives provide further guidance by stating that monitoring questions for focal species “should relate the species to the ecological condition and reason for its selection, and indicators may include affected attributes of the species, such as presence or occupancy, habitat use, reproductive rate, and population trends.”²⁹³

²⁸² *Id.* § 219.12(a)(5)(iv).

²⁸³ 77 Fed. Reg. 21,234 (Apr. 9, 2012).

²⁸⁴ Final PEIS, *supra* note 17, at 138.

²⁸⁵ 36 C.F.R. § 219.12(b) (2012).

²⁸⁶ 77 Fed. Reg. 21,256 (Apr. 9, 2012).

²⁸⁷ 36 C.F.R. § 219.12(a)(4) (2012).

²⁸⁸ *See* 77 Fed. Reg. 21,175 (Apr. 9, 2012).

²⁸⁹ 36 C.F.R. § 219 (2012).

²⁹⁰ Final PEIS, *supra* note 17, at A-17. The full language of the original provision is included in Appendix A.

²⁹¹ 36 C.F.R. § 219(a)(5)(iii) (2012).

²⁹² 77 Fed. Reg. 21,219 (Apr. 9, 2012).

²⁹³ FS Directive FSH 1909.12.32.13c(4), Land Management Planning Handbook (U.S.D.A. 2015).

These provisions highlight an important distinction between the monitoring approaches under the 1982 and 2012 rules: unlike MIS, “[f]ocal species are not intended to be a proxy for other species.”²⁹⁴ Their population trends do not necessarily need to be monitored directly because they need not provide information regarding the persistence or viability of their own population or of any other individual species.²⁹⁵ The directives echo this distinction: “Focal species are not selected to make inferences about other species. Focal species are selected because they are believed to be indicative of key characteristics of ecological integrity and are responsive to ecological conditions in a way that can inform plan decisions.”²⁹⁶ For this reason, focal species are to be “selected on the basis of their functional role in ecosystems,”²⁹⁷ rather than as their ability to serve as direct surrogates of other unmeasured species (i.e., MIS).

USFS explicitly acknowledges that the 2012 rule incorporates the focal species concept as proposed by the Committee of Scientists in their three-part approach for assessing, maintaining, and monitoring ecological integrity and species viability.²⁹⁸ This strategy consisted of the following components: “1) focusing on a set of selected ‘focal’ species and their habitat needs; 2) maintaining conditions necessary for ecological integrity; and 3) monitoring the effectiveness of this approach in conserving native species and ecological productivity.”²⁹⁹ The Committee acknowledged that providing ecosystem diversity alone would not be sufficient to ensure species viability, nor could monitoring habitat reliably predict trends in wildlife populations.³⁰⁰ The Committee advocated that the population dynamics of particular species also be assessed and

²⁹⁴ 77 Fed. Reg. 21,233 (Apr. 9, 2012).

²⁹⁵ See *id.* at 21,233; see also Response to Comments on the 2015 Directives, *supra* note 82 at 54.

²⁹⁶ FS Directive FSH 1909.12.32.13c(4), Land Management Planning Handbook (U.S.D.A. 2015).

²⁹⁷ 36 C.F.R. § 219 (2012).

²⁹⁸ “The inclusion of focal species (§ 219.19) in the monitoring section is based on concepts from the March 15, 1999, Committee of Scientists report, which recommended focal species an approach to monitor and assess species viability.” 77 Fed. Reg. 21,232 (Apr. 9, 2012).

²⁹⁹ The Committee’s recommendation in its entirety is as follows:

[W]e suggest focusing on the viability of native species themselves. However, monitoring the status of all species and assessing their viability is impossible from a practical standpoint. Thus it is necessary to focus on a subset of species called “focal species.” The key characteristic of a focal species is that its abundance, distribution, health, and activity over time and space are indicative of the functioning of the larger ecological system. In monitoring, the habitat needs of the focal species are analyzed, and projections are made of the habitat that will be needed for the species to be considered “viable,” having self-sustaining populations well-distributed throughout the species range. Self-sustaining populations, in turn, can be defined as those that have sufficient abundance and diversity to display the array of life-history strategies and forms that will provide for their persistence and adaptability in the planning area over time. The habitat that will be created under any management scenario is compared to the habitat needed for the viability of each selected focal species. The less adequate the habitat for each species, the greater the risk to native species and ecological productivity. Therefore, the Committee suggests a three-pronged strategy: (1) focusing on a set of selected “focal” species and their habitat needs; (2) maintaining conditions necessary for ecological integrity; and (3) monitoring the effectiveness of this approach in conserving native species and ecological productivity.

1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 147.

³⁰⁰ See *id.* at 19.

monitored continually.³⁰¹ The focal species concept was advanced to focus attention on “species directly, in recognition that focusing only on composition, structure, and processes may miss some components of biological diversity.”³⁰² While assessing the status of *every* species may not be feasible, the Committee suggested focusing on “the status of a relatively few ‘focal species’” capable of lending insights into the integrity of the ecosystem as a whole.³⁰³ The Committee suggested selecting focal species from the following categories: 1) threatened or endangered species; 2) species of particular interest to managers and the public; 3) game species, rare or sensitive species; and 4) species with an important functional role in the ecosystem, such as indicator species, keystone species, umbrella species, link species, and ecological engineers.³⁰⁴ The Committee cautioned that the “selection of focal species . . . should be treated as a hypothesis,” and the “assumption that a specific species serves a focal role must be validated by monitoring and research.”³⁰⁵

USFS incorporated the focal species recommendation into the monitoring program requirements for the 2012 rule. The Agency contended that, by focusing on “smaller numbers of species to monitor (relative to MIS) . . . tracking of species diversity and habitat sustainability” under the 2012 rule would “be more cost-effective and reflective of unit-specific capabilities.”³⁰⁶ According to the 2011 Science Review, focusing on “a small (e.g., 10-20) set of species was meant to be pragmatic, to address the Agency’s requirements for conservation of biological diversity, to be within the capabilities of the Agency, and to be based on the best available science.”³⁰⁷ The FSH recommends that selection for focal species take into account whether the species could serve as a reliable and direct indicator of ecosystem integrity (including composition, structure, function, and connectivity); is a keystone species or ecological engineer (e.g., beaver); is sensitive to changing ecological conditions; and can be monitored feasibly.³⁰⁸ This mirrors the criteria proposed by the Committee of Scientists (see paragraph directly above).

USFS also appears to have incorporated feedback from the 2011 Science Review in refining the focal species concept. For instance, USFS added language to the definition of focal species³⁰⁹ in order to clarify that focal species are intended to “provide insight into the integrity of the larger ecological system to which they belong, to assess the effects of management and other stressors on those ecological conditions, and to provide meaningful information regarding the effectiveness of the plan in maintaining the diversity of plant and animal communities in the plan area.”³¹⁰ The revised definition reflects the recommendation in the 2011 Science Review that the

³⁰¹ *See id.* at 20.

³⁰² *Id.* at 39.

³⁰³ *Id.* at 20, 147.

³⁰⁴ *Id.* at 39; *see also* Final PEIS, *supra* note 17, at 129.

³⁰⁵ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 39.

³⁰⁶ 77 Fed. Reg. 21,256 (Apr. 9, 2012).

³⁰⁷ Noon, *supra* note 106, at 63 (citations omitted).

³⁰⁸ FS Directive FSH 1909.12.32.13c(4), Land Management Planning Handbook (U.S.D.A. 2015).

³⁰⁹ Under the original version of the 2012 rule, the definition of focal species was, “A small number of species selected for monitoring whose status is likely to be responsive to changes in ecological conditions and effects of management.” Final PEIS, *supra* note 15, at A-26. To view all the biodiversity provisions in the draft 2012 rule, see Appendix A.

³¹⁰ Final PEIS, *supra* note 17, at 137; *see also* 77 Fed. Reg. 21,233 (Apr. 9, 2012).

2012 rule elaborate on the focal species concept in order to clarify the “relationship between ‘ecosystem diversity’ and ‘species conservation,’” which was “not clearly articulated” in any of the plan alternatives outlined in the Draft PEIS.³¹¹ By emphasizing the functional roles of species in ecosystems, the expanded definition serves to ameliorate the issue of USFS “treat[ing] ecosystems and species as if they were distinct concepts.”³¹²

While the 2012 rule does not prescribe particular methods for monitoring the status of focal species,³¹³ the ROD for the 2012 rule states that such methods may include “measures of abundance, distribution, reproduction, presence/absence, area occupied, [and] survival rates,” some of which can be accomplished with recent technological advancements in genetic sampling.³¹⁴ This echoes recommendations made in the 2011 Science Review. One of the “Science Reviewers” asserted that “[s]pecies level monitoring and viability assessments are much more feasible today than they were at the time of the Committee of Scientists’ report and the 2000 NFMA regulations.”³¹⁵ The Science Reviewer points to recent improvements in “survey design, statistical methods, [and] the ability to estimate species distribution patterns based on presence/absence data.”³¹⁶ The latter technique makes use of historical survey data and genetic sampling techniques to measure species abundance and distribution, factors which are correlated with persistence and thus viability.³¹⁷ For these reasons, the Science Reviewer suggested that the “Forest Service consider indirect methods of viability analysis that take advantage of advances in the monitoring methods and techniques.”³¹⁸ The methods enumerated in the ROD seem to reflect this suggestion.

The ROD for the 2012 rule and the 2015 directives both emphasize the limited scope of management and monitoring responsibilities related to focal species and the substantial discretion that the responsible official enjoys. First, focal species receive no special conservation protections.³¹⁹ Plans do not need to provide any direction to maintain the viability of focal species or manage their habitat conditions.³²⁰ Second, tracking the population trends of focal species is not required.³²¹ Monitoring the “status” of focal species could entail collecting data on population trends but it could also refer to measuring other indicators, such as habitat use.³²² Third, USFS does not expect monitoring programs to select a focal species for “every element of ecological conditions,” according to the ROD for the 2012 rule.³²³ The FSH provides further explanation:

³¹¹ Noon, *supra* note 106, at 61.

³¹² *Id.*

³¹³ According to 36 C.F.R. § 219.12(a)(6), “[a] range of monitoring techniques may be used to carry out the monitoring requirements.”

³¹⁴ 77 Fed. Reg. 21,233 (Apr. 9, 2012).

³¹⁵ Noon, *supra* note 106, at 63.

³¹⁶ *Id.*

³¹⁷ *Id.*

³¹⁸ *Id.*

³¹⁹ See 77 Fed. Reg. 21,232 (Apr. 9, 2012).

³²⁰ See *id.*; see also Response to Comments on the 2015 Directives, *supra* note 81, at 12.

³²¹ See 77 Fed. Reg. 21,234 (Apr. 9, 2012).

³²² FS Directive FSH 1909.12.32.13c(4), Land Management Planning Handbook (U.S.D.A. 2015).

³²³ 77 Fed. Reg. 21,245 (Apr. 9, 2012).

Focal species should be selected to monitor when doing so is feasible and they are the best way to track whether ecological integrity and ecosystem diversity is being maintained or improved. Monitoring focal species is intended to address situations where they provide more useful information or are more efficiently monitored than monitoring other potential indicators.³²⁴

Finally, the 2012 rule “provides discretion to the responsible official to choose the most appropriate methods for monitoring,” so long as the monitoring techniques are “supported by current science.”³²⁵ The 2012 rule also affords discretion in determining the most appropriate geographic scale for monitoring.³²⁶ Some focal species may be monitored at scales beyond the plan area boundary, while others may be more appropriately monitored and assessed at the plan area scale.³²⁷

2. *Monitoring Requirements for At-Risk Species*

The original version of the 2012 rule did not include any monitoring requirements for at-risk species.³²⁸ The provisions related to at-risk species were added to the final version of the rule in order to place “additional emphasis on moving desired ecological conditions towards those needed to support species that are most vulnerable within the plan area.”³²⁹ Similarly, USFS added language to the final version of the 2015 directives to clarify³³⁰ that monitoring indicators should measure the effectiveness of both ecosystem and species-specific plan components.³³¹ Additionally, in determining the appropriate monitoring methods, the directives encourage inclusion of species-specific monitoring questions. For instance, the FSH suggests considering “ecological conditions and key ecosystem characteristics at both the ecosystem and species-specific levels of the terrestrial, riparian, and aquatic ecosystems in the plan area” and considering species-specific indicators for at-risk species in particular.³³² However, USFS deliberately used the terms “should consider” and “may consider” to “give discretion to the Responsible Official” in determining how to meet the monitoring requirements “within financial and technical constraints of the unit.”³³³ Ultimately, the choice to grant fairly broad discretion reveals an emphasis on flexibility and feasibility over specificity and precision—a common theme throughout the 2012 planning regulations.

The 2015 directives elaborate that:

Monitoring questions are not required for every plan component for at-risk species, nor are species-specific monitoring questions required for every at-risk species. Monitoring a select set of important ecological conditions required by a select set of species at risk,

³²⁴ FS Directive FSH 1909.12.32.13c(4), Land Management Planning Handbook (U.S.D.A. 2015).

³²⁵ 77 Fed. Reg. 21,233 (Apr. 9, 2012); *see also* 36 C.F.R. § 219.12(a)(6) (2012).

³²⁶ 36 C.F.R. § 219.12(a)(4) (2012).

³²⁷ 77 Fed. Reg. 21,233 (Apr. 9, 2012).

³²⁸ Final PEIS, *supra* note 17, at A-17. The full language of the proposed 2012 rule is included in Appendix A.

³²⁹ *Id.* at 139.

³³⁰ Response to Comments on the 2015 Directives, *supra* note 82, at 52.

³³¹ FS Directive FSH 1909.12.32.13b, Land Management Planning Handbook (U.S.D.A. 2015).

³³² *Id.* FSH 1909.12.32.13b(2)(a).

³³³ Response to Comments on the 2015 Directives, *supra* note 82, at 53.

along with monitoring for ecosystems and watershed conditions, will give the Responsible Official information about the effectiveness of the ecosystem and species-specific plan components related to the ecological conditions monitored.³³⁴

In other words, while the ecological conditions for at-risk species are to be monitored, the populations of each of those species need not be monitored. According to USFS, monitoring the indicators associated with the habitat requirements of a select set at-risk species should provide sufficient means of assessing the management strategies intended to recover, conserve, or maintain viable populations of those species.³³⁵

Ultimately, for both at-risk species and focal species, the 2012 rule “does not rely on establishing a species population trend in order to infer relationships between population trends and habitat changes.”³³⁶ In response to the public complaint that “monitoring habitat conditions only, specifically related to vegetation composition and structure, will not adequately address the reasons why species may or may not occupy those habitats,” USFS responded that ecological conditions include not only vegetation, but ecological stressors as well.³³⁷ Moreover, the Agency contends that direct population monitoring may not always be feasible, claiming that “[r]esources and current knowledge are inadequate for directly assessing the viability of all plant and animal species on a national forest or grassland.”³³⁸ The decision not to require direct species monitoring and to limit the monitoring of ecological conditions to a “select set” of ecosystem characteristics suggests that the Agency prioritizes efficiency and feasibility in designing plan monitoring programs over investing in measuring management effects as thoroughly (i.e., precisely and accurately) as possible.

3. Alternative Monitoring Programs and Rationale for Their Rejection

Examining USFS’s rationale for rejecting the other plan monitoring programs proposed in the final PEIS reveals the intent behind the monitoring requirements in the final 2012 rule. The monitoring program under Alternative C was rejected because it provided “no specific requirements related to monitoring species diversity.”³³⁹ USFS determined that providing this degree of leeway would create a problem of inconsistency, with plans “vary[ing] considerably in their monitoring approaches for assessing the effectiveness of plan components necessary to provide the ecological conditions to maintain the diversity of plant and animal communities.”³⁴⁰

On the other hand, Alternative D’s monitoring program would have required forest plans to establish “critical values for ecological conditions and focal species that trigger reviews of planning and management decisions to achieve compliance with the provision for maintaining viable populations within the plan area.”³⁴¹ This plan monitoring program also would have

³³⁴ FS Directive FSH 1909.12.32.13b, Land Management Planning Handbook (U.S.D.A. 2015).

³³⁵ See Response to Comments on the 2015 Directives, *supra* note 82, at 53.

³³⁶ Final PEIS, *supra* note 17, at 137.

³³⁷ 77 Fed. Reg. 21,234 (Apr. 9, 2012).

³³⁸ Final PEIS, *supra* note 17, at 125.

³³⁹ See *id.* at 146.

³⁴⁰ *Id.* at 147.

³⁴¹ 77 Fed. Reg. 21,171 (Apr. 9, 2012).

included population surveys of focal species as the means of assessing the effectiveness of ecosystem and species-specific plan components.³⁴² However, USFS dismissed this option due to the high costs associated with more intensive monitoring efforts.³⁴³

The monitoring program proposed under Alternative E went “beyond the scope, scale, and specificity of the requirements under any of the other alternatives.”³⁴⁴ The framework included an extensive list of monitoring questions and indicators—including additional species-specific monitoring for at-risk species—as well as “signal points” to trigger action by the responsible official.³⁴⁵ USFS conceded that such an approach would better prepare responsible officials to anticipate and counteract potential threats to ecosystems and species.³⁴⁶ Indeed, Alternative E best reflected the monitoring approach proposed by the Committee of Scientists.³⁴⁷ However, the approach was seen as overly prescriptive, complex, and costly.³⁴⁸

The monitoring requirements in the final version of the 2012 rule are intended to assess ecological conditions thoroughly enough that more expensive direct species monitoring is not necessary. By focusing on select sets of ecosystem characteristics and focal species, USFS believes it will be able to assess progress towards the ecosystem and species diversity objectives with the most judicious use of resources.

G. Summary of Key Revisions to the Forest Planning Framework

USFS’s desire to create a planning framework that was more scientifically credible and transparent led to a set of biodiversity provisions under the 2012 rule that are both substantively and procedurally significantly different than the provisions under the 1982 rule. The 2012 rule establishes a new approach to maintaining and monitoring biodiversity that elevates ecological integrity, intends to meet the needs of at-risk species more fully, and emphasizes a commitment to scientifically grounded and transparent decision making. However, several important caveats woven into the regulatory language arguably undermine the potency of the new biodiversity protections.

1. New Requirements to Provide for Ecological Integrity and the Persistence of All Native Species

³⁴² See Final PEIS, *supra* note 15, at 150.

³⁴³ See 77 Fed. Reg. 21,172 (Apr. 9, 2012).

³⁴⁴ Final PEIS, *supra* note 15, at 153.

³⁴⁵ *Id.* at 151.

³⁴⁶ See *id.* at 153.

³⁴⁷ The 1999 Committee of Scientists Report proposed that monitoring serve “as an ‘early warning system’ to detect declines in ecosystem integrity and species viability before irreversible loss” occurs. 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 152. The Committee also recommended that the monitoring program include “indicators of ecosystem integrity and species viability, develop methods for measuring such indicators, [and] designate critical indicator values that would trigger changes in management practices.” *Id.*

³⁴⁸ *Id.* at 153.

The approach to maintaining “viable populations of existing native and desired non-native vertebrate species . . .”³⁴⁹ under the 1982 rule relied largely on managing fish and wildlife *habitat*, as discussed in Part II. In contrast, the 2012 rule aims to more broadly maintain and restore *ecological integrity* (including ecosystem composition, structure, function, and connectivity).³⁵⁰ Ensuring the overall health of the ecosystem “is intended to provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area.”³⁵¹ Maintaining the ecological conditions necessary to support biodiversity entails more than just managing habitat—it also includes addressing additional elements of the “biological and physical environment” such as invasive species, roads, recreation, grazing, and mining.³⁵² By shifting the responsibility from managing habitat to providing the necessary ecological conditions, the 2012 rule establishes a new obligation to address a broader suite of influences on species persistence, as recommended by the Committee of Scientists.³⁵³

Additionally, the requirement to maintain viable populations of all native species—not just vertebrates—broadens the scope of the responsible official’s conservation obligations. However, the 2012 rule contains a new caveat that forest plans “provide for the diversity of plant and animal communities, *within Forest Service authority and consistent with the inherent capability of the plan area.*”³⁵⁴ This was deemed acceptable by the Committee of Scientists, who conceded that ensuring a viable population of each species may not be possible due to factors outside of the Agency’s control.³⁵⁵ Nonetheless, USFS has stated that the Agency still has an affirmative obligation to create forest plans “do more than mitigate harm.”³⁵⁶ In combination, these revisions establish a new approach to maintaining biodiversity that is intended to be more comprehensive and reflective of current conservation biology, while also leading to forest plans “that provide feasible or realistic direction for responding to species and ecosystem sustainability and recovery needs and meeting requirements for plant and animal diversity.”³⁵⁷

2. *New Requirements for At-Risk Species*

The 2012 rule also takes a new approach to managing at-risk species in particular. The provisions in the 1982 rule relating to at-risk species focused on preventing harm to threatened

³⁴⁹ 36 C.F.R. § 219.19 (1982).

³⁵⁰ 36 C.F.R. § 219.9(a)(1) (2012).

³⁵¹ *Id.* § 219.9.

³⁵² *Id.* § 219.19. For further discussion of the term “ecological conditions,” see text accompanying *supra* notes 60-64.

³⁵³ As quoted in *supra* note 61, the 1999 Committee of Scientists suggested the following management standards for species viability: “The decisions of resource managers must be based on the best available scientific information and analysis to provide ecological conditions needed to protect and, as necessary, restore the viability of focal species and of threatened, endangered, and sensitive species.” 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 151.

³⁵⁴ 36 C.F.R. § 219.9 (2012) (emphasis added).

³⁵⁵ See 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at xix.

³⁵⁶ 77 Fed. Reg. at 21,163 (Apr. 9, 2012).

³⁵⁷ *Id.* at 21,255.

and endangered species, primarily by protecting critical *habitat*.³⁵⁸ Later, the directives instructed forest plans to establish standards and guidelines to also protect the habitat of “sensitive species” from potentially harmful projects.³⁵⁹ The new biodiversity provisions require that plan components “provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area.”³⁶⁰ This marks a significant advance in a variety of ways.

First, the new provision is more comprehensive. The 2012 rule includes protections not just for threatened and endangered species (as was the case with the 1982 rule), but for other categories of species that are potentially at risk of eventually becoming threatened and endangered—including proposed and candidate species, as well as SCC.³⁶¹ Second, the new provision is more proactive. The objective of the protections in the 2012 rule is to recover, conserve, and maintain at-risk species by providing for the needs of vulnerable populations,³⁶² rather than simply preventing or mitigating degradation of critical habitat. This provision establishes species-specific management as a necessary complement to ecosystem management and highlights that the fine-filter approach is most likely to be needed by at-risk species. Indeed, the imperiled status of at-risk species would seem to indicate that status quo habitat management is insufficient to meet their needs or mitigate threats to their survival. Overall, the new fine-filter element of the forest planning framework reflects USFS’s desire to establish a “more comprehensive” and “more proactive” approach to species conservation.³⁶³

³⁵⁸ The 1982 rule required the following:

Habitat determined to be critical for threatened and endangered species shall be identified, and measures shall be prescribed to prevent the destruction or adverse modification of such habitat. Objectives shall be determined for threatened and endangered species that shall provide for, where possible, their removal from listing as threatened and endangered species through appropriate conservation measures, including the designation of special areas to meet the protection and management needs of such species.

36 C.F.R. § 219.19(a)(7) (1982).

³⁵⁹ The 2015 directives require forest plans to “[d]evelop and implement management objectives for populations and/or habitat of sensitive species.” FS Directive FSM 2670.22, Wildlife, Fish, and Sensitive Habitat Management (U.S.D.A. 2005). They also required “standards and guidelines that ensure conservation when an activity or project is proposed that would affect the habitat of a sensitive species.” *Id.* FSM 2622.01. For a discussion of all the requirements under the 1982 rule related to protecting at-risk species, see Section D of Part II.

³⁶⁰ 36 C.F.R. § 219.9(b)(1) (2012).

³⁶¹ *Id.*

³⁶² *Id.*

³⁶³ The ROD for the 2012 rule states: “While the 1982 rule at section 219.19(a)(7) did have specific requirements for protection of [threatened and endangered] species . . . the requirement in the final rule that requires plan components to provide ecological conditions to ‘contribute to the recovery of’ [threatened and endangered] species is *more comprehensive*” 77 Fed. Reg. 21,215 (Apr. 9, 2012) (emphasis added). Additionally, the new requirements are “expected to result in plans that will be *more proactive* in the recovery and conservation of the threatened, endangered, proposed, and candidate species in the plan areas.” *Id.* (emphasis added).

3. *New Species Monitoring Requirements*

In developing the 2012 rule, USFS abandoned the practice of monitoring MIS and (more commonly) their habitat as the primary means of assessing the ecological impacts of management activities. The MIS provisions were jettisoned because this surrogate-based approach was debunked by conservation biology studies and its application on individual national forests was frequently legally challenged.³⁶⁴ USFS sought to establish a more reliable and credible species monitoring approach by adopting the recommendations of the Committee of Scientists. The Committee highlighted the need to monitor the population status of certain “focal species” who could provide insights into the level of ecological integrity present in the plan area. Selecting focal species based on their functional role in the ecosystem “combines aspects of [the] single-species and ecosystem management”³⁶⁵ framework outlined in 36 C.F.R. § 219.9. In other words, focal species integrate the fine filter into the monitoring program by requiring that questions and indicators “consider species directly.”³⁶⁶

Additionally, USFS added new monitoring requirements for at-risk species. The 2012 rule requires monitoring the ecological conditions necessary to support threatened, endangered, candidate, and proposed species, as well as SCC.³⁶⁷ This provision was added to the final version of the 2012 rule in order to evaluate the management effectiveness of the plan components related to at-risk species.³⁶⁸ Overall, the revisions to species monitoring reflect a more science-based and species-specific approach to assessing the ecological impacts of forest management.

4. *New Procedural Requirements*

In addition to these revisions to the substantive requirements for maintaining and monitoring ecosystem diversity and species viability, the 2012 rule contains several new related procedural requirements. The commitment to a more transparent and science-based approach to forest planning is reflected most notably in 36 C.F.R. § 219.14. This section of the 2012 rule requires that the ROD for each plan revision explain “how the plan components meet . . . the diversity requirements of § 219.9. . . .”³⁶⁹ It also requires “documentation of how the best available scientific information was used to inform planning, the plan components, and other plan content, including the plan monitoring program.”³⁷⁰ These requirements hold the responsible official accountable for using BASI throughout the planning process and justifying how the plan will

³⁶⁴ Final PEIS, *supra* note 17, at 142-143. For a brief discussion of some of these court cases, see *supra* note 125.

³⁶⁵ 1999 COMMITTEE OF SCIENTISTS REPORT, *supra* note 61, at 139.

³⁶⁶ *Id.*

³⁶⁷ “Each plan monitoring program must contain one or more monitoring questions and associated indicators addressing each of the following: . . . The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.” 36 C.F.R. § 219.12(a)(5)(iv) (2012). For further discussion of this requirement, see Section F (Sub-section 2) of Part III.

³⁶⁸ Final PEIS, *supra* note 17, at 139.

³⁶⁹ 36 C.F.R. § 219.14(a)(2) (2012).

³⁷⁰ *Id.* § 219.14(a)(4).

meet the needs of the species and ecosystems present on the unit. Additionally, the plan components themselves are more enforceable under the 2012 rule. The final version of the rule specifies that ecosystem and species plan components are to include standards and guidelines (not just desired conditions and objectives)³⁷¹ and that compliance with standards and guidelines is mandatory.³⁷² This too adds a layer of accountability.

5. *Caveats*

While science and transparency were guiding principles in developing the biodiversity conservation framework under the 2012 rule, the pragmatic considerations of flexibility, feasibility, and ease of implementation act as countervailing forces. The 2012 rule improves the likelihood that forest plans will reflect current science and meet the needs of species within the plan area, particularly at-risk species. However, several caveats call into question whether these new protections have real teeth. First, USFS's decision to allow the responsible official to determine whether species-specific plan components are necessary for each at-risk species³⁷³ results in language that affords substantial discretion. Second, a loophole is created by allowing the responsible official to avoid taking action they deem to be outside "Forest Service authority" and inconsistent with "the inherent capability of the plan area."³⁷⁴ Third, while *ecosystem* plan components must directly maintain or restore ecological integrity and ecosystem diversity, plan components for at-risk species need only maintain or restore relevant *ecological conditions*, rather than ensure the conservation of the species themselves.³⁷⁵ However, providing the ecological conditions necessary for at-risk species could entail limiting human activities (e.g., recreation), development (e.g., roads), and resource use (e.g., mining) and that influence species diversity and persistence.³⁷⁶

As a consequence of this balancing act, the 2012 rule contains a set of protections for biodiversity and safeguards for at-risk species that may only be as robust as the responsible

³⁷¹ *Id.* § 219.8(a)(1); *id.* § 219.9(b)(1)(a)).

³⁷² *Id.* § 219.7(e)(1)(iv); *id.* § 219.15(d)(3).

³⁷³ *Id.* § 219.9(b).

³⁷⁴ The only provision that states that the responsible official is required to "[d]ocument the basis for [their] determination" that "it is beyond the authority of the Forest Service or not within the inherent capability of the plan area" is in the SCC requirements. 36 C.F.R. § 219.9(b)(2) (emphasis added). The requirements for other species and the requirements for providing for ecosystem diversity and integrity but do not require documentation of such a determination. *Id.* § 219.9.

³⁷⁵ 36 C.F.R. § 219.9(a)(1) requires plans to "include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area." 36 C.F.R. § 219.9(a)(2) requires plans to "include plan components, including standards or guidelines, to maintain or restore the diversity of ecosystems and habitat types throughout the plan area." 36 C.F.R. § 219.9(b)(1) requires plan components to "provide the *ecological conditions necessary to*: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area" (emphasis added).

³⁷⁶ The term "ecological conditions" is defined in 36 C.F.R. § 219.19 and FS Directive FSH 1909.12.23.13, Land Management Planning Handbook (U.S.D.A. 2015). For a discussion of this definition, see *supra* notes 61-64.

official is willing to make them. This creates a situation in which the fine filter (i.e., species-specific plan components) is likely to be applied unevenly. Such an outcome undermines the Agency's stated desire for consistent implementation of the biodiversity requirements across the NFS.³⁷⁷ While it is beyond the scope of this paper to compare implementation of the biodiversity requirements across every plan that has been revised under the 2012 rule, examining a single case study provides insights into how some responsible officials may interpret their new set of conservation obligations. The case study below also provides a model for how to assess compliance of forest plans with the biodiversity regulations.

IV. IMPLEMENTING THE NEW BIODIVERSITY CONSERVATION APPROACH: INADEQUATE PROTECTIONS FOR SPECIES OF CONSERVATION CONCERN IN THE RIO GRANDE NATIONAL FOREST PLAN

In their authoritative text on natural resource law, Rasband et al. conclude their discussion of the new biodiversity protections under the 2012 rule by stating:

It remains to be seen how well the Forest Service applies th[e] coarse and fine filters when it develops future [forest plans]. The commitment to address issues at the ecosystem and species levels represents an important advance, even though the methods for implementing this obligation remain somewhat vague. . . . One suspects that the courts will continue to give the Forest Service wide latitude in deciding how best to manage the biological resources of our national forests.³⁷⁸

Now that some forest plans revised under the 2012 rule are being finalized, it is finally possible to assess how national forests are applying the new coarse-filter/fine-filter approach. The clients of this paper are concerned that the Rio Grande National Forest Land Management Plan ("RGNF Plan") in particular fails to adequately protect biodiversity. Defenders of Wildlife's critiques of the RGNF Plan's SCC plan components and recommendations for improvement are summarized in Appendices C and D. The RGNF is rich in biodiversity, with the elevational and topographic variability to support high alpine ecosystems, mixed conifer forests, pinyon-juniper woodlands, montane grasslands, sagebrush shrublands, and riparian ecosystems all within the same unit.³⁷⁹ This tapestry of ecosystems and microclimates provides habitat for 260 species of vertebrates,³⁸⁰ including dozens of at-risk species such as the Uncompahgre fritillary butterfly (*Boloria acrocneuma*) (an endangered species), Gunnison sage-grouse (*Centrocercus minimus*) (a threatened species), wolverine (*Gulo gulo*) (which has been proposed as threatened), and boreal toad (*Anaxyrus boreas*) (which is an SCC).³⁸¹ The RGNF is also the first national forest in the Rocky Mountain Region to revise its forest plan in accordance with the 2012 forest planning

³⁷⁷ USFS states that, under the new biodiversity conservation framework, it expects "NFS lands to more consistently provide the ecological conditions necessary to maintain the diversity of plant and animal communities and the persistence of native species." 77 Fed. Reg. 21,176 (Apr. 9, 2012) (emphasis added).

³⁷⁸ RASBAND ET AL., *supra* note 1, at 1458.

³⁷⁹ RGNF Plan, *supra* note 78, at 82-83.

³⁸⁰ U.S. Dep't of Agric., U.S. Forest Serv., Rio Grande National Forest Assessment 5 - Identifying and Assessing At-risk Species, 1 (Jul. 2016) [hereinafter RGNF Assessment 5].

³⁸¹ RGNF Plan, *supra* note 78, at 216-217, Tables 48-49.

regulations.³⁸² The RGNF Plan is therefore a useful case study in analyzing the controversy surrounding implementation of the biodiversity requirements under the 2012 rule.

This case study reveals that the RGNF Plan record (the assessments, the NEPA documents, the plan, and the record of decision) fails to adequately demonstrate: 1) how the plan components provide the ecological conditions necessary to maintain viable populations of each of the SCC in the plan area (as required by 36 C.F.R. § 219.9) and 2) how the monitoring program will allow the responsible official to assess the effectiveness of the SCC plan components (as required by 36 C.F.R. § 219.12). For certain SCC, the lack of species-specific plan components leaves them vulnerable to threats to their persistence within the plan area. Other SCC lack any plan components at all. Additionally, the explanation of how the ecosystem plan components are supposedly sufficient to maintain viable populations of those imperiled species (as required by 36 C.F.R. § 219.14) is unclear at best and nonexistent at worst. Finally, the failure to integrate the monitoring program with the relevant plan components precludes any useful assessment of how the plan will provide the ecological conditions necessary to maintain a viable population of each SCC.

A. The Need to Clarify How the Plan Components Meet the Biodiversity Requirements

The explanation in the draft ROD for the RGNF Plan³⁸³ of how the plan components meet the diversity requirements of the 2012 rule is very vague. As previously mentioned, the 2012 rule requires that the ROD for each revised plan provide an “explanation of how the plan components meet . . . the diversity requirements of § 219.9.”³⁸⁴ The ROD for the 2012 rule states that this provision was included “to increase transparency and explain the rationale for decisionmaking.”³⁸⁵ For this same reason, 36 C.F.R. § 219.14(a)(4) requires that the ROD for each revised plan “document how the best available scientific information was used to inform planning, plan components, and other plan content, including the monitoring program.”³⁸⁶

Yet the draft ROD for the RGNF Plan provides the public with a very opaque window, if any, into the logic or evidence behind the responsible official’s decisions regarding the development and evaluation of biodiversity plan components. Instead, the draft ROD makes the following broad claim:

The [RGNF Plan] provides plan components to protect and maintain ecosystem composition, structure, function, and connectivity, and species-specific direction—where needed—to maintain ecological conditions and viable populations within the plan area. . .

³⁸² RGNF Assessment 5, *supra* note 380, at 4.

³⁸³ U.S. Dep’t of Agric., U.S. Forest Serv., Rio Grande National Forest Land Management Plan Draft Record of Decision (Aug. 2019) [hereinafter RGNF Draft ROD]. The ROD has not been finalized yet (i.e., is still only a draft) because “[p]lan decisions will not be approved until the Agency has resolved any objections.” 77 Fed. Reg. 21,243 (Apr. 9, 2012). *See also* 36 C.F.R. § 219.58 (2012). At present, the responsible official is presumably still incorporating the instructions of the reviewing officer in the Response to Eligible Objections, which was issued on March 10, 2020.

³⁸⁴ 36 C.F.R. § 219.14 (2012).

³⁸⁵ 77 Fed. Reg. 21,184 (Apr. 9, 2012).

³⁸⁶ *Id.* at 21,193.

Most habitat needs of species of conservation concern are met by plan components at the coarse-filter level. Some species have fine-filter plan components to address species-specific needs where the coarse filter was inadequate or indeterminate.³⁸⁷

Neither the draft ROD nor the plan itself identify which of the SCC plan components are intended to be species-specific or why species-specific plan components were required for those species (i.e., why the ecosystem plan components were insufficient in some cases). Similarly, neither document explains how the responsible official came to the determination that ecosystem plan components alone are sufficient to support the viability of the remaining SCC. The responsible official *states* that diversity requirements have been met, rather than actually *explaining* how they were met, as required by 36 C.F.R. § 219.14. The unsubstantiated claim that the plan components are sufficient to provide the ecological conditions necessary for all SCC is further undermined by the fact that there are no plan components whatsoever—not even general ecosystem plan components—for two of the SCC in the plan area: the northern pocket gopher (*Thomomys talpoides agrestis*) and plains pocket mouse (*Perognathus flavescens*).³⁸⁸

In response to the objections of Defenders of Wildlife et al.,³⁸⁹ the reviewing officer identified “a need to clarify how the plan components provide ecological conditions to support a viable population of each SCC in the plan area.”³⁹⁰ The reviewing officer further found that while “the draft ROD suggests that the evaluation of the adequacy of the plan components to provide ecological conditions to support viable populations is enclosed in the final EIS,” that document “does not provide a clear description of how the specific plan components together address threats and ecological conditions” of SCC.³⁹¹ Consequently the reviewing officer “instructed”³⁹² the responsible official to demonstrate precisely *how* the plan components “effectively provide for the requirements to meet 36 C.F.R. § 219.9 as related to SCC.”³⁹³ The reviewing officer also instructed the responsible official to develop plan components to provide the ecological conditions necessary to maintain viable populations of northern pocket gopher and plains pocket mouse, the species for which the RGNF Plan failed to develop any plan components.³⁹⁴ This decision, along with the requirements of 36 C.F.R. § 219.14, demonstrates that the responsible official must make clear exactly how the plan components meet the viability requirements and how BASI was used in that decision-making process.

³⁸⁷ RGNF Draft ROD, *supra* note 383, at 12, 14.

³⁸⁸ See RGNF Plan, *supra* note 78, at 180; see also Appendix D.

³⁸⁹ For a description of the objections process under the 2012 planning rule, see *supra* note 86.

³⁹⁰ U.S. Dep’t of Agric., U.S. Forest Serv., Rio Grande National Forest Land Management Plan Revision Reviewing Officer Response to Eligible Objections, 62 (Mar. 10, 2019) [hereinafter Response to Objections].

³⁹¹ *Id.* at 66.

³⁹² The language in the 2012 rule seems to indicate that compliance with the reviewing officer’s “instructions” is mandatory. The reviewing officer’s response to objections “may contain instructions to the responsible official” and the “decision by the responsible official approving a plan, plan amendment, or plan revision must be consistent with the reviewing officer’s response to objections.” 36 C.F.R. § 219.57 (2012).

³⁹³ Response to Objections, *supra* note 390, at 62.

³⁹⁴ *Id.* at 67.

B. Gunnison's Prairie Dog Case Study

The vague and inadequate explanation of the sufficiency of the SCC plan components mirrors the vagueness and inadequacy of the SCC plan components themselves. This issue is perhaps most evident in the case of the plan components and monitoring indicators related to the Gunnison's prairie dog (*Cynomys gunnisoni*), an SCC with an estimated population of eight individuals within two areas of the RGNF.³⁹⁵ As justification for listing the species as an SCC, the RGNF Plan states, "The persistence concern for this species is sylvatic plague, which often wipes out most if not all of infected colonies and often involving much larger populations than found on the Forest."³⁹⁶ However, there are a whole host of other threats to the species that USFS staff identified during the assessment phase of the RGNF Plan revision.³⁹⁷ The plan components related to this SCC are an example of poor implementation of the ecosystem-species conservation approach and a flawed monitoring program. Furthermore, this case study reveals how the discretion provided to the responsible official in 36 C.F.R. § 219.9 has the potential to undermine the efficacy of the rule's biodiversity protections.

1. The Inadequacy of the Ecosystem Plan Components

Neither the RGNF Plan nor the final EIS explain what ecological conditions are necessary to maintain viable populations of Gunnison's prairie dog. The only relevant information either document provides is the statement in the final EIS justifying the species' inclusion as an SCC due to the threat of sylvatic plague.³⁹⁸ The final EIS does not describe how any of the plan alternatives under consideration would affect the species, except to mention that a proposed special interest area "would enhance ecological integrity related to the persistence of several species of conservation concern," including the Gunnison's prairie dog.³⁹⁹ However, the Gunnison's Prairie Dog Species Overview conducted during the assessment phase of the RGNF Plan revision⁴⁰⁰ does detail some of the key threats to the species. In addition to sylvatic plague, direct threats include, poisoning, shooting, and mining.⁴⁰¹ The species also suffers from declining habitat quality due to drought, livestock grazing, noxious weeds, altered fire regimes,

³⁹⁵ RGNF Plan, *supra* note 78, at 162, Table 21.

³⁹⁶ *Id.*

³⁹⁷ U.S. Dep't of Agric., U.S. Forest Serv., Gunnison's Prairie Dog Species Overview (n.d.) [hereinafter Species Overview].

³⁹⁸ U.S. Dep't of Agric., U.S. Forest Serv., Rio Grande National Forest Land Management Plan Final Environmental Impact Statement, 558, Table 145 (Aug. 2019).

³⁹⁹ *Id.* at 338.

⁴⁰⁰ During the assessment phase of the RGNF Plan revision, USFS staff developed a list of at-risk species in the plan area. In order to generate this list, USFS staff drafted "Species Overviews" intended to "highlight key elements of life history, distribution, risk factors and ecological conditions necessary for recovery, conservation and viability of at-risk species." RGNF Assessment 5, *supra* note 380, at 5. The information from the overviews was then entered into a "species database" meant to summarize "ecological conditions required by each species as well as risk factors that influence recovery, conservation, and viability." *Id.*

⁴⁰¹ Threats from mining include "clearing and crushing of vegetation, reduction in available habitat due to pad construction, road development and well operation, displacement and killing of animals, alteration of surface water drainage, and increased compaction of soils." Species Overview, *supra* note 397, at 3.

agricultural land conversion, and vegetative encroachment from shrubs, pinyon pines, and junipers.⁴⁰²

The ecosystem plan components for Gunnison’s prairie dog are too broad to directly address any of these threats to the viability of the species. The RGNF Plan identifies just two plan components related to Gunnison’s prairie dog. One plan component is the following guideline: “To avoid or minimize adverse effects to listed species and their habitat, management actions should be designed with attention to threatened, endangered, proposed, or candidate species and their habitats.”⁴⁰³ First of all, guidelines are supposed to *constrain* “project and activity decision making” in order to achieve desired conditions or mitigate adverse impacts.⁴⁰⁴ This guideline fails to provide any specific constraints or establish a connection to any desired condition or mitigation measures. Moreover, it is unclear how this guideline is related to Gunnison’s prairie dog, which, as an SCC, is, by definition, not yet a federally threatened, endangered, proposed, or candidate species.⁴⁰⁵

The second and final plan component associated with Gunnison’s prairie dog is the following guideline: “To maintain viability of species of conservation concern, reduce habitat fragmentation and maintain structural conditions of sagebrush ecosystems through design of management activities. Patch sizes should not be less than 5 acres.”⁴⁰⁶ The defining structural characteristics of sagebrush ecosystems are not identified, unless patch size is meant to be the only important element of ecosystem structure. The rationale behind that specific acreage is also never explained. Additionally, without specifying the causes of sagebrush habitat fragmentation on the RGNF, it is impossible to ascertain how this guideline will serve to mitigate the threat.⁴⁰⁷ Finally, one would expect Gunnison’s prairie dog to have a standard or guideline protecting the montane grasslands on the unit, given that the Species Overview identified “grasslands and semi-desert and montane shrublands” as the species’ primary habitat.⁴⁰⁸ However, no such plan components were included.

2. *The Need for Species-Specific Plan Components*

The threats facing Gunnison’s prairie dog are exactly the type of stressors that are meant to be addressed by application of the fine-filter element of the ecosystem-species conservation approach. Indeed, the FSH explicitly identifies recreation, mining, and grazing—all of which present threats to the Gunnison’s prairie dog⁴⁰⁹—as important ecological conditions that must be

⁴⁰² *Id.* at 3-4.

⁴⁰³ RGNF Plan, *supra* note 78, at 177, Table 23; *see also* G-TEPC-1 in Appendix C.

⁴⁰⁴ 36 C.F.R. § 219.7 (2012).

⁴⁰⁵ An SCC is “a species, *other than* a federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species’ capability to persist over the long-term in the plan area” 36 C.F.R. § 219.9(c) (2012) (emphasis added).

⁴⁰⁶ RGNF Plan, *supra* note 78, at 177, Table 23; *see also* G-SCC-3 in Appendices B-D.

⁴⁰⁷ Defenders of Wildlife’s concern with these plan components are summarized in Appendix C and detailed in Defenders of Wildlife et al. Objection, *supra* note 274, at 67-68.

⁴⁰⁸ Species Overview, *supra* note 397, at 2.

⁴⁰⁹ *Id.* at 3.

managed for at-risk species.⁴¹⁰ It is evident that species-specific plan components are needed to maintain viable populations of Gunnison’s prairie dog. The final PEIS for the 2012 rule stipulated that “species-specific plan components may be needed to more fully address potential stressors on [some] species, beyond vegetation composition and structure, which are under management control, such as human disturbance [or] road and trail placement.”⁴¹¹ For instance, as previously mentioned, the ROD for the 2012 rule recognized a species-specific plan standard may be necessary to protect red-cockaded woodpecker cavities from the threat posed by prescribed burns.⁴¹² Additionally, the 2015 directives emphasize the importance of considering threats to the persistence of each at-risk species when evaluating whether species-specific plan components are necessary.⁴¹³ The final EIS contains no information suggesting that the responsible official followed this guidance and evaluated the ability of the ecosystem plan components to effectively address the stressors on Gunnison’s prairie dog within the RGNF.

Simply managing the “vegetation composition and structure”⁴¹⁴ of sagebrush ecosystems and montane grasslands does not adequately mitigate the threats posed by sylvatic plague or drought, nor the “human-related stressors”⁴¹⁵ related to poisoning, shooting, or mining. These stressors are within USFS’s “management control”⁴¹⁶ and could be addressed by species-specific plan components. For instance, the RGNF Plan could include standards and guidelines that 1) require USFS to coordinate with Colorado Parks and Wildlife to address sylvatic plague (e.g., through appropriate flea control methods); 2) prohibit harvesting Gunnison’s prairie dog within the RGNF year-round; 3) restrict oil and gas development within current colony areas and expansion areas; 4) zone development (e.g. oil and gas development) and human activities (e.g., motorized recreation) to maintain large habitat blocks; 5) curb shrub and pinyon-juniper encroachment and remove noxious weeds; and 6) manage livestock grazing, fire, natural resource extraction, and recreation to minimize cumulative impacts during periods of drought.⁴¹⁷ Such species-specific plan components would create the “safety net”⁴¹⁸ necessary to catch a species falling through the

⁴¹⁰ According to the FSH, “[e]cological conditions include habitat and the effects of human uses (for example, recreation, grazing, and mining.” FS Directive FSH 1909.12.23.13, Land Management Planning Handbook (U.S.D.A. 2015). For further discussion, see text accompanying *supra* notes 61-64.

⁴¹¹ Final PEIS, *supra* note 17, at 133.

⁴¹² 77 Fed. Reg. 21,212 (Apr. 9, 2012). See also text accompanying *supra* note 243.

⁴¹³ See FS Directive FSH 1909.12.23.13, Land Management Planning Handbook (U.S.D.A. 2015). For further discussion, see text accompanying *supra* notes 244-246.

⁴¹⁴ Quoting text accompanying *supra* note 411.

⁴¹⁵ The 2013 directives state that in assessing the status of at-risk species in the plan area, the responsible official should “[e]valuate human-related stressors (for example, roads, disturbance and displacement, dams, and so on)” FS Directive FSH 1909.12.55, Land Management Planning Handbook (U.S.D.A. 2015).

⁴¹⁶ Again, referencing the text accompanying *supra* note 411: “species-specific plan components may be needed to more fully address potential stressors on [some] species, beyond vegetation composition and structure, which are under *management control*, such as human disturbance, road and trail placement.” Final PEIS, *supra* note 17, at 133 (emphasis added).

⁴¹⁷ These recommendations are based on information gleaned from the Defenders of Wildlife et al. Objection (*supra* note 274, at 67-68) and Species Overview (*supra* note 397, at 3-4).

⁴¹⁸ As quoted in the text accompanying *supra* note 242, the draft ROD for the 2012 rule states: “The fine-filter provisions are intended to provide a *safety net* for those species whose specific habitat needs or

cracks of the vague RGNF coarse-filter plan components, which focus on habitat management broadly and overlook specific threats.

3. *The Need to Integrate Monitoring Indicators with Relevant and Specific Plan Components*

The monitoring questions and indicators associated with Gunnison’s prairie dog, like the guidelines associated with the species, are not tied to any specific, relevant desired conditions. According to 36 C.F.R. § 219.12(a)(2), “[m]onitoring questions and associated indicators must be designed to . . . measur[e] management effectiveness and progress toward achieving or maintaining the plan’s desired conditions or objectives.” Additionally, as discussed in Section F of Part III, the 2012 rule requires monitoring the “status of a select set of ecological conditions required . . . [to] maintain a viable population of each species of conservation concern.”⁴¹⁹ This provision was specifically added to ensure that each national forest’s monitoring program would “measure the effectiveness of plan components (both ecosystem and species-specific components) designed to maintain or restore the ecological conditions and key ecosystem characteristics necessary to . . . contribute to the recovery of, conserve, or maintain the viability of at-risk species within the plan area.”⁴²⁰

In the RGNF monitoring program, the questions and indicators related to Gunnison’s prairie dog do not appear to allow the responsible official to assess the effectiveness of the plan components, as required in the provisions above. As can be seen in Appendix E, Monitoring Question 3 of the RGNF Plan asks: “What is the status and trend of key ecosystem characteristics associated with species of conservation concern, threatened and endangered species, and resident and migratory bird species?”⁴²¹ The related indicator is the “[a]cres and extent of Gunnison [sic] prairie dog colonies.”⁴²² It is unclear how this indicator is an “ecosystem characteristic,” per the question it is meant to answer. It also remains to be explained whether occupancy of the colonies by Gunnison’s prairie dog is a relevant aspect of the monitoring data to be collected. Moreover, the indicator is not tiered to any plan components explicitly associated with the species. The RGNF Plan provides a list of desired conditions associated with Monitoring Question 3 but fails to connect them to the specific monitoring indicators (see Appendix E). Because the plan does not explicitly identify any desired conditions related to the Gunnison’s prairie dog, it is difficult to determine which of the desired conditions within that list, if any, are relevant. Given that the guideline for managing sagebrush ecosystems was identified as an SCC plan component for Gunnison’s prairie dog, we can surmise that the following desired condition may also apply to the species: the “[s]tructure, composition, and function of sagebrush ecosystems meet the needs of associated species, including species of conservation concern.”⁴²³ However, this desired condition does not appear in the list of plan components associated with Monitoring Question 3.

other influences on their life requirements may not be fully met under the coarse-filter provisions.” 77 Fed. Reg. 21,175 (Apr. 9, 2012) (emphasis added).

⁴¹⁹ 36 C.F.R. § 219.12(a)(5)(iv) (2012).

⁴²⁰ FS Directive FSH 1909.12.32.13b, Land Management Planning Handbook (U.S.D.A. 2015); *see also* Final PEIS, *supra* note 17, at 136; *see also* 77 Fed. Reg. 21,219 (Apr. 9, 2012).

⁴²¹ RGNF Plan, *supra* note 78, at 88, Table 14; *see also* Appendix E.

⁴²² *Id.*

⁴²³ *Id.* at 23; *see also* DC-SCC-1 in Appendix B.

Even if it did, it would not be of much use. The characteristics of sagebrush ecosystem structure, composition, and function necessary to meet the needs of Gunnison’s prairie dog, or any other SCC, are not identified.⁴²⁴

Ultimately, one is left wondering: What is the purpose of the Gunnison’s prairie dog monitoring questions? How is management to be informed by measuring the acreage of their colonies? How does this indicator provide the information necessary to evaluate the effectiveness of the plan components? Together, the monitoring indicators and associated plan components should be capable of answering these questions. Their inability to do so highlights the disjointed nature of the RGNF Plan. As such, the plan fails to integrate the three parts of the 2012 planning framework: assessment (including the status of at-risk species and “the ecological conditions necessary to sustain them”⁴²⁵), plan components, and monitoring indicators (which are intended to assess progress towards achieving the management objectives).⁴²⁶ The *assessment* of the ecological conditions needed to support Gunnison’s prairie dog is not clearly described anywhere in the final EIS or the plan. Instead, the relevant ecological conditions are only alluded to in the Species Overview, a supplementary assessment document that takes substantial effort to locate on the planning website. Additionally, the measures needed to mitigate threats to the species are not reflected in the *plan components*. Finally, the *monitoring questions* are not tied to any desired conditions that would sustain viable populations of the species.

4. Key Takeaways

The decision to not include species-specific plan components for Gunnison’s prairie dog reveals the Achilles’ heel of the 2012 rule’s biodiversity provisions: the responsible official has the discretion to determine whether to include species-specific plan components (i.e., whether to apply the fine filter). The desire to maintain the discretion of responsible officials in managing the resources on their unit was a common theme underlying the development of the 2012 rule, as discussed throughout this paper. The unfortunate consequence of the emphasis on discretion is that some national forests may rely excessively ecosystem plan components and therefore fail to provide the safety nets⁴²⁷ necessary for the most vulnerable species.

However, the administrative record provides additional context that could guide improved implementation of the ecosystem-species conservation approach. An analysis of the rationale behind the biodiversity provisions reveals that discretion is to be balanced with transparent and science-based decision-making. As explained throughout this paper, the administrative record indicates that the responsible official should include species-specific plan components for at-risk species that have specific habitat requirements or are facing discrete threats within the management control of USFS. Moreover, these plan components should “do more than mitigate harm,” according to the ROD for the 2012 rule.⁴²⁸

⁴²⁴ See Defenders of Wildlife et al. Objection, *supra* note 274, at 48; see also Appendix C.

⁴²⁵ FS Directive FSH 1909.12.12.53, Land Management Planning Handbook (U.S.D.A. 2015).

⁴²⁶ See 77 Fed. Reg. 21,166 (Apr. 9, 2012); see also 36 C.F.R. § 219.5 (2012).

⁴²⁷ See *supra* text accompanying note 242.

⁴²⁸ See 77 Fed. Reg. 21,163 (Apr. 9, 2012).

Additionally, the RGNF Plan objection process has revealed that responsible officials can be held accountable for providing a clear and thorough explanation of the adequacy of the plan components. If the reviewing officer's response to objections to the RGNF Plan is any indication, responsible officials will not be able to simply state that the diversity requirements have been met; they will have to justify how the plan components provide the ecological conditions necessary to maintain viable populations of each at-risk species. This provides a useful check on overly vague ecosystem plan components.

Finally, in terms of monitoring, simply including an indicator related to an at-risk species does not satisfy the requirement to assess the status of ecological conditions related to at-risk species. The indicator must be tied to specific and relevant desired conditions in order to fulfill the purpose of monitoring,⁴²⁹ which is to assess the effectiveness of the plan components.

Ultimately, some national forests revising their plans under the 2012 rule may attempt to craft vague biodiversity plan components and avoid demonstrating how the plan provides the ecological conditions necessary to support viable populations at-risk species. The RGNF Plan is an example of a plan that fails to employ the fine filter in the appropriate circumstances, which is essential to successful implementation of the ecosystem-species approach to biodiversity conservation. Evidence from the administrative record substantiates the claim that forest plans must include species-specific plan components to address specific threats and habitat needs of at-risk species. Furthermore, a determination by the responsible official to rely on ecosystem plan components instead must at least be clearly explained and supported by BASI.

V. CONCLUSION

A prevalent theme in the development and revision of the forest planning framework is the struggle to balance “the *flexibility* to respond to the various social, economic, and ecologic needs across a very diverse system, while including a *consistent* set of process and content requirements for NFS land management plans.”⁴³⁰ With regards to the biodiversity provisions, this created a tension between including “strong, specific requirements in the rule for maintaining species diversity” and avoiding committing to prescriptive requirements that would “result in endless litigation that [would] keep the Agency from moving forward with planning and with projects and activities.”⁴³¹ On the one hand, USFS rejected alternative versions of the 2012 rule that did “not provide explicit requirements for plan components necessary to implement the NMFA statutory requirement for maintaining diversity of plant and animal communities.”⁴³² Their justification for including such requirements in the final version of the 2012 rule was that allowing “interpretation of how to meet the NFMA diversity requirement at

⁴²⁹ According to the 2012 rule, “[m]onitoring information should enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed. . . . Monitoring questions and associated indicators must be designed to inform the management of resources on the plan area, including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan’s desired conditions or objectives.” 36 C.F.R. § 219.12(a)(1-2) (2012).

⁴³⁰ 77 Fed. Reg. 21,166 (Apr. 9, 2012) (emphasis added).

⁴³¹ *Id.* at 21,174.

⁴³² Final PEIS, *supra* note 17, at 145.

the planning unit level” would result in forest plans that vary excessively “in the extent to which they effectively maintain species viability within the plan area.”⁴³³ On the other hand, the rule grants substantial discretion to the responsible official for each planning unit, allowing them to determine when to employ the fine filter of the ecosystem-species conservation approach.⁴³⁴ The rule also includes the caveat that forest plans “must provide for the diversity of plant and animal communities, *within the management authority of USFS and consistent with the inherent capability of the plan area. . . .*”⁴³⁵

The 2011 Science Review suggests that the biodiversity requirements may have erred on the side of being overly discretionary. One scientist offered the following critique:

The primary concern about the vagueness of the methods for conserving plant and animal diversity is that individual administrative units (e.g., 155 national forests) will each interpret the rule, and section § 219.9 in particular, in a different way. This will lead to highly inconsistent and inefficient application of management practices to conserve plant and animal diversity. There is a fine balance between being overly prescriptive and allowing for too much local discretion. My sense is that USFS generally favors local discretion over system-wide standards. Part of their argument is based on the belief that the science is too dynamic to be overly prescriptive in the alternatives. However, this is not true. Science is dynamic in the methods it employs to understand and manage ecological systems not in the objective to conserve these systems for future human generations.⁴³⁶

Despite this feedback, USFS chose to retain vague language in § 219.9 and protect the discretion of the responsible official. The 2012 rule therefore stops short of establishing truly robust biodiversity protections.

Overall, the biodiversity conservation framework under the 2012 rule is more scientifically sound, comprehensive, and proactive than the protections under the 1982 rule, which focused on simply mitigating adverse impacts to habitat. However, as the RGNF Plan case study demonstrates, the new biodiversity provisions may not be capable of reliably ensuring that ecological integrity, ecosystem diversity, and species viability will be consistently maintained or restored across all national forests. While the 2012 rule itself is not very prescriptive, the administrative record paints a clearer picture of the circumstances triggering the fine-filter biodiversity protections: when an at-risk species is facing a discrete threat or has specific needs that are unaddressed by broad-scale vegetation management. Public comments and legal challenges informed by the regulatory history of the 2012 rule, as explained in this paper, will be able to more effectively interpret the new biodiversity provisions and more effectively argue for stronger, more specific plan components for at-risk species. Ultimately, applying the insights gleaned from the administrative record throughout this analysis would lead to forest plans that better achieve USFS’s stated goal of “more consistently provid[ing] the ecological conditions necessary to maintain [bio]diversity” across the entire NFS.⁴³⁷

⁴³³ *Id.*

⁴³⁴ 36 C.F.R. § 219.9(b)(1) (2012).

⁴³⁵ *Id.* § 219.9 (emphasis added).

⁴³⁶ Noon, *supra* note 106, at 60.

⁴³⁷ 77 Fed. Reg. 21,176 (Apr. 9, 2012).