

OCCURRENCE AND MANAGEMENT CONSIDERATIONS OF CALIFORNIA GNATCATCHERS ALONG SAN DIEGO COUNTY HIGHWAYS

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Being aware of sage scrub and California Gnatcatchers (*Poliophtila californica*) along its highways, the California Department of Transportation (Caltrans), District 11, contracted with Regional Environmental Consultants (RECON) to identify potential habitat patches and survey for the gnatcatcher in these areas. The study could guide planning of highway improvements and routine maintenance to minimize or avoid effects on this threatened species. We present part of the results of that study. Our results suggest conservation-planning considerations for linear habitats along other highway and utility easements. In addition, we provide recommendations for further study of the California Gnatcatcher within such areas.

STUDY AREA AND METHODS

The study area included all interstate highways (I) and state routes (SR) within the known range of the species in San Diego County. Surveyed highways included I-5, I-8, I-15, I-805, I-905, SR-52, SR-54, SR-56, SR-67, SR-76, SR-78, SR-94, SR-125, and SR-163 (Figures 1a and 1b). We omitted highway segments currently under construction or being planned for improvement.

We identified a patch as potential California Gnatcatcher habitat if it covered at least 0.4 ha (1 acre) in size and contained greater than 10% native shrub cover. We defined a patch as an area of sage scrub or chaparral within the highway right-of-way that was not interrupted by more than approximately 400 meters of development (i.e., highway interchanges, road crossings, or residential/industrial/commercial structures) or nonnative vegetation. In addition, other land uses that might represent barriers to the gnatcatcher's movement, including highways of four lanes or greater and other areas of high traffic volume, were used to define the limits of a patch. For all surveyed patches along I-5, I-15, and I-805, the patch size was determined from Caltrans 600-scale aerial photography of highway rights-of-way. These were recorded to determine if patch size influenced the gnatcatcher's occurrence, with the premise that larger patches are more likely to support the species. We also noted whether there was contiguous habitat outside of the highway right-of-way or manufactured cut and/or filled slopes with restored native scrub.

Directed searches for the California Gnatcatchers focused primarily on I-5, I-15, and I-805, although portions of I-8, SR-52, and SR-78 were also covered. We surveyed up to a distance of approximately 400 meters from the highway or to the limit of the identified habitat patch, whichever was closer. The area that could be surveyed was limited by time and budget

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constraints; therefore, not all potential habitat along these highways was surveyed. Generally, we gave priority to areas where we judged the gnatcatcher most likely to occur. Although high-priority patches occur within rights-of-way along I-5 in Camp Pendleton Marine Corps Base and along I-15 in Marine Corps Air Station Miramar, no surveys were conducted in these areas as access to U.S. government property was not secured. Surveys were performed one to three times, as necessary. No subsequent surveys were performed if California Gnatcatchers were identified on the first or second survey. Therefore, our results represent occurrence only, not exact numbers.

Surveys were conducted by RECON biologists between April and December 1993 on 67 separate dates. Expected to be ineffective because of traffic noise, taped vocalizations of the California Gnatcatcher were generally not used during the surveys except downslope of highways, where ambient noise levels were much lower. All surveys were conducted on foot by observers moving slowly through potential habitat, searching for the species visually, and when possible listening for the bird's distinctive calls. Surveys were performed generally between the hours of 0600 and 1200 under fair weather. Temperatures during the surveys ranged from approximately 10° to 32° C.

Prior to September 15 (the approximate date when males lose their black caps and juveniles assume their adult plumage), the sex of California Gnatcatchers was recorded. After this date, sex was considered unknown. Nesting, fledging, or noteworthy behavioral observations were also recorded.

RESULTS

We identified 187 habitat patches as possibly supporting California Gnatcatchers. Of these, 124 were contiguous with larger expanses of native scrub outside of highway rights-of-way, 63 were isolated. Of the 187, 57 were surveyed for the California Gnatcatcher. Forty-six (81%) of these were occupied, 11 were unoccupied. Four of 12 (33%) surveyed isolated patches were occupied, compared to 42 of 45 (93%) patches which were contiguous with more extensive habitat.

Size of the patch appeared to be an important factor in the presence of California Gnatcatchers. Of nine patches covering 8.1 ha (20 acres) or less, only four (44%) were occupied, whereas the species was observed in 38 of the 39 (97%) patches greater than 8.1 ha. The areas of seven additional patches were measured as below 8.1 ha, but because of limitations of the base maps we were unable to determine if additional adjacent habitat would increase these patches beyond 8.1 ha. Four of these seven were occupied.

One hundred eight occurrences of the California Gnatcatcher, comprising 243 individual birds, were recorded during the surveys. The generalized locations are shown on Figures 2a and 2b. The general locations of other known California Gnatcatchers from previous survey work adjacent to Caltrans District 11 highways are also shown (Caltrans and RECON unpubl. data).

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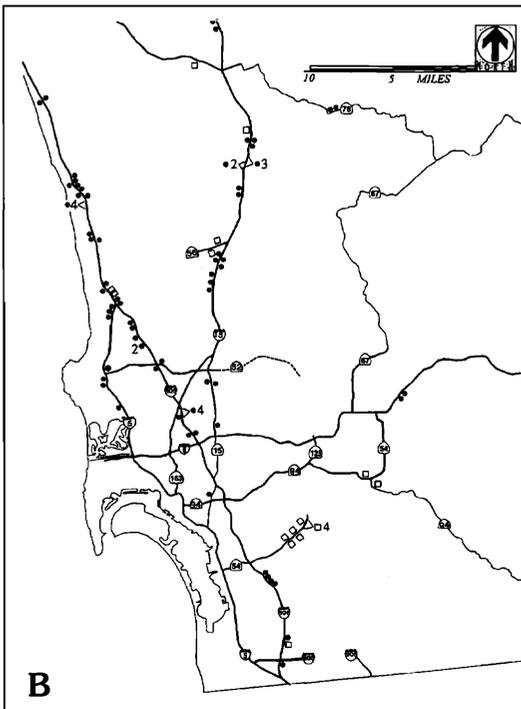
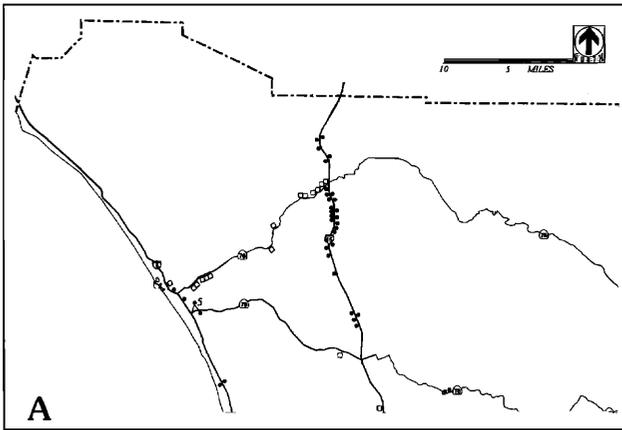


Figure 2. Locations of California Gnatcatcher sightings along highways. Solid circles, occurrence identified during this study; open squares, other known occurrences. (a), North portion of study area; (b), south portion of study area.

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Five nests of the California Gnatcatcher were recorded during the study, two along I-5, three along I-15. Of these five, two were within revegetated coastal sage scrub on cut and filled slopes, three in natural sage scrub vegetation. The nests were at approximately 6, 15, 24, 61, and 88 meters from the edge of the highway. One additional nest, on a revegetated filled slope approximately 15 meters from I-5, was previously documented by RECON (1992, Technical analysis of potential noise effects on California Gnatcatcher habitat adjacent to future Orange Avenue, RECON, 4241 Jutland Dr., Suite 201, San Diego, CA 92117-3653).

The majority of California Gnatcatchers were observed within natural habitat adjacent to revegetated cut and filled slopes. Twenty-three observations, however, were made within revegetated areas, including the two observations of nests.

Surveyed cut and filled slopes, as well as other disturbed areas, were either seeded by Caltrans following highway construction or were revegetated through natural colonization. Most of these patches were covered sparsely with small native shrubs, primarily California buckwheat (*Eriogonum fasciculatum*) and/or California sagebrush (*Artemisia californica*); however, a few areas were densely vegetated. Most revegetated areas lacked large shrubs such as laurel sumac (*Malosma laurina*) or lemonadeberry (*Rhus integrifolia*). In most instances, the revegetated slopes augmented adjacent occupied habitat, adding to its overall value. In at least seven cases where gnatcatchers were present, however, the revegetated habitat along the highway was entirely constrained by urban or agricultural development.

CONCLUSIONS AND RECOMMENDATIONS

Because California Gnatcatchers use highway rights-of-way so extensively, additions, improvements, and maintenance should be implemented so as to avoid or minimize adverse effects to areas occupied or potentially occupied by the species. Additionally, these data support the usefulness to the California Gnatcatcher of native landscaping in highway revegetation. We recommended that native plant species, particularly those mimicking the vegetation composition and structure of typical California Gnatcatcher habitat, be used in highway landscaping where appropriate rather than traditional exotic landscape vegetation.

Our results suggest that California Gnatcatchers could use highway rights-of-way as dispersal corridors. From our observations of juveniles using these rights-of-way we suggest that maintenance of gnatcatcher habitat along highways, and its integration in future highway projects, will increase the chance of genetic exchange between core populations. Current regional conservation plans have generally not considered highway rights-of-way as potential habitat linkages, but our results suggest that they (and perhaps other linear utility easements, such as power-line corridors of similar configuration and plant composition) may be of significant value in linking populations of the California Gnatcatcher. The question merits further research, as do adverse effects possibly associated with highways, such as high noise levels, dust, light, direct mortality, etc. We mean not that the construction of new highways and utility easements is beneficial to the California Gnat-

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catcher, merely that given the remaining distribution and fragmentation of habitat suitable for the species, existing easements should be studied for their potential additional value to habitat preserves focused on the California Gnatcatcher.

SUMMARY

From April to December 1993 we surveyed potential California Gnatcatcher habitat along highways in San Diego County. California Gnatcatchers were found within 46 of the 57 patches of potential habitat surveyed. Twenty-three of these observations, including two of nesting, were on revegetated slopes. These data support the value of highway rights-of-way and possibly other utility easements to contribute to the limited remaining habitat for the California Gnatcatcher. Such areas may function as dispersal corridors.

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