

Inventorying Rare Plant Species

By Larry L. Norris

It is important that park managers have an accurate data base upon which to rely when making decisions that will affect rare species. Federal law requires the protection of species that have been classified as threatened or endangered. Many plants are now classified and many others have been proposed for classification and must be given special consideration for protection. The importance of gaining knowledge of rare plants, including their numbers, localities, vigor, and habitat is obvious whenever park operations threaten to alter an area. The expansion of a campground or relocation of a section of trail may impact one or more populations of rare plants. In order to protect rare plants, managers in charge of such projects need information on the species and populations that might be impacted.

In the National Park Service the need for rare plant inventories is now being recognized and a number of studies have been or are being completed. In Sequoia and Kings Canyon NPs this represents a sizable undertaking. The combined acreage is 862,429 acres. Much of the park's 862,429 acreage is rugged, isolated and difficult to access. The manner in which an inventory was to be carried out had to be carefully planned.

Before the inventory could begin a list of rare plants known or suspected to occur in the parks had to be developed. Four sources of information were consulted to learn what species should be considered. First we recognized the rare plant list for the state of California, compiled by the California Native Plant Society and adopted by the U.S. Fish and Wildlife Service as definitive for the state. Plants appearing on this list and known to occur in Sequoia and Kings Canyon were of primary concern. Those likely to occur within the parks also were considered.

Secondly, an extensive herbarium search was conducted to gain more detailed information on known localities within park boundaries of the plants of concern. These localities were then plotted on a park vicinity map to indicate rare plant concentrations and areas requiring intensive field survey efforts. Next, an inspection of other rare plant inventories by neighboring agencies (in our case three National Forests) or private researchers was made to determine possible rare plant localities near the park boundary.

Finally, personal contact was made with those botanists who have collected or made observations within the parks in the past. Their information was of considerable help in planning and carrying out the field inventory.

After compilation of the rare plant list (30 species in Sequoia and Kings Canyon NPs) the habitat requirements of each species had to be documented. This was accomplished through literature research, through information gained from the herbarium labels, and from botanists familiar with the plants. The next step was to deduce where each rare species was likely to occur in the parks. This was done with the help of topographic maps and air photos. For instance, one species, *Oreonana purpurascens*, grows on clear ridges surrounded by red fir forests at elevations between 800 and 8500 feet. Topographic maps helped the inventory team locate such ridges, and air photos indicated whether they were forested or not. Field searches to some of these "ideal" ridges located several populations of *O. purpurascens* in the parks. These were of only suspected occurrence prior to the study.

The known populations of rare plants provided the basis of each inventory field trip. Locations plotted on the park vicinity map showed what areas needed emphasis, what the general elevations were, and how

much time would be required for the inventory trip. The field trips were then planned in a route that connected the known populations. Suspected localities would be searched as they were encountered along the way. In areas of the parks that had no recorded rare plant populations the inventory consisted of surveying all potential sites for rare plants thought possibly to occur there. These trips often yielded botanical surprises.

Each population site encountered was inventoried on a field data collection form made especially for this study. The form gathered information of the site location (geographic locale, and legal subdivision) and description (elevation, physical setting, slope aspect, and substrate). The second half of the form deals with the species' surrounding plant community, associated species and the population description (size of area, number of plants, phenology, population health, vigor, density, and, lastly, any endangerment factors).

After the data had been collected on field forms and the populations accurately mapped on USGS 7 1/2 minute quadrangles, a park status report for each species was written up. Attachments to each report included a professional line drawing, black and white 8x10 photo of an herbarium specimen, and color photographs showing a close up of the flower, a general plant photo, and a photo depicting the plant's typical habitat. Status reports, maps, and illustrations were then placed in large, three ring binders and copies distributed to those park managers who have a need to know the locations and status of these rare plants. Accompanying each copy was an index referring to map and detailed location guide for quick reference. This saves the park manager the task of thumbing through the rare plant report every time a project arises.

In short, it is essential that park managers understand where rare plant species occur and what factors or activities might threaten their survival. A prepared methodology to follow in designing and carrying out a field inventory of known and suspected rare plants is presented here. It has proved quite successful in Sequoia and Kings Canyon NPs, as well as a number of surrounding National Forests. (Note: examples of data collection field forms can be obtained from the Research Scientist's Office, Sequoia and Kings Canyon National Parks, Three Rivers, CA 93271.)

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Klamath weed (*Hypericum perforatum*).