

Chapter 1:
Introduction
In
Ecological and Biological Diversity of National Forests in Region 3

Bruce Vander Lee, Ruth Smith, and Joanna Bate
The Nature Conservancy



SAVING THE LAST GREAT PLACES ON EARTH

EXECUTIVE SUMMARY

We summarized existing regional-scale biological and ecological assessment information from Arizona and New Mexico for use in the development of Forest Plans for the eleven National Forests in USDA Forest Service Region 3 (Region 3). Under the current Planning Rule, Forest Plans are to be strategic documents focusing on ecological, economic, and social sustainability. In addition, Region 3 has identified restoration of the functionality of fire-adapted systems as a central priority to address forest health issues. Assessments were selected for inclusion in this report based on (1) relevance to Forest Planning needs with emphasis on the need to address ecosystem diversity and ecological sustainability, (2) suitability to address restoration of Region 3's major vegetation systems, and (3) suitability to address ecological conditions at regional scales.

We identified five assessments that addressed the distribution and current condition of ecological and biological diversity within Region 3. We summarized each of these assessments to highlight important ecological resources that exist on National Forests in Arizona and New Mexico:

- Extent and distribution of potential natural vegetation types in Arizona and New Mexico
- Distribution and condition of low-elevation grasslands in Arizona
- Distribution of stream reaches with native fish occurrences in Arizona
- Species richness and conservation status attributes for all species on National Forests in Arizona and New Mexico
- Identification of priority areas for biodiversity conservation from Ecoregional Assessments from Arizona and New Mexico

Analyses of available assessments were completed across all management jurisdictions for Arizona and New Mexico, providing a regional context to illustrate the biological and ecological importance of National Forests in Region 3. For example, we identified several ecologically important potential natural vegetation types that occur predominately on Region 3 National Forests – ponderosa pine forest, Madrean encinal woodland, interior chaparral, and mixed conifer forest (Chapter 3). Understanding the regional context of the biological and ecological resources managed by Region 3 – both the distribution and condition of those resources – is a necessary pre-requisite to the identification of management strategies that would enable Region 3 to attain ecosystem diversity and ecological sustainability goals. Moreover, multiple land managers share management responsibility for some of the same resources across Arizona and New Mexico; regional data and syntheses provide a starting point for identifying areas where collaborative restoration would be feasible and an effective means of addressing land health issues that span jurisdictional boundaries.

Syntheses of several other assessments illustrate the importance of National Forests within Arizona. For example, based on an assessment of native fish habitat, headwater streams in Region 3 National Forests contain more native fish habitat with higher levels of species richness than streams managed by any other landowner. Our analysis also identified stream reaches on each National Forest that might appropriately be managed to maintain native fishes based on contemporary occurrences. Based on the Arizona Grasslands Assessment, we summarized the

distribution and condition of low-elevation grasslands (5,000 ft. and below) on National Forests in Arizona. As a statewide assessment, it provides valuable context for identifying appropriate grassland management strategies, as some of the best native-dominated grasslands remaining in Arizona overlap National Forests. The assessment also identifies areas where grassland restoration is most feasible. The Forest Plan revision process provides an important opportunity to develop strategies that will maintain grasslands in good condition or enhance those in need of restoration to maximize Region 3's ability to meet sustainability goals for this important regional ecosystem type.

As with vegetation systems, it is important to address species sustainability at appropriate scales. We aggregated existing information on species occurrences on each Region 3 National Forest to develop a regional database with consistent attributes that are useful in addressing species diversity and conservation needs within Forest Plans. The database can be used to quickly identify potential species of management concern for each Forest. Importantly, the database can also be used to distinguish species that might appropriately be considered at multi-forest scales for planning, management, and monitoring activities.

Ecoregional conservation assessments provide an important starting point for evaluating overall ecosystem diversity and ecological sustainability. These large-landscape assessments synthesize numerous datasets and identify a network of areas that are vital to the sustainability of biodiversity in the region. Our analysis of ecoregional assessment information demonstrated significant overlap between the network and National Forest lands in Arizona and New Mexico, demonstrating the important role Region 3 Forests play in maintaining the region's biological diversity. The assessments also point to priority geographies on National Forest lands where the role of natural disturbance processes in maintaining ecosystem diversity, and the compatibility of land management activities and land-use allocations, should be evaluated to maximize options for attaining ecological sustainability goals.

The assessments analyzed in this report provide basic information on the status and distribution of ecosystems and species that occur throughout Region 3 Forests. The data provide a starting point for understanding the range of biological and ecological elements that would need to be addressed during the Forest Plan revision process. Regional-scale assessment information provides a context for understanding the role USFS plays in managing regional-scale resources and how proposed management strategies will affect the balance of those resources both on USFS lands and the region as a whole.

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Introduction

The 11 National Forests of the U.S. Forest Service (USFS) Southwestern Region (Region 3) will begin revising their Forest Management Plans (forest plans) in the near future. The new National Forest Management Act (NFMA) planning regulations [published in the *Federal Register* on 5 January 2005 (70 Fed. Reg. 1023)] that will be used in the revision of forest plans within Region 3 emphasize the importance of ecological, social, and economic sustainability as the overall goal in forest planning. Forest plans will be strategic in nature and will describe desired future conditions for ecological, social, and economic components. A central focus of the ecological sustainability component is restoring and maintaining ecosystem health (structure and function) as a means to maintain the plant and animal communities that depend on them. Additionally, the planning regulations provide a framework for maintaining species diversity by identifying and developing provisions for species whose continued existence may be of concern. In addition to the planning regulations, Region 3 has identified strategic priorities for forest plans. A central priority is the restoration of the ecological functionality of southwestern forests and rangelands, with a primary focus on the functionality of fire-adapted systems.

A key need within the plan revision process is the availability of timely and relevant scientific information on the ecosystems, biological processes, and species that occur on Region 3 Forests. In preparation for this, Region 3 developed a *Strategic Approach to Meet Regional Priorities and Prepare for Forest Plan Revisions* that identified tools, techniques and information “to conduct analyses needed to support the regional and national central priority of restoring the functionality of fire-adapted systems,” and to revise forest plans. In 2004, The Nature Conservancy entered into a cost-share agreement with Region 3 to conduct ecological analyses and gather pertinent scientific information relating to the needs identified by Region 3. This collaborative project aims to prepare relevant scientific background information relating to three primary objectives:

1. **Assessment of Assessments**, a review of information developed since creation of the previous Land and Resource Management Plans that will enable the Forest Service to satisfy information standards established under new planning regulations and to ensure that the best available scientific information is integrated into the development of forest plans.
2. **Determining the Historical/Natural Range of Variation** for major vegetation types and the biological diversity they harbor. HRV characterizations provide a baseline for evaluating the short- and long-term effects of natural and anthropogenic disturbances on forest resources. The historical range of variation in disturbance regimes, and climatic effects on those regimes, is the foundation for developing models of vegetative change.
3. **Developing Models of Vegetation Change** for major southwestern vegetation types. Development of ecological models for vegetation types will enable the Forest Service to evaluate management activities and better incorporate the role of ecological processes in forest management.

This report provides a summary and analysis of existing, relevant ecological assessments (Objective 1) pertinent to forest plans in Region 3. In order to provide consistent information across Region 3, a priority has been placed on identifying and analyzing assessments conducted at large spatial scales, such as state or regional levels. Also, the assessments included in this

report are directly related to the ecosystem health, functionality, and species diversity objectives in the planning regulations and Region 3's strategic priorities. Assessments relating to the following types of information relevant to forest planning needs are included:

- Distribution and extent of potential natural vegetation types (PNVTs)
- Distribution and condition of grassland systems
- Distribution of native fish species
- Conservation status of plant and animal species on Region 3 Forests
- Conservation areas and targets associated with Ecoregional Assessments

Details about the specific assessments used for analyses are provided in Chapter 2 (Methods).

A primary focus of this report is to identify the important biological values that occur on National Forests in Region 3. This information may be useful as part of the forest planning process for evaluating the suitability of current management activities and land management designations, identifying ecological characteristics that may be considered in developing desired conditions, and identifying species that may need special consideration due to continuing threats to their existence.

Because understanding ecosystem structure and functions, as well as species diversity, requires information at several scales, this report provides analysis of assessment information at two scales. Chapter 3 provides a detailed analysis of the assessments across major landowners within Region 3, as well as comparisons amongst individual National Forests. Chapters 4 -15 provide a detailed analysis of the assessment information for each National Forest in Region 3 (National Grasslands on the Cibola National Forest are considered in a separate chapter).