Applying the 2012 Planning Rule to Conserve Species: A Summarized Practitioner's Reference

Note:

This document is a technical and scientific reference to aid field practitioners applying the 2012 Rule. It does not represent policy or guidance.

Introduction

The National Forest Management Act of 1976 directs managers of National Forest System (NFS) lands to "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." This challenging mandate is embraced by the Forest Service. At the heart of the challenge is maintaining ecosystem integrity and ecosystem processes while providing ecosystem services and renewable resources to society. Success requires understanding the interconnectivity of three major portions of the 2012 Forest Service Planning Rule: assessment, planning, and monitoring, in relation to maintaining ecological integrity. Added complexity occurs when considering the ecosystems themselves, their organization and interactions, and in particular the multiple scales at which they operate and are influenced by society. This document examines the interface between at-risk species conservation and the broader planning rule, and how to use scientific approaches to ensure the conservation of at-risk species (Box A).

Box A. At-risk Species

"At-risk species ... are federally recognized threatened, endangered, proposed, and candidate species; and species of conservation concern" (SCC, Box B).

2012 Planning Rule Directives, FSH 1909.12, Chapter 20

This document was developed to 1) provide an overview of concepts related to conservation planning for at-risk species under the 2012 Planning Rule, 2) increase understanding of similarities and differences between the 2012 and 1982 Planning Rules, and 3) describe the state of relevant science that bears on species conservation. Our emphasis is on species of conservation concern (SCC; Box B), a subset of at-risk species, but we also examine species designated under the Endangered Species Act (ESA) because the 2012 Rule provides specific direction for these species. A more in-depth companion document is available to those seeking more detailed discussions of these topics and relevant references to the science[1]. Our primary audience includes Forest Service leaders, staff officers, biologists, planners, and other technical specialists who may require more detailed information than can be provided in the Directives. While the Rule and associated Directives are the definitive sources for planning direction, this overview and its companion document provide a primer on important planning and science elements relevant to conservation of at-risk species under the 2012 Planning Rule.

Box B. Species of Conservation Concern (SCC, 2012 Planning Rule)

"…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."

[1] Hayward, G. D., C. H. Flather, M. M. Rowland, R. Terney, K. Mellen-McLean, K. D. Malcolm, C. McCarthy, and D. A. Boyce. 2016. Applying the 2012 Planning Rule to conserve species: a practitioner's reference. Unpublished paper, USDA Forest Service, Washington, D.C.

Key Characteristics of the 2012 Planning Rule

In this section we explore the characteristics of the 2012 Planning Rule as they relate to species conservation, including maintaining viable populations of species of conservation concern and contributing to the recovery of species with federal status. We begin with a summary of the species conservation approach adopted by the 2012 Rule. This is followed by a comparison with the 1982 Rule, focusing on important differences between Rules to aid those familiar with the 1982 Rule in recognizing key characteristics of the 2012 Rule and associated Directives.

2012 Planning Rule: Overview of the Species Conservation Approach

Three key concepts are foundational for the 2012 Planning Rule: broad collaboration with all segments of society, using science effectively, and managing lands to achieve ecological integrity and sustainability. Therefore, species conservation under the 2012 Rule builds from carefully crafted desired ecological conditions focused on ecosystem characteristics for each plan area that reflect a functioning array of aquatic and terrestrial ecosystems (36 CFR 219.9). By maintaining or restoring the integrity and sustainability of ecosystems, NFS units are presumed to support the majority of plant and animal communities and to benefit at-risk species. At-risk species not adequately addressed by ecosystem plan components must be addressed through additional, species-targeted components under the 2012 Planning Rule. Addressing the bulk of species conservation by promoting broad ecological integrity, while including targeted plan components for select species as needed, has often been referred to as a "coarse filter / fine filter" approach to species conservation. However, we generally avoid using these terms now, instead referring to plan components focused on **ecosystem** or **system properties** and plan components focused on **species properties**.

Management of ecosystem characteristics to maintain and restore ecological integrity and ecosystem diversity is the backbone of the species conservation design of the 2012 Rule. This is clear in section 219.8 (Sustainability) and 219.9 (Diversity of Plant and Animal Communities). Section 219.9 stresses the need to approach species conservation by 1) developing plan components for ecosystem characteristics (structure, function, composition, and connectivity) and 2) including plan components for individual species when necessary to provide for the diversity of plant and animal communities. Hence, the 2012 framework for species conservation lies in analyses and plan direction that focus on both components, but with a primary emphasis on system properties. Species-specific plan components are reserved for those cases where the responsible official has determined that plan components for ecosystem characteristics are inadequate to conserve at-risk species in the plan area.

The 2012 Planning Rule direction for SCC stipulates that plan components are designed to provide for the maintenance or restoration of ecological conditions to maintain a viable population of each SCC within the plan area (36 CFR 219.9(b)(1)). The Rule acknowledges situations where it is not possible to provide ecological conditions to maintain viable populations of SCC because doing so is not within "Forest Service authority, the inherent capability of the plan area...[or] the fiscal capability of the unit" (36 CFR 219.1(g)). In these cases, the responsible official must document the basis for those determinations and include plan components that "contribute to maintaining a viable population of the species within its range" (36 CFR 219.9(b)(2)(ii)). This may be the case for many species, particularly in the face of a changing climate and accelerating anthropogenic pressures beyond the boundaries of NFS plan areas.

Comparing and Contrasting Basic Characteristics of the 2012 and 1982 Planning Rules

The 2012 and 1982 Planning Rules and associated Directives contain language describing the scope of taxa to be considered, the role of the Forest Service in conserving species diversity and viability, and guidance for monitoring progress toward species conservation goals. The 1982 Planning Rule provided a framework for species conservation that focused on both the broad ecological system and species-specific factors. However, the science and practice of ecosystem management was less developed when the 1982

Rule and Directives were drafted, and the planning process focused more on the status of habitats of individual species (e.g., threatened and endangered species, sensitive species, and management indicator species) than on the condition of the ecosystems upon which they rely (Table 1).

Table 1. Comparison of key elements for species conservation in the 2012 and 1982 Planning Rules and associated Directives.

Issue	2012 Rule and Directives	1982 Rule and Directives
Taxa addressed for viability	Native taxa screened to identify Species of Conservation Concern (SCC).	All existing native and desired non-native plants, fish, and wildlife species (see Departmental Regulation 9500-4).
Plant and animal diversity	Complementary ecosystem and species-specific approaches to maintain the diversity of plant and animal communities and the persistence of native species in the plan area.	Provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area (219.26 but also see 219.27(g) for another reference).
Species viability and conservation guidance	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 (if within the authority of the Forest Service and within the inherent capability of the plan area).	In order to ensure that viable populations will be maintained, habitat must 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.
Viability and species conservation framework	Explicit integration of ecosystem and species approaches: Ecosystem Diversity - Plan components provide the ecological conditions to maintain the diversity of plant and animal communities Species Diversity Plan components provide ecological conditions for at-risk species.	Built on an approach combining outcomes of: a) contributing to recovery of threatened and endangered species, b) evaluating taxa as Sensitive Species and managing habitat for viability of those taxa, c) managing the ecosystem to meet goals and objectives associated with Management Indicator Species (MIS) and d) identifying species of local interest for additional at-risk species.
Representative species for analysis	Focal Species [***Note**: Focal Species are not directly associated with species conservation and are only employed in monitoring. See Box C*] - Species selected to monitor status of ecological integrity - Provide meaningful information regarding plan effectiveness in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Selected on the basis of their functional role in ecosystems.	Management Indicator Species [***Note**: only one of five categories of MIS acted as surrogates intended to represent multiple species*] - Develop objectives for the subset of MIS specifically identified as surrogates - Estimate effects of each alternative on certain fish and wildlife populations (MIS)
Monitoring	Monitor a select set of ecological conditions that: - Include key characteristics of terrestrial and aquatic ecosystems - Indicate the degree to which land management is contributing to recovery of T&E species, conserving proposed and candidate species, and maintaining the viability of SCC.	Population trends of MIS will be monitored and relationships to habitat changes inferred. No specific requirements for monitoring at-risk species

Both the 2012 and 1982 versions of the Planning Rule prescribe plan components that maintain conditions to support species viability. However, it is helpful to understand that definitions of "viability" in the two Planning Rules differ. The 1982 Rule defines a viable population as one (emphasis added):

"*which has the estimated numbers and distribution of reproductive individuals to ensure its continued existence is well distributed in the planning area*."

The 1982 Planning Rule also describes how viability can be maintained:

"*In order to ensure that viable populations will be maintained, habitat must 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*."

The 2012 Planning Rule takes a different approach to manage for persistence of native species by relying primarily on a broad conservation fabric that emphasizes restoring and maintaining functioning and diverse ecosystems (36 CFR 219.1(c)). The 2012 Rule requires that plan components provide ecological conditions necessary to maintain **"a viable population"** of each SCC and defines (Sec. 219.19) 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."

Box C. Focal Species (2012 Rule)

"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. Focal species would be commonly selected on the basis of their functional role in ecosystems."

The 2012 Rule language provided above removes prior (i.e., 1982 Planning Rule) emphasis on estimating or maintaining a minimum viable population (MVP). This change was based on recognition that viability and persistence are both measured with a degree of uncertainty, which increases with the temporal scale of analysis. In other words, there is never complete certainty of long-term viability at any population size. Therefore, viability and persistence are most effectively represented as probabilities via some quantitative or qualitative risk assessment rather than a single threshold value implied by MVP estimates.

Foundation for Evaluating Species Status & Process to Promote Native Species Persistence

Conceptual Model for the 2012 Rule and Directives

Because species conservation under the 2012 Planning Rule is accomplished largely by restoring and maintaining the array of ecosystems across the planning area, analysis and management will be focused on a subset of individual species. The 2012 Rule identifies four steps in planning for at-risk species that will aid in determining when special attention is necessary for a particular species (Figure 1):

1) **Identify a list of at-risk species,** including ESA species and SCC, the latter of which is approved by the Regional Forester (FSH 1909.12, ch. 10 sec. 12.5): This list will be developed and displayed in the assessment but the list of SCC may be modified based on newly available science and public input outside the context of plan revision.
2) **Determine the status of at-risk species within the plan area**: Assessment of at-risk species uses existing information to understand the ecological conditions necessary to sustain them. This assessment, which may focus on individual species or species groups (FSH 1909.12 ch 12, 12.54), will be comprehensive enough to develop conservation approaches represented by plan components for the species or species group.
3) **Develop management direction** for each at-risk species: Conservation of at-risk species will be achieved largely through development of ecosystem plan components to "maintain or restore the

ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area" (§ 219.9(a)(1)), and to "maintain or restore the diversity of ecosystems and habitat types throughout the plan area" (§ 219.9(a)(2)). Species-specific plan components are appropriate to the extent that plan components for system characteristics have been determined to be insufficient 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 or contribute to a viable population of each species of conservation concern within the plan area" (§ 219.9(b)(1)).

- Regardless of the need for species-specific vs. ecosystem plan components, plan direction for at-risk species will begin with developing an explicit statement of desired conditions for the at-risk species. These desired conditions will be most effective when integrated with desired conditions for other features of the environment. The desired conditions should answer the question: What is the goal for the species – maintaining current distribution and abundance, increasing distribution and abundance? For listed species, the recovery plan will help in establishing desired conditions.
- The full range of potential plan components should be considered (desired conditions, objectives, suitability of areas, standards, and guidelines) within the framework of first considering approaches that emphasize management of ecosystem characteristics.

4) **Evaluate the success of the plan** in conserving at-risk species: How well the plan addresses species-specific conservation is determined by identifying ecological indicators associated with some of the at-risk species, which are a key part of the plan monitoring program and should complement or use similar monitoring elements identified for other plan components.

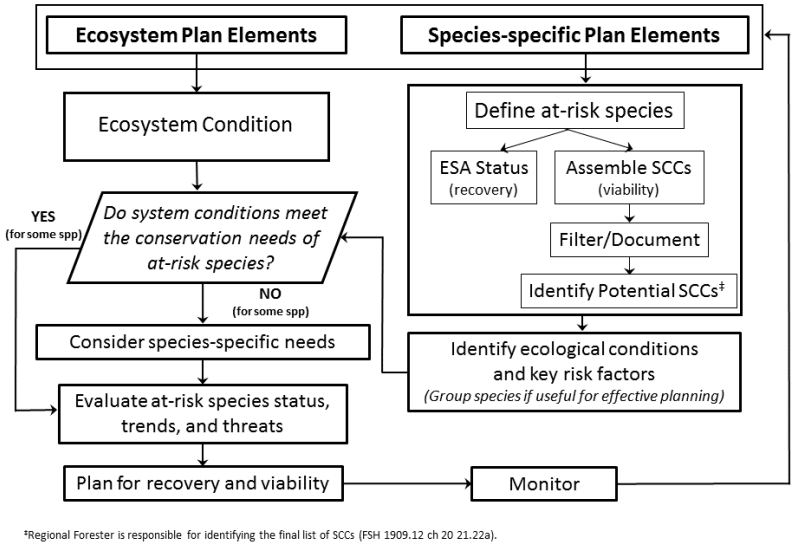

Figure 1. *Steps in the planning process that relate to conserving at-risk species. Note the emphasis on identifying important ecosystem plan elements for at-risk species, and the focus on these elements for evaluating whether system conditions meet these species' needs and inform monitoring.*

Here we briefly highlight the steps in land management planning that together provide for ecological conditions necessary to meet objectives for at-risk species under the 2012 Planning Rule (36 CFR 219.9(b)) and then provide limited discussion of several elements of the process to promote the conservation of at-risk species.

1. Assessment
    - Evaluate ecosystem status in the plan revision assessment with an emphasis on ecosystem integrity, ecosystem sustainability, and species diversity which will provide context for considering species-specific components outlined below (FSH 1909.12 ch 10 12.1 – 12.3).
    - Identify formally recognized threatened and endangered, proposed, and candidate species under the ESA, and identify potential SCC; species for which there exists scientific evidence indicating substantial concern for the species capability to persist over the long term in the plan area. (FSH 1909.12 ch 10 12.5).
    - Assessment of the status of at-risk species including consideration of risk factors and limiting factors. These may have been documented in recovery plans for ESA species but may need to be determined and reported for SCC (FSH 1909.12 ch 10 12.55).
2. Proposed Plan Development
    - Consider plan components that would contribute to conservation of at-risk species by addressing the primary risks and limiting factors. This step should begin by examining ecosystem plan components.
    - Write species-specific plan components when components emphasizing system properties are not sufficient to meet objectives for at-risk species. Note that the process of developing plan components, evaluation of those plan components, and assessment of potential effects is an iterative process (see FSH 1909.12 ch 20, 23.13).
3. Alternatives
    - Construct plan alternatives that represent a range of potential conservation approaches (FSH 1909.12 ch 20 23.13).
4. NEPA (National Environmental Policy Act) Effects Analysis
    - The examination of projected effects of plan direction on at-risk species will:
        1) provide well-reasoned evaluation of the likelihood that plan components designed to provide ecological conditions suitable to support at-risk species are sufficient (FSH 1909.12 ch 20 23.13 (2)).;
        2) consider a timeframe that is adequately long to allow the expression of plan direction on populations;
        3) consider effects of predominant risk factors, stressors, and limiting factors pertinent to the species;
        4) consider both cumulative effects (as referenced in NEPA) and the contribution of NFS management to species persistence;
        5) use currently accepted scientific information; and
        6) clearly portray uncertainty surrounding the assessment, including uncertainty due to gaps in knowledge.
5. Final Plan and Decision
    - Clearly document in the assessment the process used to select SCC and identify other at-risk species (FSH 1909.12 ch 10 12.5).
    - Describe, in the record of decision, the basis for judging that the proposed action satisfies the requirements about diversity of plant and animal communities in the 2012 Planning Rule. It is helpful, in reference to best available science, to highlight divergent scientific perspectives held by respected scientists and describe the argument for accepting one or another.
6. Monitoring
    - Clearly document the rationale for selecting the particular ecological conditions to monitor associated with at-risk species (FSH 1909.12 ch 30 32.13b).

Note: *Development of plan direction for threatened, endangered, candidate, and proposed species will differ from that of SCC. Formal listing decision documents and designation of critical habitat are likely to have defined conservation strategies for species identified through the ESA. Therefore, recommended*

actions listed in recovery plans and conservation strategies should be considered in developing plan components that contribute to the recovery of federally listed species. In contrast, recommended actions for SCC are unlikely to have been developed by another agency.

Identifying Species of Conservation Concern

The Directives provide criteria for selecting potential SCC, specifying that all species with status ranks of G/T1 or G/T2 on the NatureServe ranking system be considered and are "expected to be included unless it can be demonstrated and documented that known threats for these species, … are not currently present or relevant in the plan area" (FSH 1909.12 ch10, 12.52d). All species that were removed within the past 5 years from the Federal list of threatened or endangered species, and other delisted species that the regulatory agency still monitors, must also be considered.

While species highlighted through the above process **must be** evaluated as SCC, additional species **should be** considered, including (FSH 1909.12 ch10, 12.52d):

- Species ranked G/T-3, S1, or S2 by NatureServe.
- Species listed as threatened or endangered by relevant States, federally recognized Tribes, or Alaska Native Corporations.
- Species identified by Federal, State, federally recognized Tribes, or Alaska Native Corporations as a high priority for conservation.
- Species identified as SCC in adjoining National Forest System plan areas.
- Species that have been petitioned for Federal listing and for which a positive "90-day finding" has been made.
- Species for which the best available scientific information indicates local conservation concern about the species' capability to persist over the long term in the plan area due to:
  (a) Significant threats, caused by stressors on and off the plan area, to populations or the ecological conditions they depend upon (habitat). These threats include climate change.
  (b) Declining trends in populations or habitat in the plan area.
  (c) Restricted ranges (with corresponding narrow endemics, disjunct populations, or species at the edge of their range).
  (d) Low population numbers or restricted ecological conditions (habitat) within the plan area.

The species that result from exercising the above criteria might be thought of as a list of species for consideration, evaluated based on a set of criteria defined in the Directives (FSH 1909.12, ch. 10, sec. 12.52c). This screening process is designed to confront the list with evidence from the literature, species experts, or local information to determine for each species if the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area and therefore deserves management attention. Risk classification systems provide insights into the process of evaluating the conservation status of species. The following two criteria provide standards for the review process (FSH 1909.12 ch10, 12.52c):

- The species is recognized as native to the plan area and known to occur there (i.e., more than "accidental" or "transient").
- There is sufficient scientific information available (scientific literature, species or habitat studies, local information, and/or subject matter expertise or panel evaluations) to conclude that there is substantial concern about the capability of the species to persist over the long-term in the plan area (based on knowledge of abundance, distribution, threats to persistence, trends in habitat, or response to management). See the directives for discussion of this criterion at FSH 1909.12 ch10, 12.52c, and direction to evaluate species at FSH 1909.12 ch10, 12.53, FSH 1909.12 ch10, 12.55.

While the above criteria are clearly stated in the Directives, each may pose science dilemmas in some

cases as biologists evaluate potential SCC, as follows:

Evaluating Native Species Occurrence

The Rule indicates that SCC are limited to species "known to occur in the plan area" (36 CFR 219.9 (c)). Particularly challenging situations include: (a) species that are known or suspected to be extirpated from a plan area because of past habitat management, (b) species historically considered part of the flora / fauna of the area but which are difficult to detect, (c) species thought to be native to the area but not detected during recent surveys, and (d) species not observed directly in the plan area but observed immediately adjacent in similar habitat.

The dilemma outlined in circumstance 'a' should be addressed by acknowledging the definition of SCC and an understanding that SCC are not identified to address all conservation issues. The definition excludes species not occurring in a plan area. The potential conservation need defined in circumstance 'a' can be highlighted and addressed directly through plan components aimed toward restoring habitat or other conditions necessary for the species without designating the taxa as an SCC.

The dilemmas raised in circumstances 'b', 'c', and 'd' require careful consideration but become tractable if considered through standard science practice – evaluating the available evidence regarding species occurrence. We suggest that evidence regarding the potential occurrence of each taxa be examined and decisions regarding occurrence made based on the weight of scientific evidence. Therefore, the key question to answer may be: does the available evidence suggest the species occurs in the plan area or not?

Evaluating Substantial Concern

Just as no quantitative standard exists for identifying threatened or endangered species under the ESA, no objective standard has been established to indicate when substantial concern for long-term persistence is warranted. Criteria used to support decisions of substantial concern should be considered collectively, not in isolation. The key question practitioners should consider is where the weight of cumulative evidence points with respect to the capability of the species to persist over the long-term in the plan area.
An important consideration when evaluating conservation status is the relationship between each species and NFS management actions. Regardless of the influence of NFS management on species, a species may be identified as an SCC if "the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area" (36 CFR 219.9). Neither the definition of SCC at 36 CFR 219.9 nor the Directives (FSH 1909.12 Ch. 10 12.52 thru 12.53) indicate that a species must be threatened by Agency management to qualify as an SCC. After evaluation based on these criteria and following a process of soliciting public comment and evaluation of those comments, SCC are identified by the Regional Forester for the planning process (FSH 1909.12 ch20, 21.22a).

Evaluating Ecological Conditions to Support Viability and Persistence

Management decisions for at-risk species are made in the context of a risk assessment, acknowledging uncertainty. Several difficult, science-based issues must be confronted during any evaluation of species conservation status including, but not limited to, a lack of concrete information regarding many unlisted (non-ESA) species. Also, evaluation of population viability or persistence does not result in a dichotomous outcome – analysis cannot conclude that a population is or is not viable. Despite past discussion of and emphasis on MVPs there is no single, fixed population size above which a species is viable and below which it will become extinct; there is no MVP. Rather, over any specified time period, populations have an unknown probability of going extinct. The goal of any evaluation of population persistence is to estimate that probability (quantitatively or qualitatively) with the best precision that available information and ecological understanding permit. Consequently, viability is best expressed through varying levels of risk.

Note: *The companion document provides an in-depth discussion regarding options and methods for evaluating whether or not plan components provide ecological conditions necessary to support a viable population of SCC, however an in-depth discussion of approaches to characterize the ecological systems is beyond the scope of either of these documents*.

Focus on Limiting Factors and Threats

The risk assessment employed to evaluate viability or persistence is most strongly framed with a focus on limiting factors and threats, which demands a keen understanding of ecosystem dynamics and species natural history. This understanding will provide insight into potential limiting factors. An understanding of management direction, environmental history, and current ecosystem status in light of potential limiting factors identified in the prior step will provide insight into threats and consequently, to viability or persistence.

Temporal Scale

Definitions of a viable population in the scientific literature have generally focused on the probability of population persistence for a biologically meaningful period of time (often expressed in numbers of generations). Because the 2012 Planning Rule requires that plan components provide ecological conditions to support populations "with sufficient distribution to be resilient and adaptable to stressors" (36 CFR 219.19), Forest Service evaluations cannot simply project species persistence until some arbitrary point in time. Assessments over management-specific timeframes are important to effectively evaluate effects of management on ecosystems and species. By acknowledging that uncertainty increases rapidly as the time period lengthens, practitioners can balance the motivation to look at long-term risk with the reality of increased uncertainty.

Geographic Scale

The spatial scope of the evaluation should reflect the scale at which biological populations of the species operate while also clearly describing spatial scaling as defined in the Planning Rule and Directives. An explicit consideration of geographic scale will motivate careful consideration of the potential influence of metapopulation dynamics, dynamics of patchy populations, and the influence of the species at spatial extents beyond the planning area.

Consideration of spatial scale requires a clear distinction between the spatial scale of the evaluation and the scaling of biological processes. To evaluate SCC the 2012 Planning Rule maintains that all individuals within the plan area will be considered a single population (see FSH 1909.12, 2313c.1.b). This requirement relates to determinations regarding the requirement to maintain "a viable population of each SCC within the plan area" (36 CFR 219.9 (2)(b)). However, when evaluating the conservation status of taxa, it is legitimate and appropriate to consider the dispersion and movement of individuals and the ecological relationships among sub-populations. Therefore, to reiterate, the Rule direction to regard all individuals in the plan area as members of a single population relates specifically to the final step of the evaluation.

Spatial scale also includes addressing connectivity, a concept introduced in the 2012 Rule (absent from the 1982 Rule) to characterize ecological integrity by evaluating the degree to which ecological processes and functions are linked across landscapes. Connectivity measures the degree to which landscape elements impact the flow of abiotic components (e.g., water, nutrients), the spread of disturbances (e.g., fire, pathogens), or the movement of organisms (e.g., dispersal, migration). Examples of connectivity concepts for land use planning include evaluating the ability of individual animals to move freely among habitat patches, using network analysis to evaluate linkages across drainage systems, and assessing the distribution and abundance of targeted plants over multiple time points.

Level of Assurance

Consideration of the level of assurance for persistence or viability involves a complex mix of technical understanding, policy, and risk assessment. Quantitative or qualitative evaluation of population dynamics in light of ecological circumstances is the foundation for the determination. However, the decisions regarding level of assurance ultimately depend on risk assessment and policy regarding the level of risk that is acceptable in light of the particular planning environment.

Conclusion

The 2012 Planning Rule addresses management of at-risk species by emphasizing the maintenance and restoration of ecological integrity and sustainability. Thus, implementing the Rule implies many species conservation objectives will be met by management activities that promote a set of desired ecological conditions. In cases where at-risk species require specific attention, the 2012 Planning Rule mandates species-specific plan components.

This document is intended to serve as a basic introduction to applying the 2012 Planning Rule to species conservation. These topics and associated supporting references are addressed in greater depth in the companion document[1]. Application of the 2012 Planning Rule will be further informed by lessons learned through experience on management units, and future clarification via case law.

Suggested Citation:

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