Appendix B

Research and Technical Data Needs

The following items have been drawn from three primary sources: (1) resource managers on the Inyo National Forest, (2) suggestions from the Regional Office of items to include that are appropriate to the Forest, and (3) public comments that were received during the planning process.

RESEARCH NEEDS

Cultural Resources

- Collect and synthesize paleoenvironmental data in order to reconstruct the sequence of culturally significant Late Pleistocene and Holocene environments in the region. Tasks involved are as follows:

  1. Identify and date major geomorphic and geological events.

  2. Determine the frequencies, age, and location of past volcanic eruptions, including tephra fall and pyroclastic flow patterns.

  3. Reconstruct past riparian and neoglacial events.

  4. Reconstruct the succession of past biotic communities.

  5. Investigate the effects of various botulism bacilli on fish and avifauna populations, and the potential effects of such outbreaks on past human exploitation of these resources.

  6. Determine the initial appearance date of the pandora moth (Coloradia pandora) in the region.

  7. Determine the effect of historic activities such as mining, grazing, and water diversion on the pre-contact physical environment.

Economic Analysis

- Determine benefit values for non-market resources such as dispersed recreation, water, wilderness, and wildlife and fish.

- Conduct marketing (demand) research for Wildlife and Fish User Days (WFUDs) and Recreation Visitor Days (RVDs).

Minerals

- Identify the long-term effects on groundwater and on surface resources of removing geothermal liquids.

Range

- Develop cost-effective methods to regenerate and manage bitterbrush.

- Quantitatively assess the optimum vegetation that range soils can produce.

Sensitive Plants

- Complete sensitive plant inventories and surveys of each species and its potential habitat to determine trends, status and distribution.

- Collect the necessary biological data for completing eleven species management guides.

- Determine the type, intensity and extent of impacts that each sensitive species can tolerate without jeopardizing its viability and survival, or listed status.

- Analyze data to determine which species need recovery plans.

Timber

- Participate with researchers in designing at least one timber sale to investigate the consequences of even-aged and uneven-aged timber management.

- Research the productivity of and management opportunities on pinyon-juniper sites.

- Determine the effects on the nutrient cycle of removing large quantities of fuelwood.

Watershed: Soils

- Measure the effectiveness of various site preparation techniques for promoting tree growth and limiting erosion.

Watershed: Water

- Develop a methodology to assess the cumulative effects of management activities on water quality and quantity, and develop criteria and means to identify threshold levels of watershed condition due to cumulative effects.

Wildlife

- Study mule deer habitat use and mule deer ecology, areas not adequately understood at present.

- Determine the effects of timber harvest practices on goshawk nesting habitat and home range sizes.

TECHNICAL DATA NEEDS

Air Quality

- Determine which are the most useful Air Quality Resource Value (AQRV) indicators for monitoring in order to assess air pollution and acid deposition on Air Quality Resource Values in Class I Areas.

Cultural Resources

- Develop research designs as outlined in the Prehistoric Overview for the investigation and evaluation of specific categories of prehistoric sites.

- Test the effectiveness of special over-the-snow logging stipulations designed to protect certain types of cultural sites in order to implement programmatic protection measures.

- Evaluate the effectiveness of using survey transect intervals greater than the current 30-meter Forest standard in terms of cost- and time-efficiency. Take into account such factors as terrain and vegetative cover.

- Produce an Historic Overview for the Forest which will bring together the current historic knowledge about the region and provide a theoretical framework for future research and for evaluations of significance. Tasks involved are as follows:

  1. Reconstruct and evaluate the relationship between early historical settlement patterns and transportation systems.

  2. Compare regional mining settlement patterns with contemporaneous western slope developments.

  3. Evaluate railroad logging systems on the Forest in context of the Regional Railroad Logging System research design.

  4. Document and interpret structural construction techniques and architectural styles used on the region.

  5. Investigate the relationship of the region to metropolitan development in California and Nevada.

- Produce an Ethnographic Overview that will bring together current knowledge about the ethnographically known inhabitants of the region and will consider and provide a framework for dealing with contemporary concerns of the American Indian community.

- Perform the following tasks pending completion of the Forest-wide inventory:

  1. Develop predictive site location models for prehistoric sites located in upland areas of the White, Inyo, and Sierra Nevada mountains.

  2. Develop predictive site location models for historic sites located on the Forest.

  3. Develop appropriate sampling strategies, procedures of field recordation, and methods of data analysis for both prehistoric and historic site predictive models.

- Complete determinations of Class II properties (no determination of eligibility for the National Register of Historic Places) as either Class I (eligible) or Class III (not eligible).

Fish

- Develop a habitat capability model for golden trout.

- Develop a habitat capability model for Paiute cutthroat trout.

Recreation

- Conduct an analysis to determine the potential for additional snowmobiling opportunities.

Watershed: Soils

- Develop guidelines to ensure the sustained yield of timber, livestock, and other commodities while keeping soil degradation at acceptable levels.

Watershed: Water

- Quantify the instream flows needed for channel competence and instream values.

- Continue sediment transport studies of Mammoth Creek to identify sources of sediment and to understand the sediment transport regime for that stream.

- Quantify the effects of grazing on stream bank stability, water quality, fish habitat, and sediment yields.

Wildlife

High Priority

- Develop criteria to prevent destruction or adverse modification of critical habitat for threatened and endangered species (peregrine falcon, bald eagle, Owens tui chub, Lahontan cutthroat trout, and Paiute cutthroat trout).

- Collect data relative to optimum and acceptable snag and down log numbers for dependent wildlife species in the Eastern Sierra.

- Develop a habitat capability model for Sierra Nevada mountain sheep.

- Field test and verify habitat capability models for emphasis species.

- Gather data and perform tasks as follows to help increase the population of California mountain sheep:

  1. Assess suitable, unoccupied habitat.

  2. Monitor release sites for transplant success, and the source population to determine suitability for continued transplants.

  3. Identify limiting habitat factors.

- Evaluate suitable, unoccupied Nelson mountain sheep habitat for release site potential.

Moderate Priority

- Determine the way in which habitat criteria can be used to establish population levels of wildlife.

- Assess the suitability of goshawk nesting habitat in noncommercial or unsuitable timber.

Low Priority

- Assess factors such as road densities and livestock grazing that are limiting to tule elk habitat.

- Collect and evaluate information regarding Sierra Nevada red fox, fisher, and wolverine to determine management opportunities.

- Establish baseline information for fish and wildlife and their interaction with vegetation management. Include numbers of animals vs. habitat change, viable populations, and the relation of animals to WFUDs.