

Ecological Integrity Considerations under the 2021 Planning Rule



Figure 1. Eagle Cliff and western larch on the Lolo National Forest. USDA Forest Service Photo by Jim Ward.

What is ecological integrity?

Ecological Integrity is defined 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 influences” (36 CFR 219.19).

In short, ecological integrity means that habitat is functioning naturally and can usually withstand or recover from events like fire and floods. One of the important functions of a land management plan is to provide for ecological sustainability of the plan area. “*Ecological sustainability*” is the capability of ecosystems to maintain ecological integrity. Ensuring that National Forests have ecological integrity means that they will be resilient and will help provide people and communities with a range of social, economic, and ecological benefits now and into the future.

Ecological integrity represents a foundation for all elements of the land management planning process: assessment, plan development, and monitoring.



Figure 2. The three phases of land management planning: assess, plan, and monitor

How will the Forest Service assess ecological integrity?

The 2012 Planning Rule states that “assessments rapidly evaluate existing information about relevant ecological, economic, and social conditions, trends, and sustainability...” The link between ecological sustainability and integrity is clear – ecological integrity is the foundation for sustainability (36 CFR 219.8 (a)(1)), and the evaluation of ecological integrity provides a measure for assessing sustainability in light of current conditions and trends. An assessment that identifies those ecosystems that are threatened or compromised, while identifying the features leading to poor integrity, will inform priorities for each step in planning.

Assessing the status of ecosystems—their level of ecological integrity—is difficult. There is no guide that provides a comprehensive protocol, and each ecosystem has a unique body of scientific information relevant to the ecological assessment. The planning rule and supporting handbook identify departure from the natural range of variation as a criterion to assess ecological

integrity. The *natural range of variation* refers to the variation in key ecosystem characteristics produced by dominant natural disturbance regimes, usually in a pre-European influenced reference period. This method works well for ecosystems that are relatively well-studied and their natural range of variation can be estimated through ecological modeling or other methodology. However, for ecosystems that are relatively rare, less studied or just fundamentally altered, assessing ecological integrity may rely more heavily on expert opinion and qualitative assessments. A successful assessment of ecological integrity provides a clear review of the status of ecosystems in the plan area, the threats to those ecosystems (including multiple uses), and how changes in ecosystem status affects desired ecosystem services.

By evaluating ecological integrity at the outset of planning, the assessment provides the basis for plan development and information necessary for the public to actively engage in planning.

How will the revised plan apply ecological integrity?

The plan itself must contain plan components that maintain or restore the composition, structure, ecological processes, and connectivity of plan area ecosystems in a manner that promotes their ecological integrity. For example, the plan may contain desired conditions for the key ecosystem characteristics of integrity, based on the information provided in the assessment, and objectives for achieving those desired conditions.

Monitoring of ecological sustainability and ecosystem integrity will also be addressed in the forest plan. For example, the revised plan may include monitoring of key ecosystem characteristics to evaluate whether the plan is achieving desired conditions for integrity. Focal-species monitoring also represents a part of the requirements for ecological sustainability and diversity of plant and animal communities.

How does ecological integrity address the diversity requirement of the National Forest Management Act?

The National Forest Management Act requires that land management plans provide for diversity of plant and animal communities (16 USC 1604 (g)(3)(B)). The 2012 planning rule contains a strong, implementable approach to provide for this diversity and the persistence of native species in the plan area based on the foundation of ecological integrity. This is often referred to as the “coarse-filter/fine-filter” approach. It is a well-developed concept in the scientific literature for maintaining biological diversity and has broad support from the scientific community and many stakeholders. The ecosystem-level integrity requirements, or “coarse filter,” provide habitat for the persistence of the vast majority of species within the plan area and for the diversity of plant and animal communities. Where the coarse filter alone is not enough to support a species at risk, the 2012 planning rule requires that plans include additional plan components to provide the necessary ecological conditions. The species-specific plan components, or “fine filter”, identify specific habitat needs of species with known conservation concerns or whose long-term persistence in the plan area is at risk (threatened, endangered, proposed, and candidate species and species of conservation concern), and for which the coarse-filter conditions are insufficient.