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THE UNITED STATES DISTRIBUTION OF THE CALIFORNIA BLACK-TAILED GNATCATCHER

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The Black-tailed Gnatcatcher, *Polioptila melanura,* is represented in California by two subspecies, *P. m. lucida* and *P. m. californica* (AOU 1957). These forms were originally described as distinct species on the basis of plumage differentiation, with *californica* having darker underparts and less white on the underside of the rectrices than *lucida* (Figure 1). Later, Grinnell (1926) concluded that individual variation exhibited by the central Baja California race *pontilis*[1] and the Cape San Lucas form *margaritae* suggested that *californica* and *lucida* were merely the extremes in a continuous series of subspecies. However, there do not appear to be any documented localities of overlap or genetic introgression between *lucida* and the *californica / pontilis / margaritae* group (Grinnell 1928, Grinnell and Miller 1944). Therefore, rather than indicating genetic interchange between the populations, the resemblance of *margaritae* to the similarly pale *lucida* could be interpreted as convergence resulting from a north - south cline of dark to light plumaged birds within the *californica* group. Also, since Grinnell's taxonomic revision was based on morphological characters, and apparently failed to consider the possible significance of relatively pronounced vocalization differences between *lucida* and *californica*, additional investigation of speciation in the Black-tailed Gnatcatcher complex is currently being conducted.

[1]The nomenclature of the Black-tailed Gnatcatcher group has a rather tortured history (Grinnell 1926; van Rossem 1931a, 1931b). For the sake of clarity, the currently accepted (AOU 1957) subspecific names have been substituted here for those used in Grinnell's (1926) discussion.

Whereas *lucida* occurs widely throughout desert regions of southeastern California and Arizona, the primarily coastal California Black-tailed Gnatcatcher (*californica*) was somewhat localized in its United States distribution even prior to extensive habitat destruction within its range during the last 60 years (AOU 1957, Grinnell and Miller 1944). Restricted to coastal sage scrub habitat, *californica* was described by Grinnell and Miller (1944) as occurring in "coastal southern California from the Mexican line northwest to the lower Santa Clara Valley, Ventura County, and eastward to San Gorgonio Pass;" however, these workers also noted that suitable habitat for the subspecies had been "somewhat reduced" as early as the period 1920-1940. Pyle and Small (1961) stated that "the California subspecies is very rare, and lack of recent records of this race compared with older records may indicate a drastic reduction in population," and McCaskie and Pugh (1964) commented that *californica* "has been driven from most of its former range along the coast of the region." The subspecies was nominated for inclusion on the National Audubon Society's 1978 Blue List of declining species on the basis of the population's small and localized range being threatened by further habitat destruction (Arbib 1977).

This study represents a preliminary attempt to delineate the current United States range of the California Black-tailed Gnatcatcher and compare this distribution with the subspecies' former range. Such information provides a basis for continuing detailed evaluation of the population's status.

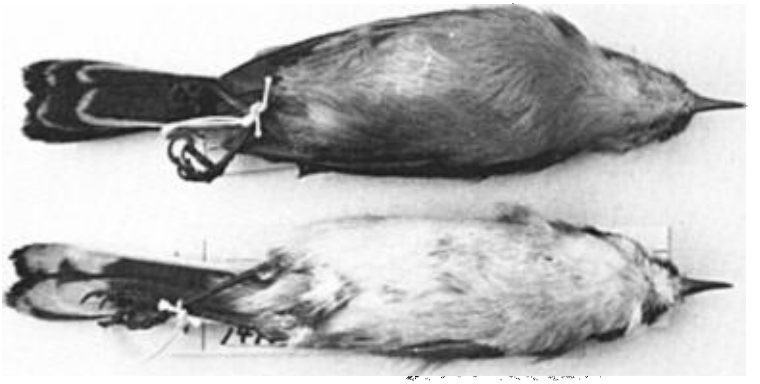

Figure 1. Ventral views of *P. m. californica* (above) and *P. m. lucida (below)*. Note the darker underparts of *californica*, as well as the limited amount of white on the undersurface of the rectrices.

METHODS

Distributional data, including both historic (pre-1960) and recent (post-1960) records, were obtained from various literature accounts, including Audubon Field Notes (AFN) and American Birds (AB). Additionally, data were collected from specimens at the Los Angeles County Museum (LACM), Western Foundation of Vertebrate Zoology (WFVZ), San Bernardino County Museum (SBCM), Museum of Vertebrate Zoology, University of California, Berkeley (MVZ), San Diego Natural History Museum (SDNHM) and the California Academy of Sciences (CAS). From February to October 1978 I spent approximately 145 hours surveying potential *californica* habitat in Ventura, Los Angeles, Orange, San Diego, San Bernardino and Riverside counties; additional areas in Los Angeles County were checked during approximately 60 hours of field work during March-May 1979. Also, observations of many active field ornithologists were solicited, and responses have been incorporated in this analysis. In Ventura, Los Angeles, Orange, Riverside and San Bernardino counties, regions which may contain suitable California Black-tailed Gnatcatcher habitat were mapped on the basis of preliminary field inspections and the location of the 2000 foot elevation contour, which corresponds roughly to the maximum elevation of coastal sage scrub vegetation. In San Diego County, more specific identification of suitable habitat was possible as a result of detailed vegetation mapping by Oberbauer (1979).

RESULTS AND DISCUSSION

The nonmigratory California Black-tailed Gnatcatcher is limited in the United States to moderately dense stands of coastal sage scrub occurring on arid hillsides, mesas and washes west of the Transverse and Peninsula ranges of southern California (Figure 2). The coastal sage scrub plant community, which is characteristically patchy in distribution, is found mainly below 2000 feet; above this elevation it is often replaced by the dense, more arborescent chaparral (Munz 1970). Coastal sage scrub is generally dominated by California Sagebrush (*Artemesia californica*), Black Sage (*Salvia mellifera*) or White Sage (*S. apiana*); other frequently occurring plant species include California Buckwheat (*Eriogonum fasciculatum*), prickly pear or cholla (*Opuntia* spp.), brittlebush (*Encelia californica*), Coyotebush (*Baccharis pilularis*), Chamise (*Adenostoma fasciculatum*) and Lemonadeberry (*Rhus integrifolia*). The restriction of *californica* to this habitat is clearly evidenced by the frequency with which various plant species have been recorded as nesting sites

(Table 1). Conversely, dominant chaparral plant species such as California lilac (*Ceanothus* spp.), oak (*Quercus* spp.), Toyon (*Heteromeles arbutifolia*) or Mountain Mahogany (*Cercocarpus betuloides*) rarely, if ever, occur as nesting sites, reflecting *californica*'s absence from the true chaparral plant community.

Where present, *californica* may be fairly common, with breeding densities of up to one pair per 5 acres being reported from the Palos Verdes Peninsula, Los Angeles County (Matson 1978b). However, the subspecies may also be very localized within large regions of apparently suitable habitat. For example, Schneebeck (1978) found the species absent from a 22.24 acre study plot of typical coastal sage scrub located in Orange County less than 15 miles from four sites where it has been recorded recently. Similarly, I was unable to locate *californica* during surveys of seemingly suitable habitat in the vicinities of Azusa and Big Tujunga Canyon, Los Angeles County, during late March 1979; both localities are known historical sites which have produced recent reports by other observers. Thus, it appears that at the present time, California Black-tailed Gnatcatchers may vary in abundance from fairly common to quite rare in those regions where they still persist.

Figure 2. Typical coastal sage scrub habitat occupied by California Black-tailed Gnatcatchers on the Palos Verdes Peninsula, Los Angeles County.

Table 1. Plant species used as nesting sites by the California Black-tailed Gnatcatcher (Western Foundation of Vertebrate Zoology egg collection data).

SPECIES	% OF RECORDED NESTS (n = 52)
California Sagebrush (*Artemesia californica*)	25
White Sage (*Salvia apiana*)	17
Black Sage (*Salvia mellifera*)	14
Chamise (*Adenostoma fasciculatum*)	11
Cholla (*Opuntia* spp.)	8
Buckthorn (*Rhamnus crocea*)	7
Orange (*Citrus* spp.)	4
Lemonadeberry (*Rhus integrifolia*)	4
Miscellaneous	10

The decline of *californica* in areas of known historic occurrence where suitable habitat is still present suggests that factors in addition to the destruction of coastal sage scrub may be having adverse impacts on the population. The Brown-headed Cowbird (*Molothrus ater*) has parasitized nests of *californica* in Los Angeles, San Diego and Riverside counties (Woods 1930, Friedmann 1934, Hanna 1934), and in Arizona, four of six nests of the desert race *lucida* were documented as victims of cowbird parasitism (Taylor 1966). The possible impact of Brown-headed Cowbird parasitism on *californica's* reproduction is unknown, but may be responsible for the subspecies' decline or absence in some areas where suitable habitat remains intact.

The distribution of California Black-tailed Gnatcatchers in southern San Diego County is probably characteristic of the population's status throughout its U.S. range (Figure 3). Most historic (pre-1960) records are at localities which no longer support coastal sage scrub vegetation; in fact, the majority of such sites are surrounded by extensive urban or agriculturally developed land. Furthermore, the remnant portions of *californica* habitat are highly fragmented, with nearly all being bordered on at least one side by regions of expanding human development. Continued reduction of the subspecies' already diminished habitat seems certain unless protective measures are rapidly initiated.

Although detailed vegetation maps were not obtained for areas north of San Diego County, Figure 4 represents a preliminary attempt to locate coastal sage scrub habitat and thereby define the maximum current range of *californica*. The category "possible coastal sage scrub vegetation" includes undeveloped areas less than 2000 feet elevation that were not adequately surveyed for *californica*; such regions undoubtedly include large portions of unsuitable

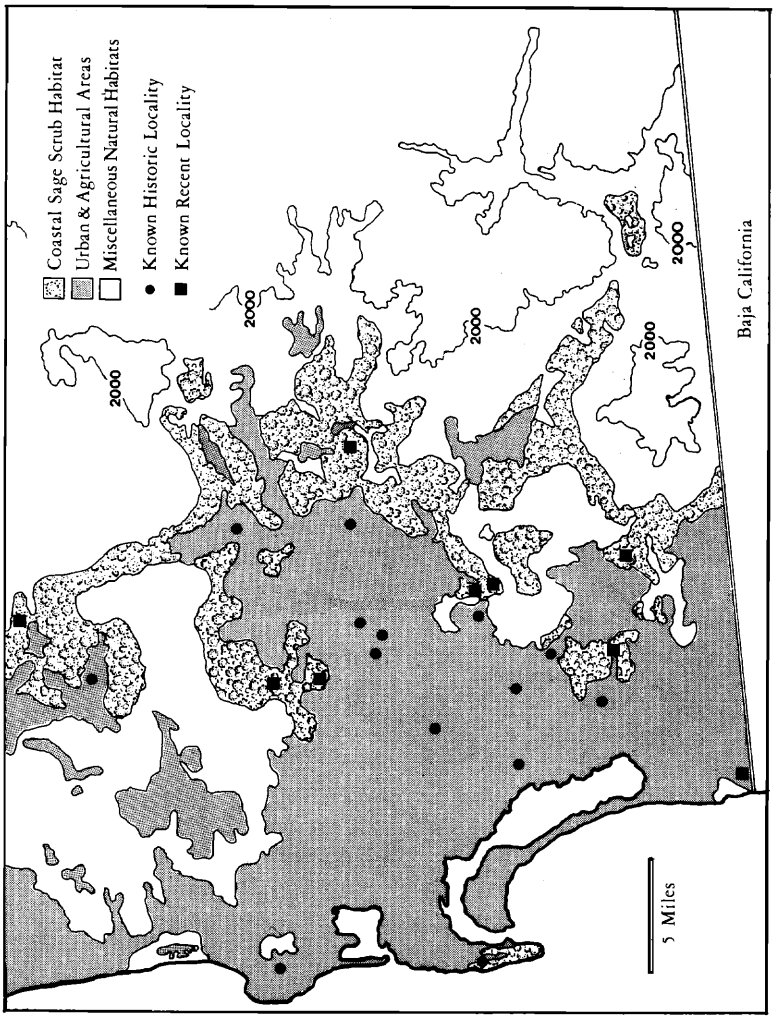

Figure 3. Distribution of the California Black-tailed Gnatcatcher in southern San Diego County. The location of the 2000 feet elevation contour is provided, as is habitat distribution based on Oberbauer (1979).

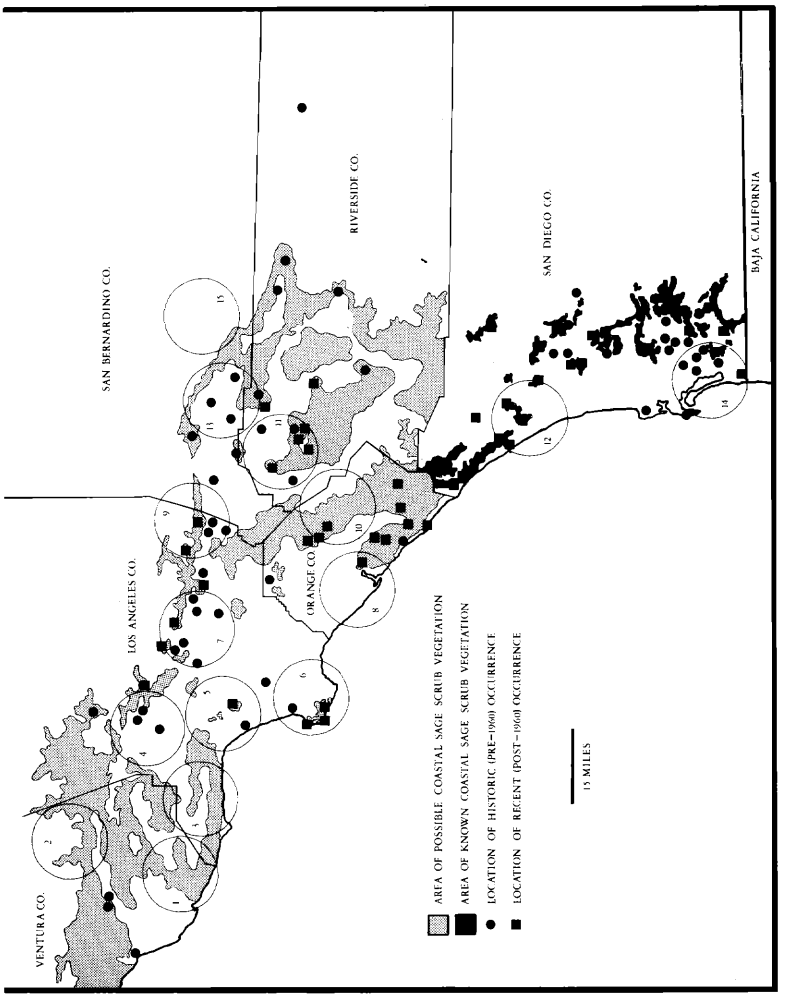

Figure 4. Estimated maximum distribution of the California Black-tailed Gnatcatcher in the United States. Locations of historic and recent records are presented. Numbered circles represent locations of the following Christmas Bird Count areas: 1—Thousand Oaks; 2—Sespe Wildlife Area; 3—Malibu Canyon; 4—San Fernando Valley; 5—Los Angeles; 6—Palos Verdes Peninsula; 7—Pasadena-San Gabriel Valley; 8—Orange County (Coastal); 9—Claremont; 10—Orange County (Northeastern); 11—Santa Ana River Valley; 12—Oceanside-Vista-Carlsbad; 13—San Bernardino Valley; 14—San Diego; 15—Redlands (Mill Creek).

habitat such as grassland or chaparral. Therefore, Figure 4 should be interpreted as an extremely liberal maximum estimate of coastal sage scrub distribution in Ventura, Los Angeles, Orange, Riverside and San Bernardino counties; the true range of *californica* in these counties probably more closely resembles the limited, highly fragmented pattern indicated for San Diego County. The following discussion provides specific information concerning *californica's* status throughout its historic U.S. range.

VENTURA COUNTY. *Historic occurrence:* Ventura (MVZ); near Santa Paula (Evermann 1886); 2.5 mi W of Santa Paula (WFVZ); Santa Paula (WFVZ). *Recent occurrence:* No known, fully substantiated records.

I am unaware of any certain records from Ventura County since 1924. However, apparently suitable coastal sage scrub remains in the vicinity of Santa Paula, where the species was recorded historically, and it is possible that small numbers still persist in the county. Although the species has been reported twice in recent years on the Sespe Wildlife Area Christmas Bird Count (AFN 23:428, 1969; AB 30:614, 1976), local observers familiar with this count area are doubtful of these records' validity.

LOS ANGELES COUNTY. *Historic occurrence:* Los Angeles (WFVZ); near Redondo (LACM); Redondo (CAS); Port Ballona (LACM); San Fernando (MVZ, CAS, LACM); Tujunga Wash (MVZ, LACM); San Fernando Valley (LACM); Rubio Wash (LACM); Pasadena (LACM, MVZ); Arroyo Seco Wash (LACM, MVZ); Arcadia (LACM, WFVZ); Big Santa Anita Wash (LACM); Monrovia (LACM); Highland Park (MVZ); El Monte (MVZ); Azusa (MVZ, Woods 1930); San Gabriel Wash (MVZ; Woods 1921, 1928); near Claremont (WFVZ); Claremont (MVZ, LACM, WFVZ); Pomona (MVZ); Mint Canyon (WFVZ). *Recent occurrence:* Palos Verdes Peninsula (S. Wells, R. Bradley, J. Atwood); Rancho Santa Ana Botanic Gardens, Claremont (R. McKernan); Arroyo Seco, Pasadena (S. Suffel); Big Tujunga Wash (M. San Miguel); near Big Dalton Canyon (S. Suffel); San Gabriel Wash, Azusa (M. San Miguel); Baldwin Hills, Culver City (J. Atwood).

Habitat for *californica* has been greatly eliminated in Los Angeles County. Although extensive natural areas which include coastal sage scrub remain in the vicinity of Saugus and a 1936 nesting record is from nearby Mint Canyon (WFVZ), the absence of other historic or recent records from this region suggests that *californica's* range may never have regularly extended north of San Fernando Pass. Similarly, there are no records from the lower elevations of the Santa Monica Mountains; a recent report from the Malibu Canyon Christmas Bird Count (AB 27:513, 1973) appears to be invalid. At most, *californica* is very rare or localized in this portion of Los Angeles County. What must be a very small population remains in the Baldwin Hills area southeast of Culver City; this tiny site is currently used for oil production and is entirely surrounded by urban areas. California Black-tailed Gnatcatchers remain fairly common in remnant patches of coastal sage scrub on the Palos Verdes Peninsula, which is the only area in Los Angeles County where the subspecies has been regularly observed in recent years. However, suitable habitat at this locality continues to shrink under the pressure of ongoing hous-

ing developments (Matson 1978a). Recent sightings of *californica* from the vicinities of San Fernando, Pasadena, Azusa and Claremont are very few, especially considering that most pre-1960 records in Los Angeles County were from these four localities.

ORANGE COUNTY. *Historic occurrence:* La Habra (WFVZ); Laguna (Grinnell and Miller 1944). *Recent occurrence:* Dana Point (A. Fries, J. Atwood); Casper's Regional Park (R. McKernan); Laguna Canyon (S. Cardiff, J. Atwood); Santiago Reservoir (E. Banstorp); Bonita Canyon Reservoir (E. Banstorp); near Mission Viejo (J. Atwood); near Laguna Niguel (A. Fries, J. Atwood); 2 mi W of Sand Canyon Reservoir (J. Atwood); Peter's Canyon Reservoir (J. Atwood).

Since there are few pre-1960 records of *californica* from Orange County, it is difficult to assess the extent to which the population has declined. Sizable portions of coastal sage scrub remain intact in Orange County, especially in the more inland areas; however, *californica's* distribution appears very patchy in the vicinity of the Santa Ana Mountains. Most sites where the subspecies has been observed in recent years are on the fringes of rapidly expanding urban centers such as Irvine, Newport Beach, Laguna Niguel, Mission Viejo and Dana Point, where ongoing destruction of coastal sage scrub seems nearly certain.

SAN BERNARDINO COUNTY. *Historic occurrence:* San Bernardino (CAS); San Bernardino Valley (CAS); NW of San Bernardino (SBCM); Lytle Creek Wash (SBCM); Cajon Wash (MVZ); Reche Canyon (SBCM, MVZ); Cucamonga (MVZ); Slover Mountain, Colton (SBCM, Hanna 1909); near Redlands (Grinnell and Miller 1944). *Recent occurrence:* No known, fully substantiated records.

Urban and agricultural development has reduced historic areas of coastal sage scrub habitat along the base of the San Bernardino Mountains. Although Figure 4 indicates a nearly continuous strip of possibly suitable *californica* habitat along the lower elevations of these mountains, in reality the subspecies' current distribution in this region is probably much more fragmented. I know of no recent San Bernardino County records in which details of observation and specific locality information are available. However, one or two Black-tailed Gnatcatchers have been reported on four relatively recent San Bernardino Valley Christmas Bird Counts (AFN 23:423-424, 1969; 24:454, 1970; AB 25:504-505, 1971; 27:526-527, 1973), suggesting that *californica* may yet persist in limited numbers.

RIVERSIDE COUNTY. *Historic occurrence:* Riverside (CAS, MVZ); near Riverside (SBCM); Minifee Valley (LACM); Mockingbird Canyon (SBCM); Jurupa Mountains (MVZ, S. Cardiff); Box Springs Mountains (SBCM); Pedley (WFVZ); Cabazon (MVZ); Valle Vista (MVZ); Corona (Grinnell and Miller 1944); Palm Springs (MVZ); Banning (MVZ). *Recent occurrence:* 2.5 mi NW of Perris (S. Cardiff); 2 mi SE of University of California, Riverside (S. Cardiff); 4 mi SE of Riverside (SBCM); near Lake Matthews (D. Morton, J. Atwood); Mockingbird Canyon (J. Atwood).

Coastal sage scrub is extensive in Riverside County, yet California Black-tailed Gnatcatchers have been reported infrequently in recent years. Most post-1960 records are from near Lake Matthews and in the vicinity of Perris; both areas are threatened by increasing housing developments. The absence

of recent observations from the San Jacinto Valley may reflect a lack of thorough observer coverage. One of the few truly extralimital records of *californica* is that of an individual collected near Palm Springs on 1 January 1904 (Grinnell 1904).

SAN DIEGO COUNTY. *Historic occurrence:* San Diego (MVZ, WFVZ, SDNHM, Belding 1890); Soledad Mountain (WFVZ); Grossmont (WFVZ); La Mesa (WFVZ); Hillsdale, near El Cajon (SDNHM); National City (Friedmann 1934, SDNHM, WFVZ); Chula Vista (MVZ, WFVZ); Bonita (WFVZ, SDNHM); Lakeside (WFVZ); Sweetwater Dam (SDNHM, WFVZ); Poway (Belding 1890); Lake Hodges (WFVZ); Escondido (Sharp 1907, WFVZ, SDNHM); San Pasqual (Sharp 1907, WFVZ); Ramona (WFVZ); 2 mi E of La Mesa (WFVZ); Point Loma (MVZ, WFVZ); 5 mi E of National City (SDNHM). *Recent occurrence:* near Santa Margarita River mouth, Camp Pendleton (A. Fries, J. Dunn, P. Unitt); lower San Luis Rey River, Oceanside (A. Fries); 3 mi E of Oceanside (S. Wise, D. Parker); Old Mission Dam (D. Ramsey); 1 mi E of El Cajon (J. Dunn , S. Suffel); Sweetwater Dam (J. Dunn, W. Everett, P. Unitt); Telegraph Canyon, Rancho Otay (P. Unitt); Spooner's Mesa, Tijuana River Valley (P. Unitt); Dictionary Hill, Spring Valley (M. Thornburgh); Rancho Bernardo (J. McNeil); near Lake Hodges (S. Montgomery); near Escondido (S. Montgomery); 5 mi E of San Pasqual (J. Atwood); O'Neill Lake, Camp Pendleton (J. Dunn); near Lake Poway (A. Fries); Pauma Valley (A. Fries); near Carlsbad (S. Montgomery); near San Marcos (W. Lenarz); San Mateo Creek (D. Erickson); near San Onofre (J. Atwood).

Californica's range has been severely reduced in San Diego County by urban and agricultural expansion. Oberbauer (1979) suggested that up to 70% of the county's original coastal sage scrub vegetation has been destroyed or modified and, as is evident in Figure 3, further reduction of this habitat is imminent. An extensive portion of suitable habitat persists in northwestern San Diego County, where sizable natural areas have been protected from development because they are located in the United States Marine Corps' Camp Pendleton. Virtually all other known sites of recent occurrence are located near rapidly expanding urban centers such as Vista, Escondido, Rancho Bernardo and El Cajon. J. Dunn (pers. comm.) reports the presence of an extralimital specimen of *californica* (SDNHM 1678) collected 13 February 1893 at San Felipe Canyon; the specimen was mislabelled as *P. m. lucida* and is, assuming correct locality information, from an area where only *lucida* is known to occur.

Table 2 summarizes observations of California Black-tailed Gnatcatchers on Christmas Bird Counts during the period 1968-79; the approximate location of each 15 mile diameter count circle is indicated in Figure 4. Due to many variables, including observer experience, thoroughness of habitat coverage and weather conditions, the numbers of *californica* reported on each count are not directly comparable with each other, nor do the numbers given represent an accurate census of the subspecies' true population level. Also, the validity of some records is very doubtful; however, for completeness, all reported observations have been included in Table 2.

Table 2. Numbers of California Black-tailed Gnatcatchers reported on Christmas Bird Counts, 1968-1979 (*Audubon Field Notes 22-25, American Birds 26-33*).

COUNT LOCATION	YEAR											
	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Claremont						—	—	—	—	—	—	—
Los Angeles	—	—	—	—	—	—	—	—	—	—	—	—
Malibu Canyon	—	—	—	—	—	1	—	—	—	—	—	—
Oceanside-Vista-Carlsbad	—	—	2	—	2	—	2	—	1	3	3	10
Orange County (Coastal)	—	—	1	2	11	—	—	1	2	—	—	—
Orange County (Northeastern)	—	6	5	1	—	—	—	3	—	—	—	3
Palos Verdes Peninsula	—	14	12	12	18	17	12	18	2	6	1	7
Pasadena-San Gabriel Valley	—	3	—	—	—	—	—	—	—	—	—	—
Redlands (Mill Creek)	—	—	—	—	—	—	—	—	—	—	—	—
San Bernardino Valley	—	2	1	1	—	1	—	—	—	—	—	—
San Diego	4	31	13	35	5	8	12	3	1	7	5	6
San Fernando Valley	—	—	—	—	—	—	—	—	—	—	—	—
Santa Ana River Valley									—	—	—	—
Sespe Wildlife Area	—	2	—	—	—	—	—	—	1	—	—	—
Thousand Oaks							—	—	—	—	—	—

Despite interpretive difficulties, the Christmas Bird Count records do suggest interesting trends. California Black-tailed Gnatcatchers appear to be an easily overlooked species, as evidenced by the absence of pre-1969 records from the Palos Verdes Peninsula count. However, even assuming that the subspecies is frequently "missed" on Christmas Bird Counts, the total lack of records from 1974 to 1979 indicates that the population level is, at most, very low in the following count areas: Claremont, Los Angeles, Malibu Canyon, Pasadena-San Gabriel Valley, Redlands (Mill Creek), San Bernardino Valley, San Fernando Valley and Thousand Oaks. The only recent Christmas counts which have regularly recorded California Black-tailed Gnatcatchers are San Diego, Palos Verdes Peninsula and Oceanside-Vista-Carlsbad, and numbers recorded from these localities are alarmingly small. The Palos Verdes Peninsula data appear to indicate a gradual decline in numbers, although changes in the amount and thoroughness of observer coverage may also be

reflected. Perhaps more significant are the San Diego Christmas count data from 1971 (35 Black-tailed Gnatcatchers per 264 party hours) and 1977 (7 Black-tailed Gnatcatchers per 268 party hours); assuming approximately comparable habitat coverage in these 2 years, the data suggest an 80% reduction in the population of *californica* over a 7 year period.

Based on the results of this preliminary survey and other recent observations, it appears that numbers of *californica* are seriously low, with further declines to be expected due to continuing habitat destruction. Also, the subspecies is absent or extremely rare in many areas of apparently suitable habitat where it was historically recorded, suggesting a possible population decline due to factors other than habitat loss. Although largely speculative, the following estimates may represent the maximum number of California Black-tailed Gnatcatchers remaining in the United States: Ventura County, 30 pairs; Los Angeles County, 130 pairs; San Bernardino County, 50 pairs; Orange County, 325 pairs; Riverside County, 400 pairs; San Diego County, 400 pairs. These figures are little more than extremely liberal guesses, and not the results of intensive population surveys. However, while this total of 1,335 pairs of *californica* may be a gross overestimate, perhaps as much as twice the actual population level, it is probably not lower than the true figure.

SUMMARY

The California Black-tailed Gnatcatcher appears to be showing continuing population declines throughout its United States range, which is located in coastal southern California. The primary cause of this decline appears to be the destruction of coastal sage scrub vegetation, the subspecies' required habitat, as a result of urban and agricultural development. The population may also be declining in areas where suitable habitat still persists, possibly due to brood parasitism by Brown-headed Cowbirds. As a result of this preliminary investigation, I suspect that no more than 1,000 to 1,500 pairs of *californica* remain in the United States, and the current population may be considerably smaller. Continued reduction of the subspecies' already limited habitat is almost certain, and warrants immediate concern for the survival of the California Black-tailed Gnatcatcher.

Additional research is needed to determine 1) the taxonomic status of the California Black-tailed Gnatcatcher, 2) the population's size and present distribution, 3) the precise ecological requirements of the subspecies, and 4) impact of Brown-headed Cowbird parasitism on *californica's* reproductive success.

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This project was supported financially by the Shirley Wells Conservation Fund of the El Dorado Audubon Society. I am pleased to dedicate this paper to the late Shirley Wells, who not only prompted the study by her interest in the Palos Verdes Peninsula population of Black-tailed Gnatcatchers, but who also inspired several generations of southern California birders by her friendship, enthusiasm and dedication.

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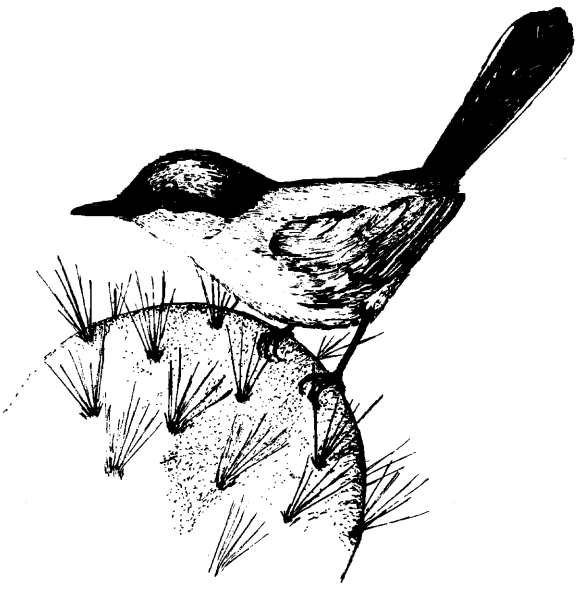

Sketch by Cameron Barrows