

COLORADO PLATEAU

Grant funds endangered plant monitoring

A 1997 grant from the National Fish and Wildlife Foundation's Native Plant Conservation Initiative allowed botanists to monitor the federally endangered sentry milk-vetch (*Astragalus cremnophylax* var. *cremnophylax*) and three of its varieties on public and Navajo Nation lands in Arizona. A member of the pea family, the sentry milk-vetch is a dwarf, evergreen, cushion plant that is confined to "ledge pavement," the rimrock habitat overlooking the South Rim of Grand Canyon National Park. In 1990, it was listed when surveys showed it to be declining following decades of trampling by park visitors who crossed the habitat to reach the canyon view. Three other closely related varieties are spatially distinct: (1) the cliff milk-vetch, a species of special concern, is located on Forest Service and Bureau of Land Management lands north of the park, (2) the Hevron milk-vetch is located on the Navajo Nation lands overlooking Marble Canyon,

and (3) a newly discovered population, which may prove to be a new variety, is located on the North Rim of the Grand Canyon.

As a result of the grant, permanent monitoring plots have now been established at all four sites. Over 500 plants have been tagged using small, numbered, plastic pennants attached with stainless steel wires. Cartesian coordinates (x and y locations) along the transect have been documented to enable individual plants to be identified should the tags be broken, lost, or removed. Basal cover or size of the plant mats was determined by tracing the perimeter or outline of the plant on clear mylar. The tracing was cut out, weighed, and the area (in grams) determined by dividing the average weight of the mylar per unit area (yielding square centimeters)¹. Substrate and associated species information was also collected in quarter-meter "Daubenmire" plots. Growth, reproduction, and mortality for each plant mat will be tracked in the coming decades. This demographic work will complement genetic research on the species; the species is threatened by inbreeding depression.

The three varieties of the sentry milk-vetch will be included along with 150 other plants in a *Rare Plants of Arizona* fieldguide currently being coordinated by The Nature Conservancy with the cooperative effort of over 25 botanists throughout the state. This effort is also being funded by a grant for the 1998 National Fish and Wildlife Foundation's Native Plant Conservation Initiative.

¹For additional information on the methodology, see the 1996 paper "A perimeter tracing method for estimating basal cover: Monitoring the endangered sentry milk-vetch at Grand Canyon National Park, Arizona" by Peter G. Rowlands and Nancy J. Brian. *The Southwest Naturalist* 41(2):169-178.