SHORT-EARED OWL
Asio flammeus

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Management Status: Federal: None
California: Species of Special Concern (CDFG, 1998)

General Distribution:

This widespread owl breeds over much of northern North America; additional populations occur across Eurasia, in the grasslands of South America, and on many oceanic islands. Many populations are migratory, and North American breeders winter south to Baja California, northern Mexico, and Florida. All North American birds belong to the nominate subspecies *A. f. flammeus*.

In California Short-eared Owls breed (or formerly bred) locally in the northern part of the state, in the Central Valley, and along the coast of southern California (Grinnell and Miller, 1944); a few breeding stations on the deserts have been recorded as well. Garrett and Dunn (1981) indicated that this species was eliminated as a breeder on the southern California coast before the middle of the twentieth century.

As noted above, the more northerly populations of this species are migratory, with an influx of birds into southern California occurring mainly from late October (casually as early as early September) through early March (and casually through April; Garrett and Dunn 1981). Short-eared Owls were formerly "abundant" in winter through much of California, and were still considered "common and widely distributed" by Grinnell and Miller (1944). Garrett and Dunn (1981) considered the species an uncommon and local winter visitor on the coastal slope, and generally rare on the deserts (although concentrations are sometimes reported).

Distribution in West Mojave Planning Area:

Nesting in the WMPA has been recorded only at Harper Dry Lake, where as many as twelve birds were present in April and May of 1980 and three active nests were found (Garrett and Dunn, 1981). Nesting was suspected, but not confirmed, in the Antelope Valley, six miles east of Lancaster, in spring of 1992 (Los Angeles County Museum files); two birds were present here in annual growth in abandoned alfalfa fields at least from 2-23 May 1992. During that same spring three birds were noted adjacent to Fox Field, northeast of Lancaster, on 25 March (Los Angeles County Museum files); this is around the time when most wintering birds have departed the region. A single bird was observed at Piute Ponds on the Edwards Air Force Base on 8 August 1993 (Los Angeles County Museum files), again with no evidence of nesting activity. Any nesting within the WMPA probably occurs only after exceptionally wet winters.

Short-eared Owls occur on the deserts (and presumably in the WMPA) mainly from late October through early March (Garrett and Dunn, 1981), with a few birds reported as early as early September and as late as late April. A group of 150 Short-eared Owls was reported in 1987 by Larry Foreman (pers. comm.) near the Harper Lake marshes. Apart from this report, the largest recent concentration found within the WMPA was of twenty or more birds on Cronese Dry Lake on 19 November 1978 (Garrett and Dunn, 1981). Four were south of Kelso on 27 October 1978 (Garrett and Dunn, 1981). This species is an occasional winter visitor and rare transient at the China Lake Naval Weapons Center (California Natural Diversity Data Base).

On the Lancaster Christmas Bird Count, this species has been recorded in eight years between 1979 and 1996, with only a single individual recorded in each instance (CBC data; F. Heath, unpublished data); most sightings on this count have been at Piute Ponds on the Edwards Air Force Base. Other winter sightings in the Antelope Valley (Los Angeles County Museum files) include two in alfalfa fields west of Lancaster on 1 November 1986 and one at Piute Ponds on 15 February 1981.

Natural History:

This medium-large owl (15 in, 38 cm) is distinguished by its buffy overall coloration, streaked underparts, and distinctive black "comma"-shaped marks on the greater primary coverts on the underside of the wing. Females are larger than males, averaging 378g to the males' 315g (Holt and Leasure, 1993). The Long-eared Owl (*A. otus*) is morphologically similar to the Short-eared, but is readily distinguished by its darker overall plumage, cross-barring on the streaked underparts, longer feathered tufts on the head, and (in flight) solid black patch on the under greater primary coverts. The two species differ in behavior and activity patterns as well: Short-eareds are largely crepuscular and are often active during the day, whereas Long-eareds are strictly nocturnal. The more buoyant, quartering hunting flight of the Short-eared Owl is more reminiscent of a Northern Harrier (*Circus cyaneus*) than of other owls. Short-eared Owls are not especially vocal away from the nesting areas; winter birds occasionally give a barking "kee-ow" call. On the breeding grounds they give a variety of additional calls and also engage in distinctive aerial courtship flights, often termed "sky-dancing" (Holt and Leasure, 1993).

Ecologically, this species is a crepuscular/nocturnal analog of the Northern Harrier, although the owl's diet includes far fewer birds. Numerous dietary studies (summarized by Clark 1975 and Holt and Leasure 1993) show that mammal prey constitutes up to 99% (and nearly always over 80%) of the diet. The great majority of mammal prey items are microtine rodents (e.g., voles, genus *Microtus*), with smaller numbers of *Thomomys* gophers, other rodents, shrews, and moles making up the remainder. In parts of the range of the Short-eared Owl, especially where colonial-nesting waterbirds are in close proximity, the owls may take chicks and recently-fledged young birds; waterbird nesting colonies are generally absent from the WMPA, although heronries are located at Piute Ponds and in the Mojave Narrow area. Prey is located by auditory and visual cues.

Short-eared Owls generally nest as widely dispersed pairs. In some regions they may nest semi-colonially, with densities of up to one pair per 13.6 acres (5.5 hectares). More typically a given breeding pair has a territory of 124-198 acres (50-80 hectares), and occasionally as large as 339 acres (137 hectares; Holt and Leasure, 1993). Pair formation occurs as early as mid-February in the southern part of the breeding range (including, presumably, the WMPA); courtship behavior may be noted as late as June. The white eggs (mean clutch size in North America is 5.6 eggs; Holt and Leasure 1993) are typically laid in April; incubation period is 21 days, and the young can fly when 30-35 days old (Holt and Leasure, 1993). Second broods have been reported in Europe, but there is no confirmation of double-clutching in North America (Holt and Leasure, 1993). The nest is located on the ground among herbaceous ground vegetation 30-50 cm (12-20 in.) in height.

Winter birds concentrate at communal roosts which may include up to 200 individuals in some regions (Holt and Leasure, 1993); the largest communal winter roosts noted in the WMPA have been of twenty birds (Garrett and Dunn, 1981), and numbers are typically much lower than this.

Habitat Requirements:

Typical habitat consists of open country which supports concentrations of microtine rodents; depending on the region breeding habitat might include prairies, coastal grasslands, salt and freshwater marshes, shrub-steppe, or agricultural lands including irrigated alfalfa fields (Holt and Leasure, 1993; Grinnell and Miller, 1944). Winter habitats are similar to those occupied in the breeding season, but more often include marshes and weedy fields; winter birds are sometimes noted at garbage dumps (Holt and Leasure, 1993). Grinnell and Miller (1944) note that, in California, tule (*Scirpus*) patches or tall grass is needed for nesting and daytime roosts; nest sites are usually on drier, raised sites compared to surrounding vegetation (Holt and Leasure, 1993). Rosenberg et al. (1991) consider this species to benefit from the agricultural development of the lower Colorado River Valley, where it occupies alfalfa fields as well as marshes.

Much habitat apparently suitable for Short-eared Owls is unoccupied, and presence of owls at a given sight may vary considerably from year to year (Holt and Leasure, 1993). In some instances wintering birds may remain to breed on the wintering territory (Holt and Leasure, 1993).

Population Status:

Concern for this species' status in parts of North America led to its placement on the National Audubon Society "Blue List" in 1976; it remained on that list until the Blue List was discontinued in 1986 (Holt and Leasure, 1993). Declines have been precipitous in much of northeastern United States, where loss of habitat due to human encroachment has been cited as the major factor (Holt and Leasure, 1993). Breeding Bird Survey data show significant declines in Short-eared Owls in much of Oregon, southern Idaho, and south-central Washington from 1966-1989; the same data suggest non-significant increases in California populations, although sample sizes are low (Holt and Leasure, 1993). Many authors have commented on the fluctuating nature of winter populations of Short-eared Owls.

Threats Analysis:

The primary threats to North American populations of this owl include shooting and habitat loss and degradation (Holt and Leasure, 1993). Grinnell and Miller (1944) considered shooting by waterfowl hunters to be the main cause in the decline of wintering birds in California; shooting has likely declined as a significant cause of mortality, although even as late as the mid-1970s Remsen (1978) considered the owl "especially vulnerable to shooting" in California. Like many owls, this species is susceptible to collisions with automobiles; Phillips et al. (1964) noted that four birds were picked up after being killed along a highway through alfalfa fields near Gila Bend, Arizona, during the month of December 1960.

The destruction of marsh and tall grassland habitat was considered "certainly the main cause for the decline" of this species in California (Remsen, 1978). Such degradation has occurred through the draining and filling of coastal and freshwater marshlands, grazing of grasslands, conversion of grasslands to agriculture, and urbanization.

Predators on eggs and small young of Short-eared Owls include corvids, domestic dogs (*Canis familiaris*), red foxes (*Vulpes vulpes*), and skunks (*Mephitis mephitis*). Two of these (red fox, domestic dog) are not native to the WMPA but are abundant (dog) or potentially established (fox). White (1994) considered Short-eared Owls to be especially vulnerable to predation by mammalian predators (e.g. foxes; raccoons, *Procyon lotor*) which increase their populations as a result of habitat alteration. The tremendous increase in WMPA populations of Common Ravens (*Corvus corax*; Boarman and Berry, 1994) could potentially impact breeding attempts of Short-eared Owls in the region. Holt and Leasure (1993) note that increases in Barn Owls (*Tyto alba*) through nest box programs in the eastern United States have possibly led to decreases in Short-eared Owls. Barn Owls are numerous in the WMPA (Garrett and Dunn 1981), but there is no evidence that they are increasing significantly (White, 1994); in fact, populations of Barn Owls in the Antelope Valley appear to have decreased during the 1990s (K. L. Garrett, pers. obs.).

There is little evidence for detrimental effects of pesticides on North American Short-eared Owl populations (Holt and Leasure ,1993).

Biological Standards:

Habitat protection is the most important management practice that might ensure the continued existence of Short-eared Owls in the WMPA. Freshwater marshes, in particular, have high value for this (and many other) species. Grassland habitats and lush annual herbaceous growth should be protected and restored where possible. Habitat management requirements for this species and for the Northern Harrier are similar. Habitat management for waterfowl could also benefit the Short-eared Owl and harrier, although the ratio of marsh vegetation to open water should be high (neither the owl nor the harrier make extensive use of large areas of open water); waterfowl management schemes (such as that implemented by Ducks Unlimited at

Piute Ponds, Los Angeles County, in 1989; **CITATION**) should consider habitat requirements of sensitive wetland species as well as game species.

Management of this species must recognize the degree of annual fluctuations in wintering populations and the occasional or ephemeral nature of breeding populations. The total amount of suitable habitat is certainly higher after exceptionally wet winters.

Attempts should be made to survey appropriate habitats for the presence of wintering and breeding Short-eared Owls; surveys should be undertaken during a period centered around dusk. Breeding birds are perhaps best surveyed in the early spring when aerial courtship flights ("sky-dancing") are given (Holt and Leasure, 1993).

Areas that are found to harbor breeding populations of Short-eared Owls should be protected from damage by livestock (which can destroy nests and damage marsh and grassland habitat). Continuing public education regarding the beneficial impacts of owl and other raptor populations and the illegality of shooting raptors should reduce the impacts of shooting cited by Grinnell and Miller (1944).

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