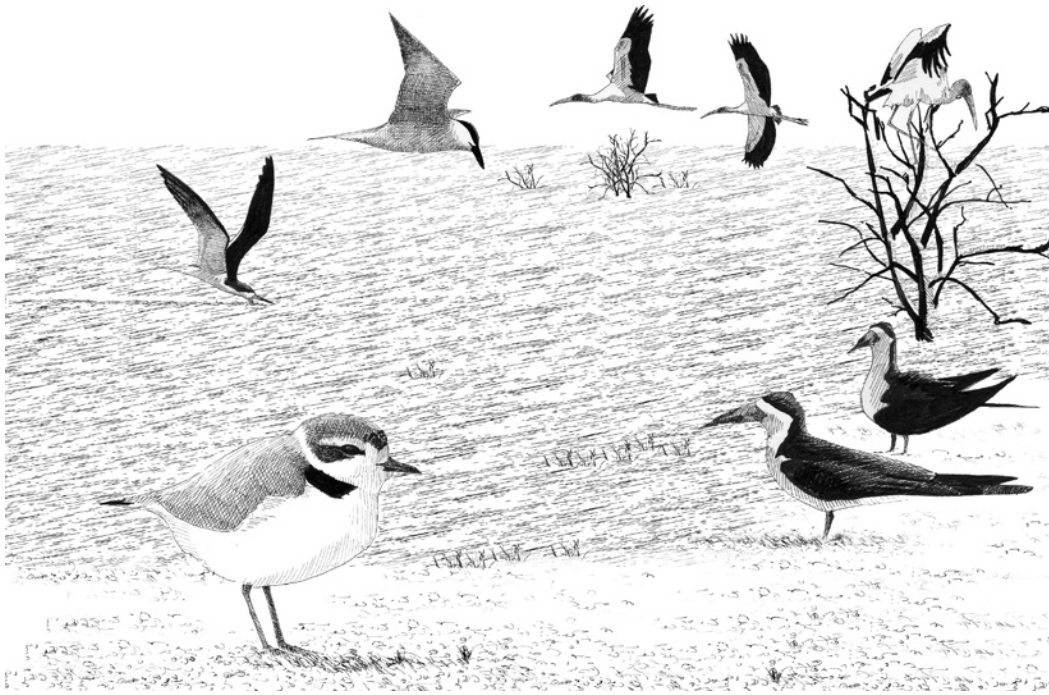
II

Species Accounts



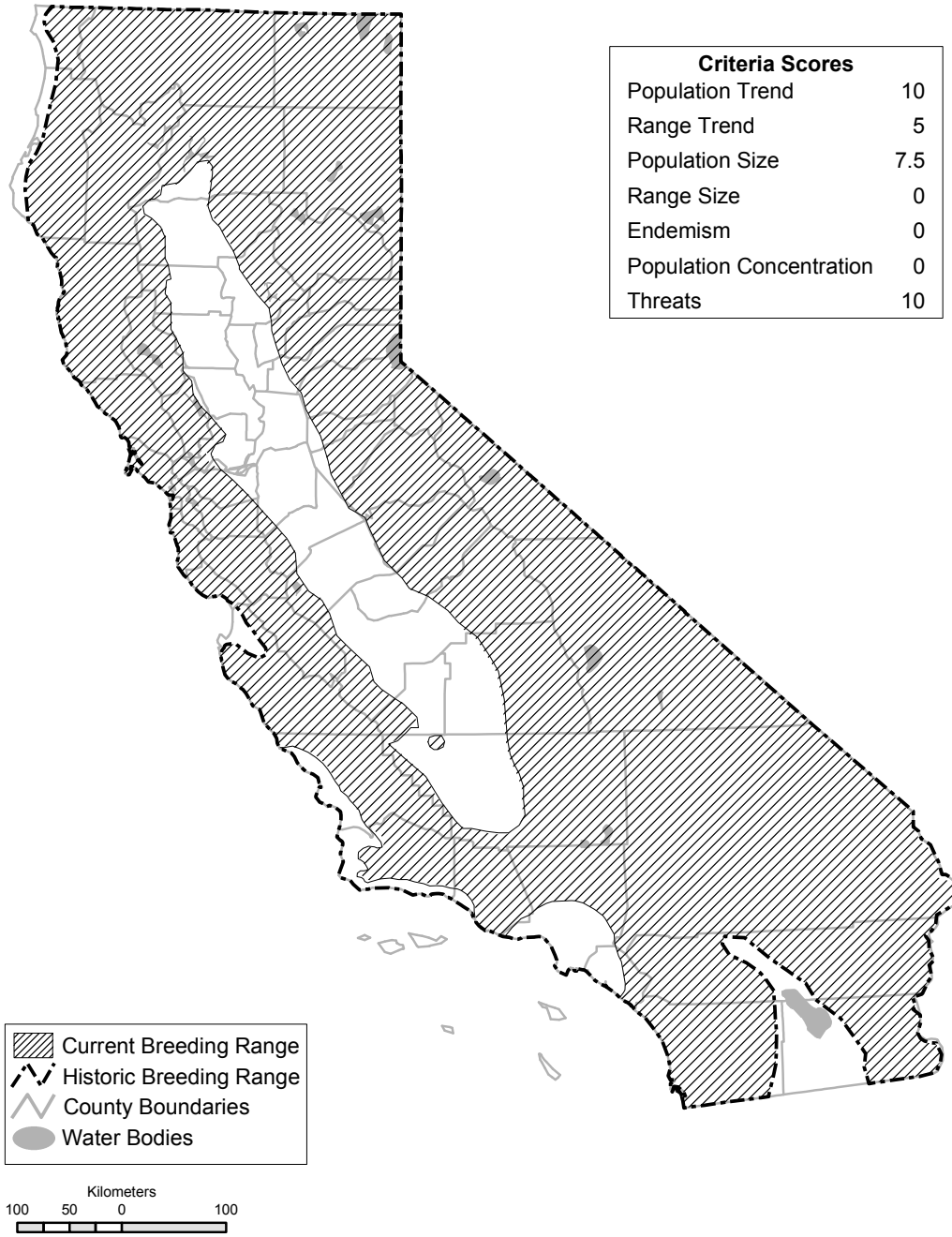
Andy Birch

PDF of Long-eared Owl account from:

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

LONG-EARED OWL (*Asio otus*)

Kevin Hunting



Current and historic (ca. 1944) breeding range of the Long-eared Owl in California. Occurs very locally within the mapped range, particularly in the southern deserts and densely forested areas. Essentially extirpated from the entire floor of the Central Valley and locally on the southern coast; numbers have declined at least moderately overall. Occurs more widely in lowland areas of the state during migration and winter.

Special Concern Priority

Currently considered a Bird Species of Special Concern (breeding), priority 3. Included on both prior special concern lists (Remsen 1978, 2nd priority; CDFG 1992).

Breeding Bird Survey Statistics for California

Data inadequate for trend assessment (Sauer et al. 2005).

General Range and Abundance

Distributed broadly throughout the Holarctic. In North America, breeds across central Canada and south interruptedly through northern Baja California in the West and Virginia in the East (Marks et al. 1994). It may winter throughout the breeding range, but northernmost populations usually are migratory; disperses south to the southeastern United States and southern Mexico (Howell and Webb 1995). Nomadism, in response to prey availability and abundance, is documented in Europe but is not clearly understood in North America (Voous 1988, Korpimäki 1992, Marks et al. 1994). No population estimate is available for North America, but the species is considered "relatively common" in the western United States (Marks et al. 1994).

In North America, has been divided into two subspecies, *A. o. wilsonianus* in the East and *A. o. tuftsi* in the West (AOU 1957), but the validity of this distinction is questioned given the species' highly nomadic nature (Marks et al. 1994, Haas 2004).

Seasonal Status in California

Occurs in the state year round, although seasonal status varies regionally; breeds from February through July (Marks et al. 1994, Haas 2004). Grinnell and Miller (1944) noted "markedly irregular wanderings of individuals and groups," but it is unclear to what extent this reflects local movements in California or influxes from outside the state.

Historic Range and Abundance in California

Grinnell and Miller (1944) described the Long-eared Owl as breeding the length and breadth of the state east of the northern humid coastal region and from sea level to 7000 ft (2134m), but noted an exceptionally high elevation record of 10,500 ft (3200 m) in the White Mountains, Mono County. They considered the species overall to be "common" to "abundant locally" and noted centers of abundance in the northeastern Great Basin region, the central interior valleys, and the San Diegan (southern coast) district. They reported an apparent decline in "late years," which they indicated likely reflected mainly the clearing of lowland habitat for farming.

Northeastern California. Breeding was confirmed near Dewitt, Lassen County, and at Mono Lake, Walker Creek, and Convict Creek, Mono County; records of immatures at Goose Lake, Modoc County, in early June are strongly suggestive of breeding (Grinnell and Storer 1924, Grinnell and Miller 1944, Gaines 1992, MVZ specimens and egg sets).

Sierra Nevada. Little is known of prior status in the Sierra, though breeding was documented at Yosemite Valley, Mariposa County (Grinnell and Storer 1924). A July 1898 observation of the species at Mt. Tallac, just south of Lake Tahoe, El Dorado County (Orr and Moffitt 1971), is suggestive of breeding.

Central Valley. Historic status in this region likewise is poorly known. Tyler (1913) reported confirmed breeding along the San Joaquin River and near New Hope school, Fresno County, and described this owl as "nowhere . . . abundant" near Fresno in the San Joaquin Valley. Specimens of adults and immatures collected in June along Butte Creek near Chico, Butte County, also suggest local nesting (MVZ specimens).

Central and southern coast. Grinnell and Wythe (1927) described this owl as a sparse and local resident in coastal portions of the San Francisco Bay region. Willett (1933) characterized it as a "fairly common" resident of the foothills and lowlands of coastal southern California. Breeding was confirmed at the Russian River near Windsor, Sonoma County; Novato, Marin County; Alameda, Alameda County; Berryessa and Betabel, Santa Clara County; Santa Cruz, Santa Cruz County; Paicines and San Juan, San Benito County; Hastings Natural History Reserve and near Carmel Valley, Monterey County; Paso Robles and Shandon, San Luis Obispo County; Goleta and Aliso Canyon, Santa Barbara County; near Redlands and Yucaipe Valley, San Bernardino County; near Santa Paula, Santa Clara River, Sherwood Lake, and Nordhoff, Ventura County; Pasadena, Placerita Canyon near Newhall, San Fernando Valley, and Santa Catalina Island, Los Angeles County; Pedley and Beaumont, Riverside County; Alamitos and near La Habra, Orange

County; and San Luis Rey River near Bonsall, Escondido, and Lakeside, San Diego County (Grinnell and Wythe 1927; Willett 1912, 1933; Grinnell and Miller 1944; Sibley 1952; Bloom 1994; Lehman 1994; Burridge 1995; Roberson 2002; CAS, MVZ, and WFVZ egg sets). Birds collected in June on Mount Pinos, Ventura County, and in July (including immatures) at Round Valley in the San Jacinto Mountains, Riverside County, likely reflect breeding in the higher mountains of southern California (MVZ specimens).

Southern deserts. This owl was documented breeding at Bishop, Inyo County, and Victorville, San Bernardino County; May–June records from Walker Creek near Olancha and the Argus Mountains, Inyo County, and from Essex, San Bernardino County, also suggest local breeding in this region (Grinnell and Miller 1944, MVZ and WFVZ specimens or egg sets).

Recent Range and Abundance in California

Limited historical information on the Long-eared Owl, particularly for the Central Valley, Sierra Nevada, and southern deserts, makes it difficult to characterize subsequent population trends. The range has retracted locally on the southern coast and apparently more broadly in the Central Valley. The substantial loss of riparian habitat in the Central Valley (87%; GIC 2003) and coastal southern California (95%–97%; Faber et al. 1989) has almost certainly resulted in population declines. Recent breeding season records for Humboldt County and expanded knowledge of the range in the Mojave and Colorado deserts likely reflect increased observer coverage rather than true range expansions (see map).

Northwestern California. Surveys for the Humboldt County breeding bird atlas found Long-eared Owls in 11 scattered blocks in the southern half of the county, mainly in the interior (Hunter et al. 2005). Prior records for the region representing possible breeding birds extend from Bald Hills, Humboldt County, south to Willets, Mendocino County (Harris 2005).

Northeastern California. This region currently is perhaps the center of abundance for this species in California. It nests in the Honey Lake Valley, Lassen County, but appears to have declined in numbers in recent years (T. Manolis pers. comm.). Gaines (1992) considered this species an "uncommon" resident in the Mono Lake area, with confirmed breeding at Lee Vining Canyon, Warford Spring, and Simons Spring. Shuford and Fitton (1998) described the Long-eared Owl as a "widespread breeder" recorded in 33 (45%) of 74 atlas blocks in the Glass Mountain area of Mono County. To the east and south, the species is an "uncommon" resident in the White-Inyo Range; nesting has been documented in the White Mountains as high at 9500 ft (2896 m) at Cottonwood Creek, Mono County (Johnson and Cicero 1986), and an individual was seen in July at 10,400 ft (3170 m) in Silver Canyon, Inyo County (T. & J. Heindel in litt.).

Cascade Range and Sierra Nevada. This owl has been recorded in summer at Cutter Butte, Shasta County, in the Cascades (J. Winter in litt.). Siegel and DeSante (1999) considered this species a "rare" resident and breeder on the west slope of the Sierra and a locally "uncommon" summer resident on the east slope. Nesting was confirmed (young calling) in the northern Sierra near Blakeless Creek, Plumas County, in 1984, and owls were recorded at Duncan Peak Lookout, Placer County; Gerle Creek Campground, El Dorado County; and Charity Valley, Alpine County (J. Winter in litt.). In the Yosemite area, Gaines (1992) reported confirmed breeding on the west slope at Ackerson Meadow, Tuolumne County, and pairs during the breeding season at Swamp Lake, Tuolumne County, and Henness Ridge, Mariposa County. There also are summer records of birds at Crane Flat and Peregoy Meadow, Mariposa County (J. Winter and J. Davis in litt.). This owl is a summer resident along the South Fork Kern River, Kern County, at the base of the southern Sierra (J. Sterling pers. comm.)

Central Valley. Limited available information suggests this owl today is a very scarce and irregular breeder in the Central Valley. Records for the Sacramento Valley include one of a nest with young in the Yolo Bypass, Yolo County, in 1961 (Yolo Audubon Society 2004) and ones for Sacramento County of a nest with young in an orchard in Rio Linda in 1974 (fide T. Manolis and C. Conard), of an adult hit by a car near Folsom Dam in July 1979 (fide T. Manolis and C. Conard), and of a nest in an Interior Live Oak (*Quercus wislizenii*) at Goethe Park on the American River Parkway in 2002 (S. Flannery fide C. Conard).

Just west of the San Joaquin Valley, nests were found in 2005 in a juniper (*Juniperus* sp.) in the Panoche Hills near Mercey Hot Springs, Fresno County (G. Woods fide C. Conard), and at Mercey Hot Springs itself (J. Davis, J. Seay in litt.). Kern NWR, on the floor of the southern San Joaquin Valley in Kern County, hosted up

to 12 Long-eared Owls in June 1992 and chicks at or near a nest in April–May 1994 (P. Williams in litt.).

Central and southern coast. Long-eared Owls generally increase in abundance with decreasing latitude along the coast. Population trends for most of the central coast are unclear. For Marin County, Shuford (1993) reported atlas records of confirmed breeding at Home Bay, Point Reyes National Seashore, in 1979 (and post-atlas in 1983) and probable breeding at Palomarin in 1979; both atlas records coincided with a vole outbreak on Point Reyes. An atlas confirmation near Lake Berryessa in 1990 represents the only breeding record for the species in Napa County (Berner et al. 2003). The Alameda atlas effort confirmed breeding near Eylar Canyon and noted probable or possible breeding in three other atlas blocks (unpubl. data). Atlases for Sonoma and San Mateo counties did not record this species (Burridge 1995, Sequoia Audubon Society 2001). Noble (1990) confirmed breeding at Monte Bello Open Space Preserve, Santa Clara County, in 1987, after far more than usual sightings of this species the previous winter. Roberson (2002) described the range in Monterey County as the Santa Lucia range and foothills, riparian areas on the Big Sur coast and creeks locally in oak savannah inland, and likely the foothills east of the Salinas Valley.

Many authors described declines of breeding Long-eared Owls on the coastal slope of southern California in recent decades (e.g., Garrett and Dunn 1981, Unitt 1984, Bloom 1994). The San Luis Obispo County atlas (unpubl. data) confirmed breeding of these owls in eight blocks in the interior, mainly on the east side of the La Panza Range but also at the Carrizo Plain. Lehman (1994) described the owls in Santa Barbara County as presently of unclear status but formerly more numerous. Records of confirmed or likely breeding from the 1950s to 1990 were from foothill areas, mountains, and the Cuyama Valley; at least until 1980, nesting occurred on Tinta Creek, Santa Barbara and Ventura counties. Surveys for the Los Angeles County atlas (unpubl. data) found the species absent in coastal lowlands but present in four blocks at mid elevations of the Santa Clara River drainage in the western San Gabriel Mountain region (K. Garrett in litt.). This species nested in the Prado Basin, Riverside County, in 1986 (Gallagher and Bloom 1997).

Long-eared Owls breed in southeastern Orange County in the lower canyons of the Santa Ana Mountains and the southern foothills (Hamilton and Willick 1996). Gallagher and Bloom (1997) reported that only 18 nest territories had been found in that county (at least 3 inactive for more than 10 years), and the county atlas confirmed breeding in seven blocks. Bloom (1994) found 6 active territories in 1991 and 12 in 1992 but failed to detect nesting in 1993 and 1994, indicating great population fluctuations in the county (P. H. Bloom in Hamilton and Willick 1996). San Diego bird atlas data suggested that 50–200 pairs nest in that county, far more than previously suspected; though suggestive of a comeback, none of the recent sightings approached the size of historic breeding "colonies" (Haas 2004). Although some owls in the county nest on the immediate coast, most do so in the foothills and inland valleys. From a comparison of 79 historical egg-set records and 50 recent (1968–1992) nesting attempts from Orange and coastal San Diego counties, Bloom (1994) concluded that the number of historic breeding territories had decreased by at least 55%, leaving a small, remnant population in interior areas.

Southern deserts. Garrett and Dunn (1981) described this owl as an "uncommon" resident distributed widely but locally over the Mojave and Colorado deserts. They judged it most numerous at the Great Basin interface in the Owens Valley, Inyo County, and Fish Lake Valley, Mono County, and noted nesting also in the New York Mountains, Mojave River drainage, and Morongo Valley area, San Bernardino County; the Antelope Valley, Los Angeles County; Yaqui Wells, San Diego County; the east side of the Algodones Dunes, Imperial County; and undoubtedly numerous other wooded washes and oases. Los Angeles County atlas (unpubl. data) observers found this owl in four blocks in the Antelope Valley. Four Long-eared Owl nests were active in the San Felipe Valley area (including Tamarisk Grove Campground) in Anza-Borrego Desert State Park, San Diego County, in 2005 (CDFG unpubl. data). This owl is not known to breed in the Coachella and Imperial valleys of the Salton Sink (Patten et al. 2003). Rosenberg et al. (1991) reported that it was possibly resident in the lower Colorado River valley in some years, with "breeding occasionally noted." In 2005, C. McCreedy and colleagues (PRBO unpubl. data) found Long-eared Owl nests in large trees in desert woodland habitat over 10 km from the Colorado River at Chemehuevi and Vidal washes, San Bernardino County; in the Riverside Mountains Wilderness, Riverside County; and at Milpitas Wash, Imperial County.

Ecological Requirements

Long-eared Owls nests in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands (Marks et al. 1994, references below). Key habitat components are some dense cover for nesting and roosting, suitable nest platforms, and open foraging areas. In Humboldt County, the owls apparently nest in mixed stands of conifers and oaks with edges and openings such as meadows or prairies (Hunter et al. 2005). On the central and southern California coast, these owls nest mainly in oak and riparian habitat (e.g., Garrett and Dunn 1981, Bloom 1994, Roberson 2002, Haas 2004). Of 69 historic nests in Orange and San Diego counties, 21 were in oak (*Quercus* sp.), 18 in willow (*Salix* spp.), 18 in Fremont Cottonwood (*Populus fremontii* ssp. *fremontii*), 4 in *Eucalyptus* spp., and 1 each in orange, White Alder (*Alnus rhombifolia*), sumac (*Rhus* spp.), English Walnut (*Juglans regia*), and Desert Wild Grape (*Vitis girdiana*; Bloom 1994). Of 31 nest records in those counties from 1968 to 1992, 30 were in Coast Live Oak (*Q. agrifolia*) and 1 was in willow. The most frequently used nesting habitat was young stands of closed-canopy Coast Live Oak woodland, but all oak and riparian habitats had adjacent grasslands for foraging. In the Sierra, Long-eared Owls are known to nest in riparian and oak-conifer forests (Gaines 1992) and are typically associated with the forest-grassland edge (J. Winter in litt.). In the Great Basin of Mono County, these owls nest in almost all wooded habitats, including Singleleaf Pinyon (*Pinus monophylla*) and Curl-leaf Mountain-mahogany (*Cercocarpus ledifolius*) woodlands, Jeffrey (*P. jeffreyi*) and Lodgepole Pine (*P. contorta* ssp. *murrayana*) forests, and various riparian associations; when not in relatively open forests or woodlands, the dense stands of trees where they nest are usually adjacent to open foraging areas, such as wet or dry meadows, sand flats, and open sagebrush scrub (Shuford and Fitton 1998). In the Antelope Valley in the Mojave Desert of Los Angeles County, these owls nest both in planted trees in ranch yards and elsewhere in natural desert woodlands (K. Garrett in litt.). Most reports of these owls along the lower Colorado River are from tall riparian trees, such as Fremont Cottonwood and Athel Tamarisk (*Tamarix aphylla*), and from densely vegetated desert washes (Rosenberg et al. 1991). Of four nests found in desert woodland west of the Colorado River in 2005, two each were in Blue Palo Verde (*Cercidium floridum* ssp. *floridum*) and Ironwood (*Olneya tesota*; C. McCreedy in litt.).

Long-eared Owls nest mainly in old corvid or hawk nests but also in old woodrat and squirrel nests, mistletoe brooms, and natural platforms of (or debris piles in) trees (Voous 1988, Bloom 1994, Marks et al. 1994). They occasionally nest on cliffs, in tree cavities, in orchards or ornamental trees, in man-made structures, or on the ground. Grinnell and Miller (1944) noted a suggestive coincidence in the ranges of these owls and Black-billed Magpies (*Pica hudsonia*) east of the Sierra, but the riparian these species mainly co-occur in makes up only a fraction of the total extent of the many habitats the owls nest in (Shuford and Fitton 1998). These owls apparently select nesting and roosting sites with dense, occasionally armored, cover for concealment from predators or perhaps to dampen thermal variation (Marks and Yensen 1980, Marks et al. 1994). In Idaho, nests averaged 3.2 m above the ground (range = 1.3–8.3 m; n = 130 nests) and were about midheight in the nest tree (Marks and Yensen 1980, Marks 1986). Marks (1986) reported nest locations as mainly in tree groves >10 m wide; owls preferred clumps of trees and avoided isolated, or single rows of, trees. Though typically single brooded, these owls will renest following nest failure.

Long-eared Owls forage primarily at night by flying low over open ground, including grasslands, meadows, active or fallow agricultural lands, sagebrush scrub, and desert scrub (Marti et al. 1986, Bloom 1994, Marks et al. 1994). They feed almost exclusively on small mammals primarily in the genera *Microtus*, *Peromyscus*, and *Dipodomys* (Marks et al. 1994) but opportunistically take other prey, such as small birds and rabbits, when rodents are limited. On the southern California coast, the most numerous prey are the California Vole (*Microtus californicus*), Western Harvest Mouse (*Reithrodontomys megalotis*), and Botta Pocket Gopher (*Thomomys bottae*; Bloom 1994). In deserts, including in California, kangaroo rats (*Dipodomys* spp.) and pocket mice (*Perognathus* spp.) are the primary prey (Bloom 1994, Marks et al. 1994).

The home-range size of the Long-eared Owl during breeding is not well known. However, radiotelemetry has shown that a breeding male tracked for five nights in early May covered 190–220 ha per night (Hilliard et al. 1982), and two pairs tracked for eight to nine nights remained mostly within 1 km of their nests but made occasional forays up to 3 km (Craig et al. 1988).

The correlation between prey densities and Long-eared Owl populations in Europe (Village 1981, Wijandts 1984, Korpimäki and Norrdahl

1991) is less apparent elsewhere in the range, but patterns of habitat use and breeding distribution strongly suggest prey-induced nomadism. Factors regulating populations likely include fluctuating prey numbers, high levels of nest predation (Marks 1986), habitat changes (Bloom 1994), and perhaps availability of nest sites, especially where corvid numbers have been reduced (Marti and Marks 1989).

Threats

The primary threat to Long-eared Owl populations is loss and degradation of breeding and foraging habitat (Marks et al. 1994), the main factor linked with historic declines in California. Bloom (1994) reported declines on the southern California coast and judged this pattern would continue, based on recent trends in habitat use in Orange County. Siegel and DeSante (1999) noted loss of riparian habitat was probably a major threat in the Sierra Nevada but lamented the lack of basic knowledge of this species upon which to make conservation recommendations.

Nest predation, particularly by increasing species such as ravens and other corvids, may be contributing to local and regional declines (Marks 1986). Bloom (1994) speculated that increased Common Raven (*Corvus corax*) populations in southern California may simultaneously provide more nest sites and exert additional nest depredation pressure.

Long-eared Owls are undoubtedly exposed to pesticides in open agricultural settings, but the direct effects of ingestion and exposure to pesticides and the indirect effects of reduced prey numbers from rodenticide use are unknown in California. Henny et al. (1984) noted elevated DDE levels in 12 raptor species, including the Long-eared Owl, in the Columbia River Basin, Oregon, but levels were below those suspected of causing reproductive harm. Bosakowski et al. (1989) suggested rodenticide use may decrease prey populations of Long-eared Owls. Grazing may affect prey populations of these owls in some agricultural areas (J. Winter pers. comm.).

Management and Research Recommendations

- Protect and enhance areas of known breeding occurrence with suitable adjacent foraging habitat, giving special attention to appropriate vegetative cover and configuration and considering the surrounding landscape out to 3 km from core nesting areas.
- Determine breeding abundance and distribution in the Sierra Nevada and Central Valley.
- Investigate the levels of reproductive success related to habitat and landscape features and determine the potential impact of increased numbers of native (e.g., Common Raven, Raccoon [*Procyon lotor*]) and non-native nest predators.
- Initiate studies to determine grassland management prescriptions beneficial to Long-eared Owls and other native species.

Monitoring Needs

The Breeding Bird Survey is inadequate for monitoring because of the nocturnal habits of this species. Annual or biannual population size monitoring, using standardized protocols with sampling stratified by key regions and habitats in the state, would probably be required to capture periodic natural fluctuations; surveys should be timed with respect to both the season and time of night when this species is most vocal.

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