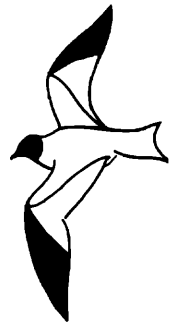


# WESTERN BIRDS



Volume 31, Number 4, 2000

## **BREEDING LANDBIRDS OF A HIGHLY THREATENED OPEN SPACE: THE PUENTE-CHINO HILLS, CALIFORNIA**

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**ABSTRACT:** Surveys of breeding birds in the remaining 20,000 ha of open space in the Puente-Chino Hills of southern California during spring and early summer 1997 and 1998 revealed several species declining or nearing extirpation in the Los Angeles area. This report represents the first treatment of the distribution of the birds of this fast-disappearing natural area. From data collected on point counts and transects, three areas appear in need of immediate conservation action for bird diversity in the Puente-Chino Hills to be maintained: the coastal sage scrub of northern Brea/Yorba Linda, the grassland of southern Rowland Heights, and the grassland of upper Tonner Canyon.

Tenuously separating the metropolitan areas of Los Angeles (LAX), Orange (ORA), Riverside (RIV) and San Bernardino (SBD) counties, the Puente-Chino Hills are the site of numerous ongoing battles over development and open-space conservation. In order to guide future land acquisitions and conservation projects here, California's Mountain Recreation and Conservation Authority contracted with the University of California, Riverside, to survey birds of the Puente-Chino Hills during 1997 and 1998. During this survey I encountered several species whose ranges are poorly known in the Los Angeles area or that are nearly extirpated there, such as the California Gnatcatcher (*Polioptila californica*), Bell's Vireo (*Vireo bellii*), Grasshopper Sparrow (*Ammodramus savannarum*), and several raptors. This report represents the first treatment of birds of the entire Puente-Chino Hills.

### STUDY AREA

#### Physical Location

The eastern Los Angeles Basin features three ranges of low hills (100–500 m) that cover about 20,000 ha and loosely connect the San Gabriel and

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Santa Ana mountains: the San Jose, Puente, and Chino hills. The Puente-Chino Hills extend northwest from the Santa Ana Mountains in eastern Orange and western Riverside counties and terminate about 50 km to the west at Whittier Narrows, forming a "peninsula" of open space through the urbanized eastern Los Angeles Basin (see Beier 1995). Their westernmost extension, north and west of Colima Rd., is widely referred to as the Whittier Hills. Currently, less than 30% of open space in the Puente-Chino Hills is protected as public land, mostly within Chino Hills State Park (about 5000 ha) in the extreme southeast (Figure 1).

The study area consisted of all open space west of State Route 71 and south of State Route 60 (Figure 2). It also included patches of undeveloped land within the community of Phillips Ranch, Pomona, located just north of State Route 60. The southern boundary of the study area was formed by (west to east) Whittier Blvd., Imperial Hwy., Yorba Linda Blvd./Weir Canyon Rd., and State Route 91. Patches of habitat interspersed in low-density residential development adjacent to the main body of open space (e.g., on steep hillsides within housing tracts) were also surveyed. Cities and communities within the study area include Whittier, Hacienda Heights, La Habra Heights, Rowland Heights, Diamond Bar, and Phillips Ranch (LAX), Brea and Yorba Linda (ORA), and Chino Hills and Sleepy Hollow (SBD).

Single-family tract housing accounts for most of the development within the hills, with small areas of older neighborhoods in La Habra Heights and Diamond Bar. Long bordered by urbanization to the north and south, the hills are now seeing their eastern border, the agricultural Chino region,

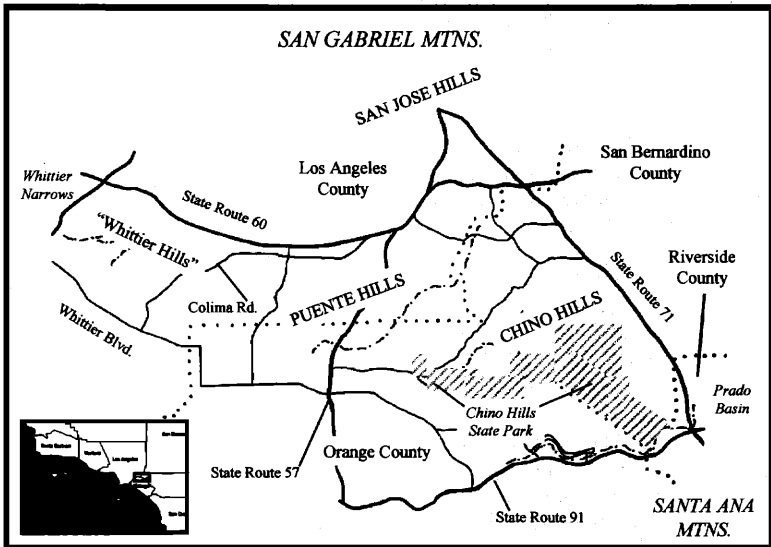


Figure 1. Puente-Chino Hills region.

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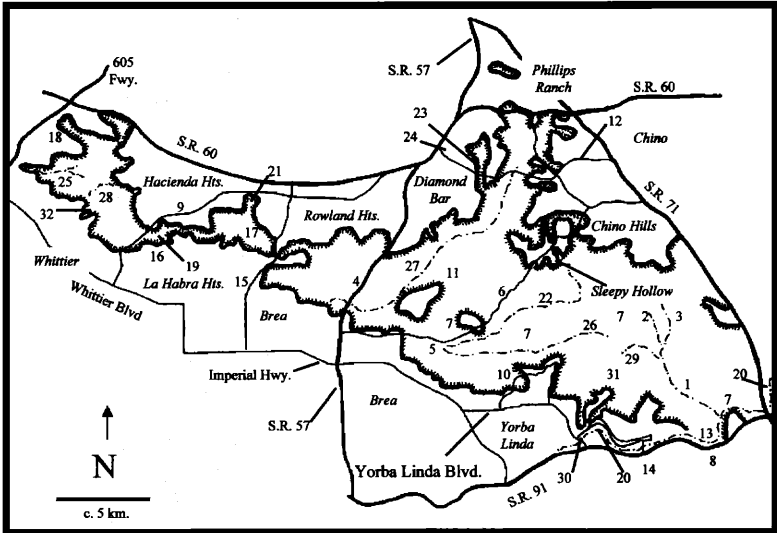


Figure 2. Locations mentioned in the text. 1, lower Aliso Cyn.; 2, upper Aliso Cyn.; 3, Bane Cyn.; 4, Brea Cyn.; 5, Carbon Cyn. Regional Park; 6, Carbon Cyn. Rd.; 7, Chino Hills State Park; 8, Coal Cyn.; 9, Colima Rd.; 10, Fairmont Ave.; 11, Firestone Boy Scout Reserve; 12, Grand Ave.; 13, Green River Golf Course; 14, Gypsum Cyn. Rd.; 15, Harbor Blvd.; 16, Murphy Ranch Park; 17, Powder Canyon Natural Area; 18, Rose Hills Memorial Park; 19, San Miguel Creek; 20, Santa Ana River; 21, Schabarum Park; 22, Soquel Cyn.; 23, Summitridge Park; 24, Sycamore Canyon, Whittier; 25, Sycamore Canyon Park, Diamond Bar; 26, Telegraph Cyn.; 27, Tonner Canyon; 28, Turnbull Cyn.; 29, Water Cyn.; 30, Weir Cyn. Rd.; 31, Wire Springs Trail; 32, Worsham Cyn.

finally succumbing to large-scale residential sprawl. While open-space conservation in the hills is dominated by Chino Hills State Park, local efforts in the Whittier Hills have had some success in protecting and linking parcels west of Harbor Blvd.

### Ornithological History

Historical data on breeding birds in the Puente-Chino Hills are sparse. Housed at the Western Foundation for Vertebrate Zoology (WVZ), Camarillo, the unpublished field notes of Antonin Jay, an egg collector in Whittier during the early 1900s, provide some of the earliest records of nesting species but focus mainly on the San Gabriel River bottom to the west of the Puente Hills. Craigmile (1906) provided a rough sketch of the region's avifauna, though its accuracy was questioned by Grinnell (1906). Early comprehensive distributional works (e.g., Grinnell 1898, Willett 1912, 1933, Grinnell and Miller 1944) mention scattered collection records, generally from established towns on the periphery of the hills such as Whittier. The same may be said for specimens or egg records in various museums.

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Students at Rio Hondo College near Rose Hills Memorial Park north of Whittier have conducted regular bird surveys of open space adjacent to their campus since the 1970s (S. Breaux, unpubl. data), and the Whittier Hills have received regular coverage by a handful of dedicated birders since the 1960s (especially L. Schmahl and J. Schmitt). Field work associated with the Orange County Breeding Bird Atlas in the late 1980s (Gallagher 1997) and the Los Angeles County Breeding Bird Atlas in the late 1990s (M. Wimer, unpubl. data) contributed general distributional information on the breeding avifauna of the region, as have several recent publications on Orange County (Hamilton and Willick 1996) and Whittier Narrows (Long 1993). While environmental assessment reports from development projects in the region typically mention just a few common species or focus on the California Gnatcatcher, several consultants (including K. Campbell and J. Pike) contributed significant recent observations for this study.

### Plant Communities

The vegetation of the Puente-Chino Hills is a mosaic of scrub, grassland, and woodland. Scrub communities are most widespread, particularly coastal sage scrub dominated by California Sagebrush (*Artemisia californica*), California Buckwheat (*Eriogonum fasciculatum*) and Black Sage (*Salvia mellifera*). This occurs with a shrubby sumac woodland ("Sumac Series" of Sawyer and Keeler-Wolf 1995) dominated by Toyon (*Heteromeles arbutifolia*), Laurel Sumac (*Malosma laurina*), Lemonadeberry (*Rhus integrifolia*) and, except in the Whittier Hills, California Black Walnut (*Juglans californica* var. *californica*). Both coastal sage scrub and sumac woodland are most prevalent along the southern flank of the hills and in the far west. Chaparral, characterized by Chamise (*Adenostoma fasciculatum*), buckthorns (*Ceanothus* spp.) and other frost-tolerant shrubs, is restricted to several high ridges in the north-central and eastern portion of the study area.

Native woodland, dominated by Coast Live Oak (*Quercus agrifolia*) and/or California Black Walnut, is most extensive in the north-central section of the hills and along drainages elsewhere. Woodland-forming groves of planted eucalyptus are scattered throughout and support a subset of native woodland bird species. I distinguish riparian growth of steeper slopes and faster-flowing streams dominated by mature Western Sycamore (*Platanus racemosa*) and Coast Live Oak, with occasional Black Cottonwood (*Populus balsamifera*), as "foothill riparian," that of more level, slower streams, characterized by willows (*Salix* spp.), Fremont Cottonwood (*Populus fremontii*), and thickets of Mulefat (*Baccharis salicifolia*) as "lowland riparian."

The region's grassland is dominated by nonnative plants, including Black Mustard (*Brassica nigra*) and annual grasses (especially *Hordeum*, *Bromus*, and *Avena*), and is most extensive in the central and far eastern portions of the hills. This habitat features scattered patches of native bunchgrasses (e.g., *Nassella pulchra*) and forbs (e.g., *Bloomeria crocea*, *Dichelostemma capitatum*). Hamilton and Willick (1996) provided an overview of the bird communities associated with these habitats.

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### METHODS

I used a combination of point counts and walking transects. Transects served to reveal inconspicuous and/or nonvocal birds undetected by point counts. Points and transect routes were placed as evenly as possible given access limitations. I sampled each point and transect once between 15 April and 29 May during either 1997 or 1998. A few riparian transects were surveyed later in the year (to 14 June) to minimize detection of migrants.

I made one count (adapted from Ralph et al. 1995) between 0500 and 0930 at 331 points in undeveloped portions of the Puente-Chino Hills. Nearly all points were located within 500 m of each other, but none was closer than 200 m. Point counts lasted 8 minutes, and all birds heard or seen were recorded. The 46 transect surveys (1–4 km long), each done once, involved walking slowly along a road or trail and recording all birds seen or heard within 100 m.

Since this study focused on large-scale patterns of distribution rather than on local abundance, I use only presence/absence data from point counts and transects. No special effort to record breeding evidence was made other than by incidental observation. Flyovers were omitted from analysis, except in the case of raptors, the Turkey Vulture (*Cathartes aura*), American Crow (*Corvus brachyrhynchos*), Common Raven (*Corvus corax*), and several difficult-to-survey taxa including nocturnal species, aerial foragers, and waterbirds. I omit numerical data for these species and obviously nonbreeding species but summarize their known status briefly.

I recorded migratory species as present only if singing, paired, or exhibiting nesting behavior. While these methods may have over- or undercounted certain species, they attempted to minimize rather than eliminate confusion of migrant with breeding birds.

I surveyed both public lands and the few private holdings granting permission to enter. In regions with little public access, point counts and transects were conducted from public roads or public parkland. Several large private holdings were off limits during the study, including most of Tonner Canyon (including the large Firestone Boy Scout Reserve), Brea Canyon (both sides of State Route 57), and much of the grazing land north and east of Chino Hills State Park in the far eastern Chino Hills.

### RESULTS

At the end of most species accounts, the first number in parentheses is the percentage of point counts where species recorded as present ( $n = 331$ ), followed by the percentage of walking transects where detected ( $n = 46$ ). CHSP, Chino Hills State Park. All observations are mine unless another observer is credited.

Turkey Vulture *Cathartes aura*. Typically observed either soaring over grassland and other open habitats or roosting in eucalyptus and riparian groves in small groups, the largest being about 10 birds in riparian woodland in southern Diamond Bar on 14 May 1998. This species has probably been extirpated as a breeder from the study area, as Gallagher (1997) found none in the Chino Hills during the late 1980s and

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M. Wimer (pers. comm.) received no reports of nesting during the Los Angeles County Breeding Bird Atlas. Nevertheless, J. Schmitt observed an adult walking into several cavities on bluffs above Sycamore Canyon north of Whittier on 4 April 1999, near which "tufts of down" clung to shrubs. In several subsequent visits he found no nest or young, but according to the unpublished notes of Antonin Jay, Turkey Vultures nested in this area from 15 March to 29 April, with the "height of the season" being the first two weeks in April. The birds were apparently plastic in their requirements, as Jay wrote, "I have found them nesting in swamps near El Monte (just west of Whittier) under some blackberry vines where the ground was so wet as to stick to your hands and clothes. I have also found them nesting in holes at the base of some gravel banks, under some bushes on steep hillsides, in open situations, and in hollow trees.... The nests are always placed on the southern or eastern side of a hill, and nearly always at the base. . . . The nests . . . are generally found by the white downy feathers which adhere to the weeds." Jay went on to describe the discovery of eight nests in the Puente Hills (no locations) between 1900 and 1903. Although he noted a decline throughout Los Angeles County by the early 1900s, ascribing it to the disappearance of the large cattle and sheep ranches where they fed, he observed (ca. 1905) "still a great many nest and rear their young in the foothills" (3.3, 26.1).

White-tailed Kite *Elanus leucurus*. While single birds were observed widely, the only pair west of State Route 57 was in Powder Canyon Natural Area, Hacienda Heights, where courting on 14 May 1997 (M. San Miguel). Nesting activity was apparently confined to woodland adjacent to extensive grassland: an adult transporting food over State Route 60 to Phillips Ranch, Pomona, on 19 and 20 May 1998; single pairs observed in courtship display along Water Canyon on 7 June 1997; two pairs, including one accompanied by a juvenile, along the Santa Ana River adjacent to Weir Canyon Rd., Yorba Linda, on 19 June 1997. With an estimated maximum of 25 potential breeding territories in all of Orange County during the late 1980s (Gallagher 1997), the birds of the Puente-Chino Hills represent a significant contribution to the regional population (2.1, 19.6).

Northern Harrier *Circus cyaneus*. Very scarce, with evidence of breeding confined to a pair engaged in courtship behavior in upper Tonner Canyon near the Los Angeles/San Bernardino Co. line on 20 May 1997 (confirmed as breeding here later in 1997, B. Daniels). Two other sightings in eastern CHSP (lower Aliso Canyon, 30 July 1997; Wire Springs Tr., 19 May 1997) suggest additional breeding sites. An estimated one pair per year bred successfully in all of Orange County during the late 1980s (Gallagher 1997), and the species does not breed in the extensive habitat of the Prado Basin to the east (*vide* J. Pike), emphasizing the regional importance of the Puente-Chino Hills birds (0.6, 0.0).

Cooper's Hawk *Accipiter cooperii*. Widespread in woodland: pair with calling fledgling(s) within residential development in southern Hacienda Heights on 28 May 1998; juvenile at nest along canyon south of Rowland Heights on 23 April 1997 (M. San Miguel); recently used nest (fresh whitewash and feathers) in mature Coast Live Oak near Tonner Canyon in Diamond Bar on 20 May 1997; distraction behavior by adult along the Santa Ana River near Gypsum Canyon Rd., Yorba Linda, on 14 June 1997; adult in territorial flight (slow, exaggerated wingbeats) near State Route 71 in southeastern city of Chino Hills on 19 April 1998. Elsewhere, pairs noted along Sycamore Canyon on 17 June 1998, adjacent to State Route 60 in Hacienda Heights on 7 May 1997, and in Sleepy Hollow on 11 May 1998 (2.1, 37.0).

Red-shouldered Hawk *Buteo linearis*. This widespread species was recorded in riparian woodland and eucalyptus groves, but direct breeding evidence was limited to a pair with vocal fledgling(s) heard adjacent to an old estate in residential Whittier on 1 May 1997 (1.5, 15.2).

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Red-tailed Hawk *Buteo jamaicensis*. By far the most frequently encountered raptor, breeding throughout the hills in tall trees (especially Western Sycamore) and on transmission-line towers (10.3, 71.7).

Golden Eagle *Aquila chrysaetos*. Single birds observed as follows: adult perched on transmission-line tower adjacent to Rose Hills Memorial Park 12 July 1997; adult and immature feeding in grassland south of Rowland Heights 24 May 1997 (M. San Miguel); adult soaring north of upper Aliso Canyon 15 April 1998; adults near Green River Golf Course 13 April 1997 and 3 May 1998, with an apparent pair there 5 May 1998. B. Daniels also noted this species in upper Tonner Canyon during spring 1997. In my study area, the Golden Eagle is believed to breed at only one or two sites, both in or adjacent to CHSP (Gallagher 1997; G. Hund pers. comm.). In the late 1980s, only four nesting sites were known in Orange County, all in virtually inaccessible locations within the Santa Ana Mountains (Gallagher 1997) (0.3, 2.2).

American Kestrel *Falco sparverius*. Found breeding in open habitats near structures or large trees with nest cavities, with one nest placed under the roof of a house adjacent to a golf course in residential La Habra Heights in 1998 (7.9, 41.3).

Prairie Falcon *Falco mexicanus*. One observation, of two flying east over lower Aliso Canyon 22 May 1997. The only potential nest site near the study area is in the northern Santa Ana Mountains of Orange County southeast of the Chino Hills (Hamilton and Willick 1996) (0.3, 0.0).

California Quail *Callipepla californica*. Recorded throughout in all but the smallest fragments of open space and in extensive grassland (33.7, 76.1).

Rock Dove *Columba livia*. Groups of about 10 regularly seen flying high overhead (mainly in Chino Hills); otherwise confined to urban areas (0.0, 0.0).

Band-tailed Pigeon *Columba fasciata*. Sparingly recorded at urban edge along the northern fringe of the hills (Whittier to Diamond Bar) (0.0, 6.5).

Spotted Dove *Streptopelia chinensis*. Single birds recorded incidentally near downtown Whittier in 1997 and in Phillips Ranch, Pomona, in 1999 (0.0, 0.0).

Mourning Dove *Zenaida macroura*. Common throughout (24.1, 84.8).

Common Ground-Dove *Columbina passerina*. Incidentally observed in two areas of remnant citrus orchards: lower Carbon Canyon and along the Santa Ana River in eastern Yorba Linda (0.0, 0.0).

Yellow-billed Cuckoo *Coccyzus americanus*. Not recorded during study, though it historically bred in riparian woodland along the Santa Ana River (Schneider 1900) and along the San Gabriel River into the 1950s (Long 1993). With a very few (1–5) pairs summering in the extensive riparian woodland of the Prado Basin (Pike 1997), limited recolonization within the study area along the Santa Ana River is conceivable.

Greater Roadrunner *Geococcyx californianus*. Though widespread in coastal sage scrub and grassland, it was most commonly observed in extensive coastal sage scrub on northern edge of Brea/Yorba Linda, where one to four birds were encountered each morning spent in the habitat (4.9, 15.2).

Barn Owl *Tyto alba*. Recorded in Whittier Hills, Diamond Bar, and city of Chino Hills, but probably occurs widely.

Western Screech-Owl *Otus kennicottii*. Two family groups were recorded in Sycamore Canyon on 7 May 1997 during a pre-dawn survey. J. Schmitt reports successful nesting from both nest boxes and natural cavities along Sycamore Canyon (four territories) and Telegraph Canyon (five territories) during the late 1990s, and L. Schmahl found at least three breeding pairs in Turnbull Canyon during spring 1995,

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with young observed on 6 June. This species also nests in boxes placed along Carbon Canyon (C. Campbell) and was heard calling in the riparian woodland along the Santa Ana River in 1991 (J. Pike).

Long-eared Owl *Asio otus*. Unrecorded during this study, though a small population apparently persists just to the east in mature willow woodland of the Prado Basin (*vide* J. Pike). Since apparently suitable nesting habitat (oak savannah, riparian thickets within grassland) exists throughout the Chino Hills, it is possible that focused surveys could turn up this species here.

Great Horned Owl *Bubo virginianus*. Incidentally observed in scattered wooded sites, including eucalyptus groves. Fledgling encountered in a sycamore-lined canyon south of Hacienda Heights on 20 May 1998, and L. Schmahl mentions six birds, including a begging juvenile, just north of Turnbull Canyon on 27 August 1996. J. Pike noted three recently used nests in the bluffs on the north side of the Santa Ana River in 1991.

Burrowing Owl *Athene cunicularia*. Common in the far eastern Chino Hills prior to the mid-1980s (*pers. obs.*), this species was last recorded in the early 1990s along Bane Canyon (C. Schlotterbeck, M. A. Patten). Frequent surveys in suitable habitat between CHSP and State Route 71 during spring and summer 1999 (K. F. Campbell) found none, although a handful remain in the Prado Basin just to the east (J. Pike). It is invariably found in large sparsely vegetated parcels of land, most of which have been developed. This species may be a very rare transient through the hills, as J. Schmitt observed the fresh remains of two killed by a raptor in Sycamore Canyon on 23 October 1999, apparently the first record for the Whittier Hills since at least the 1960s (*vide* J. Schmitt) (0.0, 0.0).

Lesser Nighthawk *Chordeiles acutipennis*. One record during study, of a single bird flushed from heavily grazed grassland with clumps of Coast Goldenbush (*Isocoma menziesii*) south of Rowland Heights on 11 June 1997. Other records include a single bird observed recently (no date) along a transmission-tower road in northeast CHSP (A. Ing) and another in the Whittier Hills on 6 April 1994 (L. Schmahl). Hamilton and Willick (1996) mentioned a remarkable record of "many dozens" observed by M. A. Patten on 13 April 1980 in Telegraph Canyon, but given the lack of recent records from the Santa Ana River and adjacent Prado Basin (*vide* J. Pike), it seems likely these were migrating birds.

Common Poorwill *Phalaenoptilus nuttallii*. Unrecorded during this study, though L. Schmahl observed a single bird just south of Turnbull Canyon on 20 April 1996. C. Campbell mentions recent records from Carbon Canyon, and K. F. Campbell noted a single bird in the city of Chino Hills between CHSP and State Route 71 in 1999.

White-throated Swift *Aeronautes saxatalis*. Nests widely and abundantly on anything resembling a cliff face, including freeway overpasses. Well over 100 pairs nested under State Route 57 at Tonner Canyon in 1997.

Black-chinned Hummingbird *Archilochus alexandri*. Occurs mainly in riparian vegetation but also recorded in urban areas, perhaps owing to hummingbird feeders and ornamental vegetation (7.3, 67.4).

Anna's Hummingbird *Calypte anna*. Common throughout in shrubby habitats, especially at the urban interface (39.1, 87.0).

Costa's Hummingbird *Calypte costae*. Like the Greater Roadrunner's, the center of this species' abundance apparently lies in solid stands of coastal sage scrub along the hills' southeastern flank (Brea/Yorba Linda), though it was widely recorded in low scrub and grassland throughout, including on the urban edge and in isolated patches of scrub adjacent to larger blocks of open space (e.g., within Diamond Bar and the city



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of Chino Hills). This species may have decreased recently, as I found it scarce in the Whittier Hills, where it outnumbered Anna's before 1970 (J. Schmitt pers. comm.) (14.3, 15.2).

Allen's Hummingbird *Selasphorus sasin*. Most reliably found in flowering eucalyptus and Cape Honeysuckle (*Tecomaria capensis*) at the urban interface and common in riparian and adjacent scrub west of State Route 57, particularly near patches of Tree Tobacco (*Nicotiana glauca*). Breeding evidence includes a single nest found in willows along Telegraph Canyon on 26 May 1997 (C. Campbell) and pairs engaged in courtship displays along the urban interface in Whittier on 1 May 1997 (nest building observed here 21 May 1995, L. Schmahl) and in La Habra Heights on 28 May 1998. This species has bred in the area since at least 1989, when a nest was found in residential Whittier (D. Heindel). Though breeding-season aggregations at flowering Tree Tobacco were common in the open space of the Whittier Hills, the species went virtually unrecorded in interior of the more expansive Chino Hills farther east (3.3, 15.2).

Acorn Woodpecker *Melanerpes formicivorus*. Found exclusively in association with Coast Live Oak, including trees integrated into urban development. Loosely colonial when breeding, and unrecorded over large areas of apparently suitable habitat (e.g., portions of Hacienda Heights and La Habra Heights) (7.0, 34.8).

Nuttall's Woodpecker *Picoides nuttallii*. Common in woodland and riparian habitats, including sumac woodland and eucalyptus groves (21.3, 93.5).

Downy Woodpecker *Picoides pubescens*. Restricted to two habitats: tall lowland riparian forests (e.g., Carbon Canyon and Santa Ana River) and mature ornamental trees in some urban areas such as Whittier, where small numbers have apparently bred for years (L. Schmahl). K. F. Campbell encountered this species in oak-walnut woodland in Rowland Heights during spring 1999 (1.5, 8.7).

Northern Flicker *Colaptes auratus*. Sparsely distributed throughout, confined to stands of Western Sycamore or other large trees with cavities. A pair near an apparent nest hole in a eucalyptus grove in extreme northeast Whittier on 21 May 1998 suggests at least limited acceptance of nonnative vegetation (1.8, 19.6).

Western Wood-Pewee *Contopus sordidulus*. Singing birds and apparent pairs found in mature foothill and lowland riparian woodlands into June throughout the study area. While the lateness of this species' migration (Garrett and Dunn 1981) makes it difficult to separate breeders from transients (or non-breeding summer residents), breeding was confirmed in the late 1980s in western CHSP (Gallagher 1997). Nest searches and surveys later in the summer would be needed to assess its local breeding status and distribution (1.2, 4.3).

Willow Flycatcher *Empidonax traillii*. Obvious migrants were recorded into mid-June, including individuals singing in grassland and coastal sage scrub. The only territorial bird found was apparently unpaired, though remaining for several weeks during May and June 1998 along lower Aliso Canyon (A. Ing). Other recent records of possibly breeding birds are of one along the Santa Ana River near Gypsum Canyon Road on 25 June 1999 and another (the same?) about 400 meters east 21 July 1999 (K. F. Campbell). Like the Yellow-billed Cuckoo, this species maintains a small remnant population in the Prado Basin (Pike pers. comm.).

Pacific-slope Flycatcher *Empidonax difficilis*. Singing birds recorded in shady riparian woodland and in dense eucalyptus and exotic pine groves at the urban interface (especially La Habra Heights and Hacienda Heights). Active nests noted on 7 May 1997 along Sycamore Canyon (J. Schmitt) and on 8 June 1997 along Turnbull Canyon, both north of Whittier. Although the species' range has recently spread in the

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coastal lowlands of southern California (P. Unitt pers. comm.), the Puente-Chino Hills were undoubtedly a historical nesting area, with eggs collected in Turnbull Canyon in 1938 (WVZ) (4.0, 50.0).

Say's Phoebe *Sayornis saya*. A widespread breeder in grassland and grassy coastal sage scrub, though unrecorded from the Whittier Hills. Virtually all nesting was associated with artificial habitats (e.g., large water tanks) on the urban interface. An apparent nest under eaves of a house adjacent to San Miguel Creek on 30 April 1997 and in 1998 (J. Schmitt) was the westernmost breeding locale during the study, although in 1999 L. Schmahl found a pair nesting at Rose Hills Memorial Park north of Whittier, the first nesting record for Whittier since the early 1900s (Long 1993, *vide* J. Schmitt). Gallagher (1997) discussed this species' recent reestablishment (or rediscovery) as a breeder in Orange County (5.7, 15.2).

Black Phoebe *S. nigricans*. Common in riparian and urban habitats (16.1, 70.9).

Ash-throated Flycatcher *Myiarchus cinerascens*. Noted throughout in woodland, including sumac woodland and eucalyptus groves (24.6, 80.4).

Cassin's Kingbird *Tyrannus vociferans*. Found in tall eucalyptus groves adjacent to open habitats, including golf courses (L. Schmahl in litt.) (3.0, 10.9).

Western Kingbird *Tyrannus verticalis*. Sparsely distributed in savanna-like habitats (2.1, 15.2).

Loggerhead Shrike *Lanius ludovicianus*. Though apparently one of the most common breeding birds in the Los Angeles Basin prior to urbanization (e.g., Grinnell 1898, Swarth 1900, Willett 1933), now known only from scattered records in overgrazed and otherwise sparsely vegetated areas. The largest group (up to seven pairs; C. Brady) was found in CHSP along upper Aliso Canyon, where the birds apparently nest in naturalized thistles (*Cirsium* sp.). Two other small colonies (2–5 pairs each) were in an area of horse stables and pastureland along English Rd. in eastern city of Chino Hills (two pairs on 19 May 1997, including adults feeding a juvenile) and east of Harbor Blvd. between Rowland Heights and Brea (two birds on 30 May 1998). Breeding records elsewhere: adults with food entering a nest in tall Black Mustard at Rose Hills Memorial Park on 18 April 1998; a nest with four eggs in a large Mexican Elderberry (*Sambucus mexicana*) along San Miguel Creek on 30 April 1997 (J. Schmitt), and, before the study, a juvenile along Worsham Canyon just southeast of Turnbull Canyon on 9 June 1996 (L. Schmahl). This species went undetected in the Santa Ana River portion of the study area in 1997 and 1998 and on extensive surveys there in spring and summer 1991 (*vide* J. Pike) (0.9, 8.7).

Bell's Vireo *Vireo bellii*. Though historically numerous in willow thickets throughout southern California, breeding in the study area is now largely confined to two small populations in extensive willow and Mulefat thickets, one in Carbon Canyon Regional Park, the other along the Santa Ana River. At the latter site, M. San Miguel noted singing birds from the spillway of Prado Dam west to Green River Golf Course on 15 May 1997, although K. F. Campbell observed five singing birds west to Weir Canyon Road in 1999 (0.6, 4.3). Elsewhere, A. Ing found two pairs feeding young along upper Aliso Canyon in summer 1998, and I noted one singing male in lower Aliso Canyon 3–8 May 1998 and two along the west side of State Route 71 adjacent to the Prado Basin 19 April 1998. Bell's Vireos may be more widespread than detected in the numerous willow-lined gullies east of CHSP (e.g., four singing between the park and State Route 71 during 1999, K. F. Campbell). A lone singing male in Schabarum Park, Hacienda Heights, on 12 June 1998 did not remain to breed.

Hutton's Vireo *Vireo huttoni*. Found in woodland and foothill riparian habitat throughout, west to Sycamore and Turnbull canyons. Birds in mature eucalyptus

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groves on the urban edge (e.g., three at Murphy Ranch Park, Whittier, on 16 May 1998 and one at Hollow Run Park, city of Chino Hills, on 19 May 1998) suggest limited acceptance of nonnative woodland (4.0, 30.4).

Warbling Vireo *Vireo gilvus*. I found a few singing birds and pairs in riparian woodland, generally in association with tall willows and oaks near flowing water. Records of singing birds after 10 June, when most migrants have passed through, include two in Sycamore Canyon on 17 June 1998 and two in Schabarum Park on 12 June 1998. K. F. Campbell (pers. comm.) mentions six to eight singing birds "through the season" in 1999 along the Santa Ana River between Green River Golf Course and Weir Canyon Road. More surveys would be needed to confirm breeding (0.9, 13.0).

Western Scrub-Jay *Aphelocoma californica*. Common resident throughout (36.8, 91.3).

American Crow *Corvus brachyrhynchos*. Common in urban areas adjacent to study area but rarely encountered more than 1 km from the urban edge (5.5, 21.7).

Common Raven *Corvus corax*. Apparently replaces American Crow away from the urban interface. Nests found in live oaks and on transmission towers (17.3, 50.0).

Horned Lark *Eremophila alpestris*. Localized in barren grassland, with singing birds noted incidentally on three areas cleared for housing within the city of Chino Hills on 20 April 1997 and 18 May 1997. I noted only a single bird in the grazing land south of Rowland Heights (8 May 1997), but K. F. Campbell and D. Guthrie (pers. comm.) mention recent summer records from this area. A flock of about 50 in late summer 1997 in heavily grazed upper Tonner Canyon may have been a postbreeding concentration. Like the Loggerhead Shrike, this species has drastically declined in the region, having been a common breeder in the Whittier Hills during the late 1960s and early 1970s (J. Schmitt pers. comm.) (0.3, 0.0).

Tree Swallow *Tachycineta bicolor*. I observed no indication of breeding during this study, and Gallagher (1997) reported none through the Orange County breeding-bird atlas, but J. Pike saw six entering cavities in snags along the Santa Ana River near the Green River Golf Course during spring and summer 1991.

Violet-green Swallow *Tachycineta thalassina*. Aside from occasional individuals in mixed foraging flocks on overcast days, I encountered a pure flock of about 50 along Turnbull Canyon on 8 June 1997. Although the species nested at this site during the early 1990s (L. Schmahl), I observed no evidence of breeding there. A small group nested recently in a cliff face along Carbon Canyon Rd. (Gallagher 1997, C. Campbell).

Northern Rough-winged Swallow *Stelgidopteryx serripennis*. Nests commonly on structures, exposed rock faces, and barren land-slips.

Cliff Swallow *Hirundo pyrrhonota*. Locally abundant at the urban interface, nesting under overpasses and eaves of newer houses with little obstructing vegetation.

Barn Swallow *Hirundo rustica*. Single pairs presumably nesting near the urban edge in Sycamore and Telegraph canyons. I also observed a pair entering a probable nest site just north of the study area at Queen of Heaven Cemetery, Rowland Heights, on 30 May 1997. The species is probably more widespread around flood-control structures away from the hills, as K. F. Campbell noted "at least 8 pairs" in storm drains in eastern city of Chino Hills in 1999.

Oak Titmouse *Baeolophus inornatus*. Restricted to the eastern Puente and western Chino hills (unrecorded west of Harbor Blvd.), encountered in mature oak and riparian woodland, pure willow thickets within grassland, and shrubby walnut woodland. This species bred formerly in the Whittier Hills (eggs collected in Turnbull

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Canyon 1940, WFVZ) but apparently disappeared following a large fire (J. Schmitt pers. comm.), with the last breeding-season record from Sycamore Canyon on 14 April 1970 (L. Schmahl) (4.0, 39.1).

Bushtit *Psaltriparus minimus*. Common resident, especially near the urban interface (29.2, 91.3).

White-breasted Nuthatch *Sitta carolinensis*. Unrecorded during survey, though known to breed sparingly at comparable elevations in the Santa Ana Mountains to the south (Gallagher 1997). A pair encountered incidentally on 3 September 1997 in mature walnut woodland south of Rowland Heights may have dispersed from elsewhere. This species apparently summers irregularly along Telegraph Canyon (C. Campbell), with nesting confirmed in 1993 (Gallagher 1997). It may breed in foothill riparian woodland of larger canyons not surveyed during this study, particularly Tonner and Soquel (0.0, 0.0).

Cactus Wren *Campylorhynchus brunneicapillus*. Noted in extensive patches of cactus (*Opuntia* spp.) throughout, particularly where surrounded by extensive coastal sage scrub. Birds were regularly encountered at the urban interface and in cactus patches surrounded by or adjacent to houses (e.g., Phillips Ranch, Pomona). Sites overrun with nonnative grasses are apparently avoided. The birds rapidly recolonized burned habitat in Schabarum Park. I observed nests nearly everywhere I recorded the birds (7.9, 15.2).

Rock Wren *Salpinctes obsoletus*. Though Hamilton and Willick (1996) mentioned a "minor concentration" in the Chino Hills, I found none during this study. Though a small population may exist in the lightly surveyed ranchland east of CHSP, this wren is probably only a rare nonbreeding visitor throughout the hills (0.0, 0.0).

Canyon Wren *Catherpes mexicanus*. One or possibly two birds heard singing on 5 May 1998 in wind-eroded cliffs above the Santa Ana River opposite Coal Canyon in eastern Yorba Linda. May be slightly more widespread in the extreme southeastern Chino Hills, but much of this habitat is inaccessible. A record from the Whittier Hills in April 1990 (L. Schmahl) apparently pertains to a vagrant (0.3, 0.0).

Bewick's Wren *Thryomanes bewickii*. Common resident throughout, except in extensive grassland. Occurs locally in adjacent urban areas (59.0, 84.8).

House Wren *Troglodytes aedon*. Common in woodland and riparian growth with trees large enough to provide nesting cavities. Like Bewick's Wren, occurs locally in urban areas (44.4, 80.4).

California Gnatcatcher *Polioptila californica*. Probably present historically the entire length of the hills, with egg records extending from Sycamore Canyon (until 1995, M. Wimer, unpubl. data) to Diamond Bar (early 1900s, WFVZ). Now found in two main areas: the border of Whittier and La Habra Heights between Colima Rd. and Murphy Ranch Park, and the south-central flank of the hills in northern Brea and northwestern Yorba Linda, from State Route 57 east to Fairmont Ave. Both populations occur in extensive dense (nongrassy) coastal sage scrub dominated by California Sagebrush growing on gentle slopes, with larger shrubs such as Mexican Elderberry and Laurel Sumac widely scattered. A single bird observed in coastal sage scrub in the city of Chino Hills northeast of CHSP on 27 April 1999 (K. F. Campbell) suggests the existence of a third population. This record is especially notable, as Davis et al. (1998) cited no records from the Chino Hills in their review of California Gnatcatcher records in San Bernardino County.

Although the western group is now relatively secure on designated open space, the eastern group is located in a rapidly developing region. I did not record the species in CHSP, although A. Ing has recently found a few, including an active nest, along the southwestern edge of the park adjacent to Yorba Linda.

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Here near the northwest edge of its range, this species persists also in the San Jose Hills to the north and the Montebello Hills to the west (*vide* K. Garrett) but has been nearly extirpated from San Bernardino County (Davis et al. 1998) and Ventura County (*vide* W. Wehtje). It is possible that continued recovery of sage scrub vegetation in CHSP may allow this species to increase in the region (0.9, 4.3).

Blue-gray Gnatcatcher *Polioptila caerulea*. My only record was of a single calling bird, possibly an early fall migrant, in coastal sage scrub on 22 August 1997 just north of Turnbull Canyon. Gallagher (1997) mentioned an anomalous record of two or three in coastal sage scrub on 14 May 1985 in Carbon Canyon Regional Park, which matches closely an observation of a family of California Gnatcatchers (J. Schmitt pers. comm.). This species nests primarily at higher elevations in the Santa Ana Mountains (Gallagher 1997), although breeding has been noted in the San Joaquin Hills in coastal Orange County at elevations comparable to the Puente-Chino Hills (Hamilton and Willick 1996), and I recently found summering birds in walnut woodland west of the study area in the low Repetto Hills of northeastern Los Angeles (0.0, 0.0).

Western Bluebird *Sialia mexicana*. Apparently confined to a handful of breeding groups in oak, riparian, and eucalyptus woodland, west to Powder Canyon. Numbers undoubtedly augmented by nest boxes placed along the Santa Ana River at Green River Golf Course, Carbon Canyon Regional Park (see Gallagher 1997), and Summitridge Park (0.9, 8.7).

Swainson's Thrush *Catharus ustulatus*. The few May and June records of singing birds came from three widely scattered sites: Sycamore Canyon, near Phillips Ranch in Pomona, and upper Aliso Canyon. Like that of other late migrants, its breeding status in the area is not well addressed by my study. Historically a common breeder in lowland riparian tangles (Willett 1933, A. Jay unpubl. notes), this species maintains a "small but apparently stable population" in Prado Basin (J. Pike pers. comm.). Singing birds have summered recently at long-urbanized sites within the Los Angeles Basin such as San Marino (pers. obs.) and Wilmington (*vide* K. Garrett) (0.3, 2.2).

American Robin *Turdus migratorius*. Mainly confined to lush vegetation of urban parks and golf courses, especially where riparian habitat occurs with irrigated lawns. A singing male in willows along lower Carbon Canyon on 13 May 1997 was the only indication of breeding away from the urban interface, although K. F. Campbell found small numbers breeding along the Santa Ana River west of State Route 71 in 1999. This species became established in the coastal lowlands of Los Angeles County between 1950 and 1980 (see Grinnell and Miller 1944, Garrett and Dunn 1981) but did not begin breeding in the lowlands of coastal Orange County until the early 1980s (see Gallagher 1997) (3.0, 10.9).

Wrentit *Chamaea fasciata*. Common resident throughout in scrub, riparian thickets, and open woodland with brushy understory. Unrecorded in exotic plantings at urban interface (60.5, 76.1).

Northern Mockingbird *Mimus polyglottos*. Resident throughout in shrubby habitats, particularly at the urban interface (28.3, 16.9).

California Thrasher *Toxostoma redivivum*. Common resident in scrub, riparian thickets, and open woodland with brushy understory. Like the Wrentit, absent from exotic vegetation (33.7, 80.4).

European Starling *Sturnus vulgaris*. Away from urban areas, found nesting mainly in areas of extensive woodland (therefore scarce along the southern flank of the hills) and concentrated along the urban interface (9.4, 41.3).

Phainopepla *Phainopepla nitens*. Singing birds and pairs widespread in woodland (including sumac woodland) and foothill riparian habitats (12.5, 41.3).

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Orange-crowned Warbler *Vermivora celata*. Widespread in woodland and riparian thickets, including sumac woodland. While many April and May records may pertain to migrants, singing birds were detected through early June. Singing males were also recorded locally through May in lush plantings on the urban interface, especially in La Habra Heights (7.3, 19.6).

Yellow Warbler *Dendroica petechia*. Highest densities of singing males from mid-May through early June were in mature lowland riparian woodland, primarily along the Santa Ana River, in lower Carbon Canyon, and along Bane and Aliso canyons. Scattered singing birds also recorded into June in larger canyons elsewhere (e.g., Sycamore, Powder, and Tonner), but records of singing birds after 10 June limited to the Santa Ana River (2.4, 15.2).

Common Yellowthroat *Geothlypis trichas*. Recorded (including fledglings) in grassland, riparian thickets, and at seeps with tall grasses such as Giant Wild Rye (*Leymus condensatus*) within scrub and open woodland (17.9, 47.8).

Yellow-breasted Chat *Icteria virens*. Singing or paired birds during May and June noted locally in lowland riparian thickets (especially of Mulefat and Mexican Elderberry adjacent to grassland) throughout study area. Evidence of breeding was limited to a bird carrying food in eastern Telegraph Canyon on 28 May 1997 and a male delivering a flight song along lower Aliso Canyon on 3 May 1998. Birds singing in atypical habitats such as mustard and Tree Tobacco were within about 20 m of riparian habitat (5.2, 19.6).

Spotted Towhee *Pipilo maculatus*. Common resident throughout; less tolerant of urbanization than the California Towhee, though common in lush exotic plantings at the urban edge (71.7, 93.5).

California Towhee *Pipilo crissalis*. Common resident throughout, including in adjacent urban areas (64.4, 95.7).

Rufous-crowned Sparrow *Aimophila ruficeps*. Recorded throughout in treeless grassy scrub and nearly pure grassland, provided singing perches were available. Often recorded in pairs, though direct evidence of breeding limited to an adult accompanied by a juvenile south of Rowland Heights on 30 May 1997 (17.0, 39.1).

Black-chinned Sparrow *Spizella atrogularis*. I found only a single small colony (<10 birds), in tall coastal sage scrub (mainly California Sagebrush) along Wire Springs Trail. One bird singing in similar habitat in the Whittier Hills along San Miguel Creek for one day (30 April 1997, J. Schmitt) was apparently a migrant. Two birds singing from cactus-rich coastal sage scrub near Sycamore Canyon on 27 June 1999 (J. Schmitt) and nestings in the early 1990s near Turnbull Canyon (L. Schmah) suggest occasional breeding elsewhere. The species may occur also in large tracts of scrub along middle Carbon, Soquel and Tonner canyons, which I could not survey thoroughly. Historical locations for egg sets include Diamond Bar (1963, WFVZ). This species is locally common in the Santa Ana Mountains south of the study area (R. A. Hamilton pers. comm.) (0.3, 2.2).

Lark Sparrow *Chondestes grammacus*. Range coincident with both extensive grassland and grazing, the birds occupying large unvegetated patches of land near shrubs or small trees. Several pairs were found in sparse exotic vegetation of new suburban development adjacent to grazing land, the males using roofs as singing perches. Like the Oak Titmouse and Costa's Hummingbird, the Lark Sparrow was not found in the far west (Whittier Hills) or the far northeast of the study area (Phillips Ranch, Pomona) despite the seemingly suitable conditions there (4.0, 13.0).

Sage Sparrow *Amphispiza belli*. The only one recorded during my study was a single juvenile in heavily grazed coastal sage scrub north of Brea on 24 May 1997 (M.

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San Miguel), although a small population apparently persists in coastal sage scrub between Yorba Linda and Telegraph Canyon in and adjacent to oil fields (A. Ing). K. F. Campbell recorded "several" there in spring and summer 1999. In western Riverside and San Bernardino counties (e.g., Jurupa Hills) Sage Sparrows occur in sagebrush-dominated coastal sage scrub growing on gravelly ground not overrun by exotic grasses (pers. obs.), a highly localized habitat in the study area. Even more localized than the Black-chinned Sparrow in the Santa Ana Mountains, the Sage occurs mainly in extensive stands of Chamise (R. A. Hamilton pers. comm.), helping explain its rarity in the study area. Like the Black-chinned, the Sage Sparrow may persist in unsurveyed chaparral in Carbon, Soquel, and Tonner canyons (0.0, 2.2).

Grasshopper Sparrow *Ammodramus savannarum*. Mainly restricted to extensive grassland east of Powder Canyon, with several pairs breeding in 1995 and 1996 above Turnbull Canyon (L. Schmahl). Loosely colonial, generally recorded in groups of two to five singing males. Though this species favors native grassland (e.g., Gallagher 1997), and I found several groups in patches of Purple Needlegrass (*Nasella pulchra*) surrounded by extensive nonnative grassland (e.g., lower Aliso Canyon and just east of Powder Canyon), it uses other habitats too, both ungrazed and grazed. The former were wild oats (*Avena* spp.) mixed with Black Mustard (e.g., Bane Canyon, CHSP) and grassy (recently burned?) coastal sage scrub with well-spaced California Sagebrush, sages (*Salvia* spp.), California Buckwheat, and Laurel Sumac along Wire Springs Trail. The latter were sparse scrub of Coast Goldenbush south of Rowland Heights and a marshy area of nonnative grasses and forbs including thistles (*Cirsium* spp.), along upper Tonner Canyon at Grand Avenue. Birds in pure grassland (both grazed and ungrazed) were generally found only where dry mustard stems or scattered subshrubs provided singing perches but did not form a contiguous thicket (7.0, 6.5).

Song Sparrow *Melospiza melodia*. Common resident in shrubby vegetation throughout, nesting widely in dense plantings of adjacent urban areas (69.3, 93.5).

Black-headed Grosbeak *Pheucticus melanocephalus*. Common in woodland throughout, recorded locally in lush exotic vegetation near urban interface (41.3, 69.6).

Blue Grosbeak *Guiraca caerulea*. Recorded in extensive grassland, grassy coastal sage scrub, and in lowland riparian thickets adjacent to these habitats. More intensive surveys may be required to ascertain whether birds singing in nonriparian habitat are actually breeding (14.3, 30.4).

Indigo Bunting *Passerina cyanea*. L. Schmahl observed an apparently territorial subadult male just south of Turnbull Canyon from 3 June to 7 July 1995. This species has apparently bred in very small numbers in the Prado Basin since 1986 (J. Pike) and has increased recently as a breeder throughout California (Rowe and Cooper 1997) (0.0, 0.0).

Lazuli Bunting *Passerina amoena*. The largest groups were encountered in the eastern Chino Hills and in grazed grassland with patches of Coast Goldenbush south of Rowland Heights. This species probably breeds locally throughout the study area; L. Schmahl has noted regular nesting sites west to Turnbull Canyon (9.1, 8.7).

Red-winged Blackbird *Agelaius phoeniceus*. Generally recorded in small groups in mesic grassland (2.4, 8.7).

Tricolored Blackbird *Agelaius tricolor*. One breeding colony (about 50 pairs in May 1997) at a stock pond and adjacent marsh in upper Tonner Canyon at Grand Avenue.

Western Meadowlark *Sturnella neglecta*. Like the Grasshopper Sparrow, restricted to extensive grassland and grassy coastal sage scrub, primarily east of Powder

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Canyon. The only meadowlark west of here were <10 summering (1997 and 1998) on the mustard-covered portion of Rose Hills Memorial Park (12.5, 17.4).

Brewer's Blackbird *Euphagus cyanocephalus*. Away from purely urban sites, this species was found only on the urban interface and along the Santa Ana River, mainly in association with cattle (0.6, 10.9).

Brown-headed Cowbird *Molothrus ater*. Common throughout, particularly in riparian and woodland habitats (15.2, 80.4).

Hooded Oriole *Icterus cucullatus*. Breeding birds restricted to exotic plantings (especially palms and eucalyptus) near the urban interface (6.4, 10.9).

Bullock's Oriole *Icterus bullockii*. Common in tall woodland and riparian habitats throughout, accepting urban situations with tall shade trees (17.3, 58.7).

House Finch *Carpodacus mexicanus*. Common resident throughout, particularly at the urban edge (33.1, 58.7).

Purple Finch *Carpodacus purpureus*. An irregularly common winter visitant with an anomalous spring record of a single singing male in Carbon Canyon Regional Park on 13 May 1997 (J. Schmitt), where the species is not known to breed (C. Campbell pers. comm.). In 1998 J. E. Pike confirmed nesting in nearby Prado Basin (*Field Notes* 52:504, 1998). More extensive surveys in foothill riparian woodland, particularly after flight years, could yield breeding records, as Hamilton and Willick (1996) mentioned spring and summer records from foothill canyons of southern Orange County (0.0, 0.0).

Lesser Goldfinch *Carduelis psaltria*. Common resident throughout, particularly in urban areas (14.3, 67.4).

Lawrence's Goldfinch *Carduelis lawrencei*. Probably a scarce and irregular breeder in riparian sites surrounded by dry, open habitats. Only three records during this study: a singing male along a sycamore-lined canyon south of Rowland Heights on 23 April 1997 (M. San Miguel); three birds (including a singing male) at a willow-lined pond adjacent to the Western Hills Country Club north of Sleepy Hollow on 18 May 1997; a single bird along lower Aliso Canyon on 22 May 1997. K. F. Campbell observed a pair in riparian vegetation within heavily grazed grassland in the city of Chino Hills on 14 June 1999, and C. Campbell (in Gallagher 1997) reported nest building in Telegraph Canyon on June 1990. Eggs were collected in Turnbull Canyon in 1938 (WFVZ) (0.3, 4.3).

American Goldfinch *Carduelis tristis*. Found in lowland riparian thickets dominated by willows, breeding locally in residential plantings in Whittier (L. Schmah) (0.9, 13.0).

House Sparrow *Passer domesticus*. Absent away from the urban edge and the immediate vicinity of structures (1.5, 4.3).

Nutmeg Mannikin *Lonchura punctulata*. Widely naturalized along flood-control channels in the Los Angeles area (pers. obs.), but my only sighting during this study was of three recently fledged juveniles in Hollow Run Park, city of Chino Hills, on 19 May 1998 (0.0, 0.0).

## DISCUSSION

### Historical Changes

Ecological relaxation, the gradual replacement of a diverse ecological community by a few widespread species (see Soulé et al. 1988, Bolger et al. 1997), may be happening in outlying portions of the Puente-Chino Hills.



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This process is most likely in coastal sage scrub and grassland, where I found the Costa's Hummingbird, Say's Phoebe, Grasshopper Sparrow, and Western Meadowlark to be locally common east of Powder Canyon yet virtually absent in the Whittier Hills and in Phillips Ranch, Pomona.

Of the major plant communities, grassland may have declined most within the Puente-Chino Hills, the result of both residential encroachment and the reestablishment of woody plants following the removal of grazing. Judged from historical photographs and accounts (e.g., Freudenberger et al. 1987), woody vegetation in the Puente-Chino Hills was much sparser during the early 1900s when grazing dominated the landscape. Livestock are now eliminated from the western Puente Hills and from Chino Hills State Park (both since early 1990s, *vide* L. Schmahl), although grazing remains heavy in portions of the eastern Puente and Chino Hills east of Powder Canyon.

With this change in land use, species dependent on a dense understory, such as the Song Sparrow and California Quail, may be more numerous now than they were during the height of grazing 100 years ago, whereas species associated with barren land, such as the Loggerhead Shrike, Western Kingbird and Horned Lark, have probably declined greatly as breeders in the hills since that time (Swarth 1900, Craigmile 1906, Willett 1933). Aside from the recent loss of Burrowing Owls, however, the grassland bird community appears remarkably intact, at least in the eastern Puente and Chino Hills.

Though coastal sage scrub has been drastically reduced in its global extent, its distribution in the study area may have actually increased at the expense of grassland during the past century. Nevertheless, several of its birds (e.g., the Costa's Hummingbird) have become scarce or absent in the outlying portions of the Puente Hills. Components of its distinctive bird community (including the California Gnatcatcher and Cactus Wren) represent remnants of a far wider former distribution in the Los Angeles area. Birds typical of the rocky alluvial-fan scrub probably once extensive on the southeastern flank of the hills and along the Santa Ana River before it was channelized (e.g., the Lesser Nighthawk, Rock Wren, Sage Sparrow) have declined greatly.

I surveyed too little chaparral to assess its birds' current status, though the small amount in the hills does not appear to support a bird community distinct from that of the much more extensive coastal sage scrub and sumac woodland. Not surprisingly, the characteristic chaparral avifauna of the nearby Santa Ana Mountains (see Hamilton and Willick 1996) was poorly represented, with characteristic breeding species like the Blue-gray Gnatcatcher absent and Black-chinned and Sage sparrows nearly so.

Lowland riparian woodland was probably never widespread in the study area, particularly during the period of heavy grazing. Still, channelization for flood control and development along the Santa Ana River in the far southeast has doubtless reduced the number of riparian bird species within the study area, reflecting trends throughout southern California (see Garrett and Dunn 1981). By contrast, foothill riparian areas have been widely spared from nearby development (e.g., Sycamore Canyon north of Whittier and Sycamore Canyon Park, Diamond Bar), in part because development of canyons is physically and legally difficult, in part doubtless also because of aesthetic considerations. Aided by oak-tree ordinances, woodlands continue

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to receive protection, though often as isolated remnants within residential development.

The number of woodland bird species in the hills is somewhat reduced in comparison with that of oak woodland within the Santa Ana and San Gabriel mountains (Garrett and Dunn 1981, Hamilton and Willick 1996). The species present, including the Pacific-slope Flycatcher, Hutton's Vireo, Western Bluebird, and Oak Titmouse, all nest regularly in appropriate habitat throughout the Los Angeles Basin. The woodland species that are absent, including the Hairy Woodpecker (*Picoides villosus*), White-breasted Nuthatch, Chipping Sparrow (*Spizella passerina*), Dark-eyed Junco (*Junco hyemalis*), and Purple Finch, are generally infrequent breeders at elevations below 800 m south of Ventura County (Unitt 1984, Hamilton and Willick 1996, Gallagher 1997).

Without more precise historical data, it is difficult to say whether these "missing" woodland species were ever regular breeders in the hills. It is worth noting, however, that the foothill plant community of the hills is also depauperate in comparison to that at similar elevations in the surrounding ranges. Several trees and shrubs of nearby foothill woodland are apparently absent, including California Bay (*Umbellularia californica*), manzanita (*Arctostaphylos* spp.), Big-leaved Maple (*Acer macrophyllum*), Canyon Live Oak (*Quercus chrysolepis*), and Holly-leaved Cherry (*Prunus ilicifolia*) (pers. obs.). This suggests that the hills have always had a reduced foothill flora, a pattern probably mirrored by their avifauna.

### Conservation

Large areas of contiguous open space within the Puente-Chino Hills remain in private hands, susceptible to residential development. Some of these lands were surveyed during this study, mainly from public roads, while others were completely off limit to public access. I suggest three sites for highest conservation concern for birds in the region, owing to their large size, their unprotected status, and the large number of declining species they support (Table 1).

The coastal sage scrub of northern of Brea and Yorba Linda along the southern flank of the hills from just east of Harbor Blvd. in the west to Fairmont Ave. in the east (area "A," Figure 3) currently supports the richest assemblage of sage-scrub specialists like the California Gnatcatcher, Cactus Wren, and Greater Roadrunner, and perhaps the only population of the Sage Sparrow. With oil fields currently giving way to new housing developments, some reduction in the sage-scrub specialists is inevitable here, since intact sage scrub and its associated birds are scarce within nearby Chino Hills State Park (pers. obs.). Efforts by Shell Oil to develop a habitat-conservation plan (A. Ing pers. comm.) and the designation of this area as a "subregional planning area" under California's Natural Communities Conservation Plan offer hope for some level of conservation.

The second area of concern is the extensive grassland south of Rowland Heights (area "B"), located mostly on property owned by Shell Oil in unincorporated Los Angeles County, which represents the largest contiguous grassland west of Chino Hills State Park. While smaller regions of grassland throughout the study area, such as the Whittier Hills, support a few

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**Table 1** Sensitive Breeding Birds of the Puente-Chino Hills

Species	Estimated Abundance <sup>a</sup>	Location <sup>b</sup>		
		A	B	C
White-tailed Kite	2		K	K
Golden Eagle	1		K	K
Northern Harrier	1		P	K
Burrowing Owl	X		P	P
Greater Roadrunner	4	K	K	K
Lesser Nighthawk	X		K	P
Bell's Vireo	3		P	P
Loggerhead Shrike	3	K	K	L
Horned Lark	3		K	K
Rufous-crowned Sparrow	4	K	K	K
Cactus Wren	4	K		K
California Gnatcatcher	3	K		
Yellow-breasted Chat	3	K	P	K
Blue Grosbeak	4	K	K	K
Grasshopper Sparrow	4	K	K	K
Sage Sparrow	2	K		
Tricolored Blackbird	4 <sup>c</sup>			K
Western Meadowlark	4	K	K	K

<sup>a</sup>1, one or two breeding pairs known; 2, three to ten pairs; 3, 10–50 pairs; 4, >50 pairs; X, extirpated or irregular breeder.

<sup>b</sup>A, north Brea/northwest Yorba Linda; B, grassland and savanna south of Rowland Heights; C, Upper Tonner Canyon. K, known to occur; L, likely (known from adjacent areas); P, possible (suitable habitat present).

<sup>c</sup>Breeds at only this site in the study area.

pairs of species like the Grasshopper Sparrow or Lazuli Bunting, these and other grassland birds are abundant here. Although some of this habitat is included within Shell's habitat-conservation plan, much of the grassland and oak savanna along the northern edge of the site is being replaced by gated housing tracts (pers. obs.). Unfortunately, it may be too late to protect these northern parcels, since the development of most was approved years ago and is only now taking place (J. Yann pers. comm.).

The third area is the unprotected grassland along upper Tonner Canyon straddling the Los Angeles/San Bernardino County boundary in the extreme northeast (area "C"). The most significant open space lies within San Bernardino on an active cattle ranch, visible from Grand Ave. Extending from near State Route 60 south to the eastern edge of the Firestone Boy Scout Reserve, this area includes a freshwater marsh (at Grand Ave.) that supports the only pair of the Northern Harrier and colony of the Tricolored Blackbird known in the study area. Other raptors nesting locally, including the Golden Eagle and White-tailed Kite, regularly forage here during the breeding season, and all the characteristic grassland birds occur.

Smaller areas of that support rare species and are threatened by development include the foothill riparian woodland of Turnbull Canyon and adjacent

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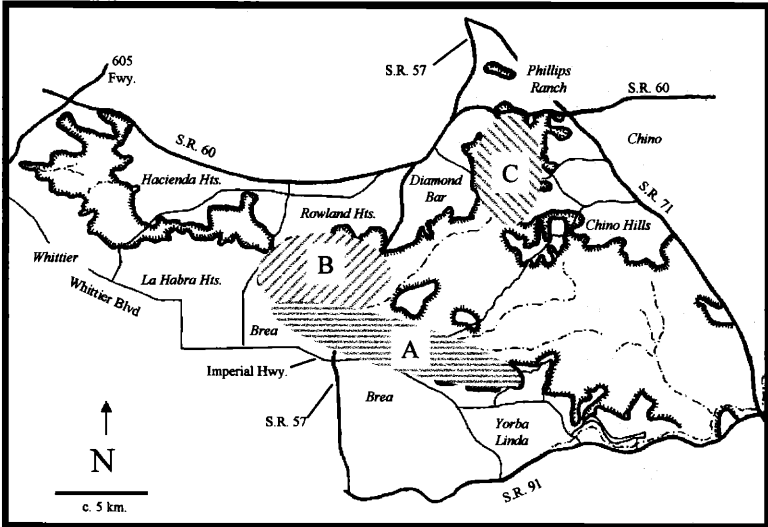


Figure 3. Areas in the Puente-Chino Hills of highest conservation concern (see text).

grassland, Summitridge Park and adjacent coastal sage scrub, the pastureland of the eastern city of Chino Hills, particularly along English Rd., and the remaining open space along the Santa Ana River through Yorba Linda, important foraging habitat for several riparian birds such as the White-tailed Kite).

Access for this study was denied in several areas of the hills, yet most of these sites support habitats duplicated (and surveyed) elsewhere. One of the most interesting undersurveyed regions is the ranchland north and east of Chino Hills State Park, where recent sightings of the locally rare Loggerhead Shrike and Bell's Vireo (K. F. Campbell) indicate additional populations and the rediscovery of the Burrowing Owl remains a possibility. Surveys of the extensive chaparral east of State Route 57 (including the Firestone Boy Scout Reserve and Soquel Canyon) could turn up additional populations of the Black-chinned Sparrow and Sage Sparrows. A more thorough assessment of the the sycamore-lined canyon bottoms in these same areas would probably also reveal nesting sites for scarce riparian breeders like the Warbling Vireo and Western Wood-Pewee. Recent efforts by the Santa Monica Mountains Conservancy to purchase a portion of Firestone Boy Scout Reserve are encouraging, provided plans to locate major highways through this region and Chino Hills State Park are abandoned (C. Schlotterbeck pers. comm.). The feasibility of extending the state park should be investigated.

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### ACKNOWLEDGMENTS

I thank Tom Scott, my advisor at the University of California, Riverside, for his assistance throughout this project. The Mountains Recreation and Conservation Authority provided most of the funding for the study, and its staff, in particular Andrea Gullo, provided logistical help throughout the project. Geary Hund and Alissa Ing facilitated work in Chino Hills State Park. Cheryl Swift of Whittier College graciously lent aerial photos and a vegetation map, and John Fisher and the staff of the WFVZ provided access to historical field notes. Mike San Miguel, Nehemiah Landes, Nancy Storms, John Schmitt, and Colin Campbell assisted in fieldwork. Mark Wimer generously provided recent breeding records from the Los Angeles County Breeding Bird Atlas, and several other observers, in particular Kurt F. Campbell, James E. Pike, Larry Schmahl, and John Schmitt, contributed valuable unpublished field notes. Finally, accommodating staff at Torch Operating Company and both Nuevo and Monterey Resources greatly facilitated fieldwork on oil fields in Brea. The manuscript was greatly improved by the editorial comments of Kurt F. Campbell and Robert A. Hamilton.

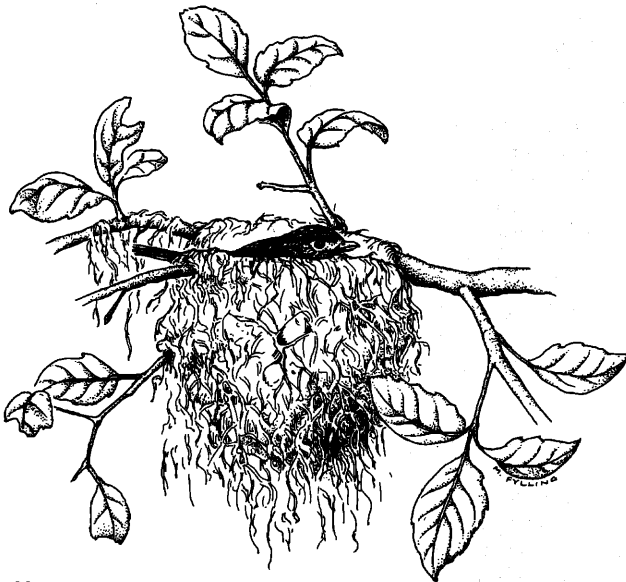
### LITERATURE CITED

- Beier, P. 1995. Dispersal of juvenile cougars in fragmented habitat. *J. Wildlife Mgmt.* 59:228-237.
- Bolger, D. T., Scott, T. A., and Rotenberry, J. T. 1997. Breeding bird abundance in an urbanizing landscape in coastal southern California. *Cons. Biol.* 11:406-421.
- Craigmile, E. 1906. Common birds of Whittier, California. *Wilson Bull.* 18:83-87.
- Davis, L. H., McKernan, R. L., and Burns, J. S. 1998. History and status of the California Gnatcatcher in San Bernardino County, California. *W. Birds* 29:361-365.
- Freudenberger, D. O., Fish, B. E., and Keeley, J. E. 1987. Distribution and stability of grasslands in the Los Angeles Basin. *Bull. S. Calif. Acad. Sci.* 86:13-26.
- Gallagher, S. R. 1997. Orange County, California, Atlas of Breeding Birds. Sea and Sage Press, Irvine, CA.
- Garrett, K., and Dunn, J. 1981. *Birds of Southern California: Status and Distribution.* Los Angeles Audubon Soc., Los Angeles.
- Grinnell, J. 1898. Birds of the Pacific slope of Los Angeles County. *Pasadena Acad. Sci. Publ.* 2.
- Grinnell, J. 1906. Why should it have been printed? *Condor* 8:156-157.
- Grinnell, J., and Miller, A. H. 1944. The distribution of the birds of California. *Pac. Coast Avifauna* 27.
- Hamilton, R. A., and Willick, D. R. 1996. *The Birds of Orange County, California: Status and Distribution.* Sea and Sage Press, Irvine, CA.
- Long, M. C. 1993. *Birds of Whittier Narrows Recreation Area, Los Angeles County, California.* Whittier Narrows Nature Center Associates, 1000 N. Durfee Ave., South El Monte, CA 91733.
- Ralph C. J., Droege, S., and Sauer, J. R. 1995. Managing and monitoring birds using point counts: Standards and applications, in *Monitoring bird populations by point counts* (C. J. Ralph, S. Droege, and J. R. Sauer, tech. eds.), pp. 161-170. Gen. Tech. Rep. PSW-GTR-149. Pacific Southwest Research Station, U.S. Forest Service, Albany, CA.

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- Rothstein, S. I. 1994. The cowbird invasion of the Far West: History, causes, and consequences experienced by host species. *Studies Avian Biol.* 15:301-315.
- Rowe, S. P., and Cooper, D. S. 1997. Confirmed nesting of Lazuli Bunting with Indigo Bunting in Kern County, California. *W. Birds* 28:225-227.
- Sawyer, J., and Keeler-Wolf, T. 1995. *A Manual of California Vegetation*. Calif. Native Plant Soc., Sacramento.
- Schneider, F. B. 1900. Nesting of the California Cuckoo in Los Angeles County. *Condor* 2:34.
- Soulé, M. E., Bolger, D. T., Alberts, A. C., Wright, J., Soric, M., and Hill, S. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. *Cons. Biol.* 2:75-92.
- Swarth, H. S. 1900. Avifauna of a 100-acre ranch. *Condor* 2:14-16, 37-41.
- Unitt, P. 1984. The birds of San Diego County. *San Diego Soc. Nat. Hist. Memoir* 13.
- Willett, G. 1912. Birds of the Pacific slope of southern California. *Pac. Coast Avifauna* 7.
- Willett, G. 1933. A revised list of the birds of southwestern California. *Pac. Coast Avifauna* 21.

*Accepted 6 March 2000*



Hutton's Vireo

*Sketch by Marni Fylling*