

Planning integrates actions for maintaining biological diversity on three scales: geographic scale, ranging from developing site-specific prescriptions to forest-wide direction; biological scale, including maintaining genetic resources, viable populations, and ecosystem functions; and temporal scale, including maintaining biological diversity on seasonal, annual, successional, and long-term periods.

Several key areas where research and technology development can help maintain biological diversity include building basic biological and ecological knowledge of genetic, population, species, community, and ecosystem functions. Also of help is to further our understanding of environmental processes of weather, water, and soils.

Planning and management models and guidelines for maintaining biological diversity are needed. These tools include classifications of species, habitats, and communities; population and community growth and yield models; species-habitat relationships coefficients and models; cumulative effects analysis processes; visual landscape planning models; economic analysis methods; and adaptive environmental assessment and management procedures for guiding planning and management from results of monitoring.

Monitoring Biological Diversity

Monitoring conditions and trends of biological diversity may entail monitoring genetic resources, population and habitat management effects, attributes of landscapes, and patterns of human use. Monitoring would record conditions and trends of specific aspects of biological diversity over time according to standards and goals for maintaining biological diversity. Monitoring would address who, what, desired accuracy and precision, frequency, data management, data assessment and evaluation of results, criteria for change, and procedures for reporting results, conclusions, and recommendations to decision-makers and publics.

[NOTE: this section on monitoring is only an introduction to basic ideas; it is NOT a biodiversity monitoring plan! Such a plan is still to be written]

Elements of Diversity

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The following are specific items that could be described and tracked in order to provide information on the effects of Forest plans on diversity.

Wildlife and fish elements

Species richness and viability

Describe total numbers of species within specific geographic areas (Forest, district, county, watershed, etc.)

Provide information on the likelihood of maintaining scarce species over time

Species density

Describe species density over time, expressed either as expected actual population density or as capability of habitats to support the species

Describe relative densities or habitat capabilities of species

Fast extinctions, possible future extinctions, and possible future introductions

Describe any past extinctions to help reviewers understand how existing diversity compares with diversity from the (recent) past.

Describe the likelihood of future extinctions. Also describe plans or likelihood for reintroduction or range expansion for any species that are not currently present in the area.

Habitat (vegetation) elements

Plant species abundance

Describe total numbers of species within specific geographic areas

Provide information on the likelihood of maintaining scarce species

Habitat richness

Describe the total numbers of plant associations present by geographic area and how those could change under proposed management

Habitat abundance

Describe total acres of plant associations and seral stages within plant associations over time

Describe relative abundance of plant associations and seral stages

Spatial attributes

For habitats that are of concern (old-growth, Port-Orford-cedar, Redwoods, etc.) estimate changes in the following spatial attributes through time:

Patch sizes

Patch shapes

Spacing within and across watersheds

Describe fragmentation based on the above characteristics

Processes

Catastrophes

Describe the past and future role of fire in shaping the composition, structure, and function of the forest

Describe the role of other catastrophic agents including insects, disease, wind, flood, and geologic actions

Long term productivity

Describe likely effects of management on long-term productivity, including a discussion of insect and disease problems; fire effects; nutrient cycling, availability, and uptake; the presence of dispersal agents; and the effects of pollutants and toxicants

Other diversity elements

Remoteness

Describe access to the Forest; significance of land areas that are least accessible; and the possible role of inaccessible areas in the retention of diversity (relative to plant invasions; effects of recreation, grazing, etc.; and effects of pollutants)

Recreation opportunities

Describe acres by recreation opportunity spectrum, and the changes in acres proposed in the plan

Management practices

Describe the different types of management that are proposed for

various lands on the forest, and how that spectrum of management actions compares to the total spectrum of management actions that could be employed

Economic opportunities

Describe economic opportunities that will be available over time for various segments of society, e.g., large sales, small sales, guide services, commercial fishing, commercial rafting, grazing, mushroom hunting, etc.

Future options

Describe future options for adjustment of Forest management, and how those options are affected by proposed management