

by Sandy DeSimone

Partners Restore Coastal Sage Scrub Habitat



California gnatcatcher

Photo © B. Moose Peterson/Wildlife Research Photography

Coastal sage scrub vegetation serves as breeding habitat for a threatened bird, the coastal California gnatcatcher (*Polioptila californica californica*). The 4,000-acre (1,620-hectare) Starr Ranch Sanctuary, a National Audubon Society preserve in Orange County, California, shelters at least 22 nesting pairs of gnatcatchers and approximately 1,964 acres (795 ha) of undisturbed coastal sage scrub. Working with the Carlsbad Fish and Wildlife Office, the Service's Partners for Fish and Wildlife Program is funding weed control on approximately 25 acres (10 ha) now occupied by a nonnative plant, the herbaceous perennial *Cynara cardunculus*. Once the exotic plants are removed, the land will be restored to coastal sage scrub for gnatcatchers and other native species.

Nonnative artichoke thistle infestation before restoration (left). Area restored with *Artemisia californica* and other coastal sage scrub natives (right).

Photos courtesy of Starr Ranch Sanctuary



Restoration efforts at Starr Ranch are initiated during the second year of treatment for control of *C. cardunculus*. Non-chemical control methods are based on experiments that indicated effectiveness of removal of *C. cardunculus* rosettes every three weeks during the rainiest months, and then every four weeks until the tops die back during the summer drought. Field crews switch to hoes for rosette removal from year three on, and cutting intervals become extended to four, six, or eight weeks depending on the results of monitoring data. All seeds for restoration to coastal sage scrub or to native purple needlegrass (*Nassella pulchra*) grassland are collected at Starr Ranch, and plugs are grown in the native plant nursery.

Ongoing experiments on planting techniques for native shrub and grass species guide decisions on plug and seed rates, low-cost methods of soil tamping, and the timing of plug planting and direct seeding. Experiments also help make decisions about timing and effectiveness of non-chemical methods—

brush cutting, hand weeding, flaming, mowing, and burning—for control of exotic annual grasses and forbs. Restoration standards are derived from data collected in relatively pristine, mature coastal sage scrub and native grassland at Starr Ranch.

We are hopeful that the partnership between the Fish and Wildlife Service's Partners for Fish and Wildlife Program and the National Audubon Society at Starr Ranch will provide a national example not only of habitat restoration techniques but also of working cooperatively with private landowners for conservation purposes.

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Photo courtesy of Starr Ranch Sanctuary

This project will help to sustain the core population of gnatcatchers at Starr Ranch (above) and provide opportunity to increase gnatcatcher numbers through colonization of restored habitats at the ranch. Other species that will benefit from habitat restoration include the cactus wren (*Campylorhynchus brunneicapill*) and orange-throated whiptail lizard (*Cnemidophorus hyperythrus beldingi*). Other plants and animals are also monitored over time in restoration sites.



Cactus wren

Photo © B. Moose Peterson/WRP



Orange-throated whiptail lizard

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