

23. Relationship Between Short-Term Uses of the Human Environment and Enhancement of Long-Term Productivity

The relationship between the short-term uses of the human environment and the maintenance and/or enhancement of long-term productivity is complex. For the purposes of this assessment, short-term uses are those that generally occur on a yearly basis on some area of the Malheur National Forest. "Long-term" refers to longer than a 10-year period. Productivity refers to the capability of the land to provide market and amenity outputs and values for future generations. For example, maintenance of long-term soil productivity requires that activities which cause excessive erosion, compaction, and other adverse impacts to soil be mitigated. Occasionally, short-term uses will cause substantial damage to isolated areas. Forest direction in Chapter IV of the Land Management Plan contains Management Requirements designed to protect soil and water resources so that long-term productivity is not significantly impaired. A discussion of the ways various long-term productivity of the Forest is presented in the next few pages.

The soil resources are affected by most management activities. Activities such as timber harvest, road construction, and use of developed recreation sites, are cumulative and have long-term effects on the productivity of the soil. The effects can be seen through both soil erosion and soil compaction. Harvest removals of nutrients also have direct impacts on long-term productivity, although our understanding of these processes is quite limited at present. Soil compaction is generally considered to be a long-term effect. However, on some types of clay soils, the process of wetting and drying (shrink/swell) tends to break up the compaction over several years.

Short-term management of the tree resource will have effects upon long-term productivity depending on the intensity of management selected. Short-term management techniques that can increase long-term productivity include restocking of harvested areas within 5 years, the use of genetically superior trees, subsequent silvicultural treatments such as reforestation, precommercial thinning, and through fertilization in some stands. The Forest Plan establishes a sustained yield of resource outputs while maintaining productivity of resources. The specific direction and mitigation measures included in the Forest-wide direction ensure that long-term productivity will not be impaired by the application of short-term management practices. Each alternative was analyzed to assure that Forest direction could be met. An alternative was revised if some aspect did not meet these requirements. Thus, long-term productivity is believed to be maintained in every alternative.

Reductions in habitat capability for old-growth-dependent species due to timber harvesting are long-term effects that cannot be mitigated. Management Requirements for maintaining viable populations establish the least amount of mature and old-growth forest to be retained or managed. This is necessary to avoid losing species dependent on mature and old-growth forest. The effectiveness of this approach in maintaining species viability is quite controversial at present.

Reductions in deer and elk habitat capability due to human disturbances, such as road building and vegetative cover removal, can be long term but are difficult to quantify on a Forest-wide basis. Management prescriptions that reduce open road densities have been assigned and are available. The areas managed as elk winter range (eg, most local and collector roads), may be closed during the winter. These measures will reduce wildlife harassment, partially mitigating the effects of traffic on existing roads and those created by the construction of new roads. Permanent closures will be the most effective. Those with signs and no barriers are the most likely to be violated if enforcement is lax. Gates and barriers are sometimes removed or surmounted, and off-road vehicles can sometimes go around them. In areas where violators are likely to be seen by other Forest visitors, peer pressure is often effective in enforcing closures.

A measure of long-term productivity for the fisheries resource is the effect on stream habitat capability. Alternatives which call for more emphasis on timber harvest and road construction, have the greatest potential for long-term effects. Long-term effects to

fish habitat on Forest Service-managed land are expected to be adequately mitigated by the proper implementation of the Forest-wide Standards.

Cultural resources represent a long-term use of the land. In many cases, the resources have been in place for decades or even centuries. However, these resources generally occupy a small area of land and thus have a negligible effect on the long-term productivity of the area they occupy.

Recreation uses, such as developed campgrounds, recreation residences, and Wilderness, all represent long-term commitments of the land. These commitments, in some cases, can mean a loss of long-term productivity of other resources. Heavy, short-term recreation uses, such as large group outings or concentrated use in popular areas, may also result in a reduction of productivity. For example, campsites and trails can be compacted by heavy use which may result in soil and vegetation damage. The short-term use of a campsite in a fragile Wilderness ecosystem can result in a long-term loss of vegetation. Recreation use in critical fish habitat areas has the potential to affect the genetic makeup of fish populations by reducing the wild-type genes which may be necessary for the long-term maintenance of a fish species.

Short-term vegetation Management Practices can have a long-term effect on the maintenance of scenery. Timber harvest, with its associated road construction, will lead to greater visual diversity in the Forest stands, but also will contribute to the loss of the "natural appearing" setting. Natural appearing landscapes are preserved in Wildernesses and roadless areas.

Mineral resources are not renewable, and deposits are fixed in size and grade. Forest Service policy, as it relates to exploration and development of mineral resources, does not change by alternative. Therefore, the short-term/long-term relationship does not vary by alternative. However, management prescriptions which call for withdrawing lands from mineral entry have a short-term effect on the availability of minerals. This can have a long-term effect if withdrawn indefinitely. Examples of areas withdrawn include Wildernesses, Research Natural Areas, developed recreation sites, and some special interest areas and scenic travel routes. Leasing of Wilderness lands for mineral exploration and development would result in short-term degradation of Wilderness values. However, if an assessment of an area's restoration capacity shows that Wilderness values would be significantly damaged over the long-term, the area would not be recommended for leasing or prospecting activities.

Arterial and collector roads and some local roads and landings, are dedicated uses that take land out of production. Therefore, these kinds of uses have long-term effects. These effects vary because they are directly related to the amount of timber harvested. Roads can have indirect negative effects on long-term productivity of fish and wildlife by increasing the amount of recreational fishing and hunting use. Long-term productivity of timber can be increased due to roads allowing access for more intensive management activities. Long-term effects of roads on the soil resource and on water quality can also be significant detrimental impacts.

24 Irreversible and
Irretrievable
Commitments of
Resources

Some irreversible and irretrievable commitments of resources would occur in all alternatives.

To varying degrees, roadless and wilderness characteristics will be altered, land will be lost to timber production and some loss of wildlife habitat will occur. Additionally, mineral wealth will be removed from the Forest and some loss of cultural resource sites will occur.

An "irreversible commitment of resources" results from a decision to use or modify resources that are renewable only over a long period of time, such as soil productivity, or

nonrenewable resources, such as cultural resources or minerals. An "irretrievable commitment of resources" refers to a resource that is lost because of land use designation and/or scheduling decision. In other words, opportunities are foregone for the period of time that resource cannot be used. The Forest Plan and the alternatives examined were long-term productivity for all resources. Measures to protect natural resources that could be irreversibly affected by management practices were incorporated into Forest-wide Standards (Chapter IV of the Forest Plan)

The water resource on the Forest fluctuates in runoff or output in response to changes in climate. Water quality and timing of runoff is affected by management activities. These effects are rarely irreversible with degradation being only temporary over time.

Soil productivity can be irreversibly lost or reduced by dedicated uses of the land. Examples of these uses would be arterial and collector roads, administrative sites, and developed recreation sites. Soil erosion, as a result of management activities, is an irretrievable loss because once the soil particles are removed from the site and deposited into a stream or river, they are no longer available. Accelerated erosion rates can reduce soil productivity and also reduce the water holding capacity of the soil.

Unique biological and botanical interest areas, as identified in Chapter III, are either protected from management activities or not. This could potentially mean an irreversible loss of the opportunity to classify a unique species. However, while the area would not be classified, the rare or unique species would be protected through the Forest Plan Standards. Geologic features would also be protected in this way from irretrievable loss.

Another irretrievable loss would be those timber stands occurring in designated Wildernesses or dedicated as old-growth wildlife habitat. Insects, disease, and fire can also cause irretrievable losses.

Reductions in habitat capability for old-growth-dependent species due to timber harvesting involve an irreversible and irretrievable commitment of resources that cannot be mitigated. Management Requirements for maintaining viable populations establish the least amount of mature and old-growth forest to be retained or managed. This is necessary to avoid losing species dependent on mature and old-growth forest. There are no known irreversible and irretrievable commitments of resources affecting fisheries involved in the implementation of the preferred alternative.

The protection of cultural resources also may affect timber production. However, this effect would be relatively small. Trees on and near cultural sites may not be harvested or harvested at less than maximum intensity. Since the commitment to protect these cultural resources will continue in the foreseeable future, the timber not harvested on these sites represents an irreversible loss of that resource.

The development of roadless areas would mean an irreversible loss of the characteristics which qualify these areas for wildernesses or roadless areas. Development could also mean an irreversible loss of natural scenery and, in some cases, old-growth habitat. On the other hand, *not developing roadless areas may be an irretrievable loss of opportunities for vegetation management.* This could result in a lower volume of timber supply from the Forest.

Removal of mineral or energy resources is an irretrievable commitment of resources. The removal and utilization of rock resources for road construction would be an example of a common use on the Forest. Actual commitment of mineral resources will depend upon demand and mining industry initiative.