

Introduction

The following species profiles are assessments of various categories of species. These include Management Indicator Species (MIS), Threatened & Endangered Species (TES) and Forest Sensitive species. The rationale for preparing species profiles for each of these categories is explained below.

Management Indicator Species (MIS)

Management indicator species (MIS) were defined in the 1982 forest planning regulations (36 CFR 219) implementing the National Forest Management Act (NFMA) of 1976. MIS are a subset of all animal and plant species in a planning area that are selected for planning and management purposes. “In order to estimate the effects of each alternative on fish and wildlife populations, certain [species] present in the area shall be identified and selected as management indicator species.” A key reason MIS are selected is “because their population changes are believed to indicate the effects of management activities.” (36 CFR 219.19(a)(1) MIS are selected to represent several categories, such as commonly hunted or fished species, non-game and threatened and endangered species (TES).

Management indicator species are identified during the development process of a forest’s land and resource management plan (hereafter referred to as the Carson Forest Plan). The 1986 Carson Forest Plan designates specific MIS with habitats that could best be used to analyze effects of site-specific proposals on the Carson National Forest. These species are:

MIS	Habitat
Hairy woodpecker	snag
Turkey	old growth pine
White-tailed ptarmigan	alpine tundra, subalpine deciduous shrub
Plain titmouse	pinon-juniper canopies
Brewer's sparrow	sagebrush
Abert's squirrel	interlocking canopies
Red squirrel	mixed conifer
Elk	general forest
Bighorn sheep	alpine, subalpine tundra mountain meadow grassland
Resident trout	perennial stream riparian
Aquatic macro-invertebrates	perennial stream, riparian

It is feasible (per the Carson Forest Plan Environmental Impact Statement) that either federally listed threatened or endangered species or Forest Service sensitive species could be considered as MIS. However, they may or may not possess the characteristics to meet the intent of the (36 CFR 219.19(a)(1) regulations as explained above. Federally listed threatened or endangered species, including species proposed for federal listing, that occupy or have potential habitat on the Forest are required by the Endangered Species Act (ESA) to have a biological evaluation (BE) prepared for site-specific proposals. Threatened, endangered and Forest Service sensitive species are selected for comparison of effects in site-specific analyses, in addition to the Forest management indicator species.

MIS Habitat Trends

The 1986 Environmental Impact Statement (EIS) for the Carson Forest Plan described the habitat groups and characteristics along with projected trends of Management Indicator Species, based on current direction and management of these habitats. The basis for determining habitat trend is a comparison of estimated occupied habitats at the time of preparing the Forest Plan to the present. The methods used to determine current habitats were developed to approximate similarity (to the degree possible) to the acreages used in the 1986 Forest Plan EIS. In some cases, the estimated acres of occupied habitats are based on certain parameters of habitat quality. The rationale and methods used to reach the current habitat estimates are described for each species or group. The methods generally included developing queries from existing stand exam data. The processes used for determining habitat trends for the Carson National Forest's Management Indicator Species are outlined by species in an appendix called *Rationale for Determining Habitat Trend Lines*, at the end of this document.

MIS Population Trends and Viability

In addition to defining management indicator species, the forest planning regulations direct that "Population trends of management indicator species will be monitored and relationships to habitat changes determined" (36 CFR 219.9 (a)(6)). This assessment provides information on the relationship of the species to a forest community(s), forest successional class(s)¹, aquatic community(s), rare community(s) or relevant habitat parameters. These relationships are supported by documentation of published/unpublished research, professional opinion, administrative studies/surveys, effectiveness monitoring or from ongoing research/validation monitoring.

Because methods determine population numbers and/or estimate trends vary by species, conclusions that relate population trends to habitat conditions are also reached through a variety of methods. This assessment uses a combination of the methods to determine the population trend for each of the MIS identified for the Carson National Forest. Information sources on MIS populations include (but are not limited to) the BISON-M, Biota Information System of New Mexico (1999 and 2000), National Forest System (e.g., local Forest and Regional data), Forest Service Research (e.g., Forest Service Intermountain Research Station literature), university research, other federal and state government agencies (e.g., Patuxent Wildlife Center breeding bird surveys) and an assortment of non-government organizations (e.g., Partners in Flight, NatureServe Explorer). The 36 CFR 219.19(a)(6) recognizes the need to use outside sources, "...monitoring will be done in cooperation with State fish and wildlife agencies, to the extent practicable."

From known relationships between species and habitat, trends in amount and condition of habitat over time may also reflect population trends. This is not necessarily the situation in all circumstances. Population trends can often relate to other outside forces, such as predation, nest parasitism or detrimental impacts to other migratory habitats.

Population trend is most appropriately addressed at scales above the project level. Many of these selected MIS species occur and range far beyond a local scale. Individuals, family groups or herds, such as elk, annually use areas much larger than the analysis area and population trend must be examined on a greater scale to be meaningful. Evidence from long-term censuses

¹ Forest succession is the change in vegetation and in animal life that takes place as a plant community evolves from bare ground to climax (Managing Forested Lands for Wildlife 1987). The steps or classes in the process of ecological succession are referred to as "seral stages".

suggests that few natural populations or communities persist at or near equilibrium on a local scale (Martin and Finch 1995). At a site-specific project level, there is a great deal of fluctuation in wide ranging populations. For this reason, it is not appropriate to determine population trend at the local level. For National Forest Management Act implementation, population trend is addressed at the scale of the Carson National Forest. Even at this level, population trend information is not likely to be indicative of overall population trends of a species.

It is the mandate of the Forest Service to manage fish and wildlife habitat “to maintain viable populations of existing native and desired non-native vertebrate species...” (36 CFR 219.19). The FEIS for the Carson Forest Plan analyzed seven alternatives. The Carson Forest Plan decision alternative is described relative to projected impacts on management indicator species over the life of the plan, taking into account the estimated annual volume to be harvested from the Forest. The FEIS describes that,

The Proposed Action will over time provide moderate to high amounts and quality of most habitat components within the suitable timberlands and other management areas. Requirements for management of old growth, cover, vegetative diversity, raptor nesting habitat and many other habitat components receive greater emphasis and specific direction than other alternatives. Populations of all indicator species, with the possible exception of certain rare animals, will be managed at levels greatly exceeding minimum viable populations. (Carson FP FEIS, p.152)

The following figure shows the projected harvest level over the period of the Forest Plan compared to the actual harvest. The FEIS determined that MIS would be managed at levels greatly exceeding viable populations at the projected harvest levels. The actual harvest level has averaged only about one third of the projected, therefore it is assumed that the Forest is well within its ability to maintain viable populations for MIS.

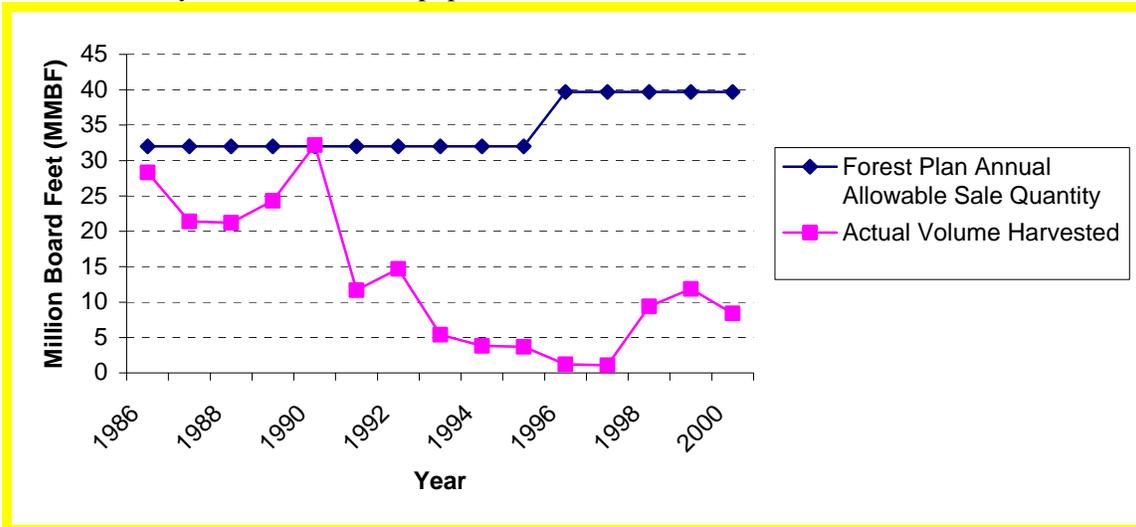


Figure 1. Comparison of Forest Plan Allowable Sale Quantity to Actual Harvest