Short-eared Owl

Asio flammeus

REGULATORY STATUS

USFWS: Migratory Bird
USFS R2: Sensitive
USFS R4: No special status
Wyoming BLM: No special status
State of Wyoming: Protected Bird

CONSERVATION RANKS

USFWS: Bird of Conservation Concern
WGFD: NSS4 (Bc), Tier II
WYNDD: G5, S1S2
Wyoming Contribution: LOW
IUCN: Least Concern
PIF Continental Concern Score: 12

STATUS AND RANK COMMENTS

The Wyoming Natural Diversity Database has assigned Short-eared Owl (*Asio flammeus*) a state conservation rank ranging from S1 (Critically Imperiled) to S2 (Imperiled) because of uncertainty about the species' population trends and intrinsic vulnerability to habitat modification in Wyoming.

NATURAL HISTORY

Taxonomy:

There are ten recognized subspecies of Short-eared Owl, though some subspecies may constitute unique species [1]. The only subspecies in Wyoming, *A. f. flammeus*, also occurs across North America, Europe, northern Asia, and northern Africa. Other subspecies are found in South America and in isolated populations on Pacific, Caribbean, and south Atlantic islands [1].

Description:

Identification of Short-eared Owl is possible in the field. Short-eared Owl is a medium-sized owl, measuring 38 cm from bill to tail [2]. Females are slightly larger than males, but plumage is similar between sexes [1]. Dorsal plumage is mottled brown and buff. Ventral plumage is whitish to rust colored with dense vertical streaking on the breast and thinner streaking on the sides and flanks. Short-eared Owl has small, often inconspicuous, ear tufts near the center of the forehead. The facial disk is large, grayish-white, with a ruff around the rim. Short-eared Owl has yellow eyes and a black bill. Juveniles plumage is similar to that of adults, but the facial pattern is not as pronounced and the upperparts and head are more dusky [1]. Short-eared Owl is most similar in appearance to Long-eared Owl (*A. otus*), Great-horned Owl (*Bubo virginianus*), and Northern Harrier (*Circus cyaneus*). Long-eared and Great-horned Owls have large ear tufts. Northern Harrier has a conspicuous white rump patch, which Short-eared Owl lacks [2].

Distribution & Range:
Short-eared Owl is widely distributed across open habitat in northern temperate and arctic regions as well as in northwestern and southern South America and various island groups. Changes in the species' distribution in North America have recently been documented. Specifically, a westward shift has been observed along with large contractions of the breeding range in northeastern North America [1, 3]. Some range expansions in the Antilles also have occurred [1, 3]. The species is nomadic within its range, and may be absent from some areas for many years [3]. Individuals that breed in the northern portion of the range migrate south in the winter. During the non-breeding season, most individuals are found south of Canada to northern and central Mexico [3]. In Wyoming, the species is found in low numbers across the state in appropriate habitat but distribution is patchy and irregular and numbers can vary greatly in abundance depending upon prey and spring weather conditions [3-5].

Habitat:
Short-eared Owl breeds in open habitat including: intermountain, prairie, and coastal grasslands, sagebrush steppe, marshes, arctic tundra, and shrub-steppe plateaus. The species prefers native and seeded grasslands. Agricultural fields are used to a lesser degree [3, 6, 7]. The species also has been observed using strip- and surface-mines that have been reclaimed [8, 9]. Short-eared Owl requires dense horizontal cover for nest concealment and proximity to preferred foraging areas. In Wyoming, the species occupies undisturbed open habitats below approximately 2,100 m including grasslands, meadows, and marshes and, less frequently, shrubsteppe [5]. Winter habitat is similar to breeding habitat, but the species also will use large open areas within woodlots, dumps, gravel pits, rock quarries, and shrub thickets [1].

Phenology:
In Wyoming, some Short-eared Owls are year-round residents while others are nomadic or migrate in winter. Although phenology has not been studied in Wyoming, migration probably occurs in April and October [10]. In other parts of the species' range, pair formation begins in mid-February and continues into June [1]. In the Great Plains, egg-laying has been observed from the end of March into late June, and hatching from early May to mid-July [6]. Incubation lasts 21 to 37 days [1]. Young disperse from nests at 14 to 17 days of age and are capable of flight at 27 to 35 days of age [1].

Diet:
Short-eared Owl can hunt day and night during the breeding season and eats a variety of small mammals, especially voles in the genus *Microtus*. Birds also are consumed, though typically not as frequently as small mammals [1].

CONSERVATION CONCERNS

Abundance:
Continental: CONTINENTAL
Wyoming: UNCOMMON
Short-eared Owl abundance in many areas fluctuates annually, due in part to prey abundance and the nomadic nature of the species [1, 3, 11-13]. In 2013, Partners in Flight estimated the Wyoming population of Short-eared Owl to be about 7,000 birds [14]. However, this estimate is extrapolated from Breeding Bird Survey (BBS) data and should be viewed with caution due to the low number of detections of the species both in Wyoming and across its range using this survey technique.

Population Trends:
Historic: MODERATE DECLINE
Recent: MODERATE DECLINE to STABLE
Due to annual variations in abundance and the nomadic and crepuscular nature of the species, population trends are hard to determine [1, 3]. However, multiple data sources indicate that Short-eared Owl has declined. Long-term (1966–2013) BBS data indicate that Short-eared Owl has declined across both the United States and Canada and limited data suggest a decline in Wyoming [11]. Christmas Bird Count (CBC) data for the United States and Canada also show that the number of Short-eared Owls detected per unit effort has declined 50% and 80%, respectively [13, 15]. Limited CBC data could suggest an overall decline in Wyoming; however, samples sizes are extremely small and data are inconclusive [13]. A 2008 status assessment of Short-eared Owl in Canada reported a decline of 27% in the previous 10 years, falling just short of criteria for listing the species as Threatened in Canada [16]. NatureServe lists Short-eared owl as possibly extirpated, critically imperiled, imperiled, or vulnerable in 37 states (74%) in the United States [15]. Comparisons between recent atlas projects in various states and anecdotal historical records also suggest a decline in the species' abundance [3]. Recent declines in eastern Europe prompted the European Commission to list Short-eared Owl in the 2013 European Union Annex 1 (Threatened) Birds Directive [17].

Intrinsic Vulnerability:
MODERATE to HIGH VULNERABILITY
Short-eared Owl is moderately or highly vulnerable to extrinsic stressors because the species has relatively narrow habitat requirements and a large home range. Short-eared Owl requires relatively large tracts, a minimum of 100 ha, of native grassland or other open habitats for successful breeding. Reproductive success and population dynamics are strongly influenced by prey abundance and dependence on cyclical and irruptive small mammals as primary prey requires owls to travel long distances in search of prey irruptions. The species also nests on the ground and needs tall dense vegetation cover around the nest to protect eggs and young from predation [1, 3, 15].

Extrinsic Stressors:
HIGHLY STRESSED
Short-eared Owl uses landscapes with potential high human impacts, which makes the species highly threatened in Wyoming. Livestock grazing poses a serious potential threat to Short-eared Owl if grazing practices significantly reduce the amount of tall dense herbaceous plant cover necessary for nesting. Research suggests that Short-eared Owl has significantly higher reproductive success and lower nest mortality in ungrazed grasslands compared to grazed grasslands [3, 6, 18]. The species is sensitive to areas with a large proportion of edge habitat. This may indicate that habitat fragmentation may have a strong negative effect on the owl. Extensive historical and ongoing fragmentation and conversion of both breeding and non-breeding habitat from land development, agricultural practices, and recreational use threaten the species across its range, including Wyoming [3, 15]. Mowing of hayfields also may threaten this species in Wyoming because young of this late-nesting species may not fledge until late-July or August [19].

KEY ACTIVITIES IN WYOMING

Currently, there are no projects focused specifically on Short-eared Owl in Wyoming. BBS are conducted annually in Wyoming, and the species has been detected on a total of 31 routes. Accurate abundance or trend estimates cannot be made from these limited data [4]. Additional but

limited data are being collected from ongoing grassland bird survey transects, but these are focused on other species and observations of Short-eared Owl are not documented consistently on all routes [20].

ECOLOGICAL INFORMATION NEEDS

Accurate population abundance and trend estimates are needed for this species in Wyoming and across its western breeding range. Short-eared Owl is nomadic and the influence of local habitat characteristics (e.g., disturbance, degree of habitat fragmentation, change in vegetation structure, etc.) on site fidelity is not known [3]. The benefits to Short-eared Owl of land conservation programs such as Conservation Reserve Program and Grassland Reserve Program need to be assessed [1, 3].

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Susan M. Patla. Short-eared Owl is classified as a Species of Greatest Conservation Need in Wyoming. On-going habitat loss and fragmentation due to human activity are increasing and will likely negatively affect long-term population status and trends [21]. Two separate but compatible survey programs are in place to monitor populations of many avian species that breed in Wyoming; the North American BBS [4] and the multi-partner Integrated Monitoring in Bird Conservation Regions [22]. However, existing data are not robust enough to support estimates of occupancy, density, or population trend for Short-eared Owl. The Nongame Technical Committee of the Pacific Flyway submitted a multi-state proposal to develop a standardized, region-wide monitoring program for this wide-ranging species in 2015. Although not funded in 2016, Wyoming and other partner states will continue to seek funding for this effort. Conservation of native grasslands and implementation of beneficial management practices on agricultural lands where this species occurs will help to maintain and improve nesting and migration habitat for this species.

CONTRIBUTORS

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Figure 1: Adult Short-eared Owl in Seedskadee National Wildlife Refuge, Sweetwater County, Wyoming. (Photo courtesy of Tom Koerner, USFWS)

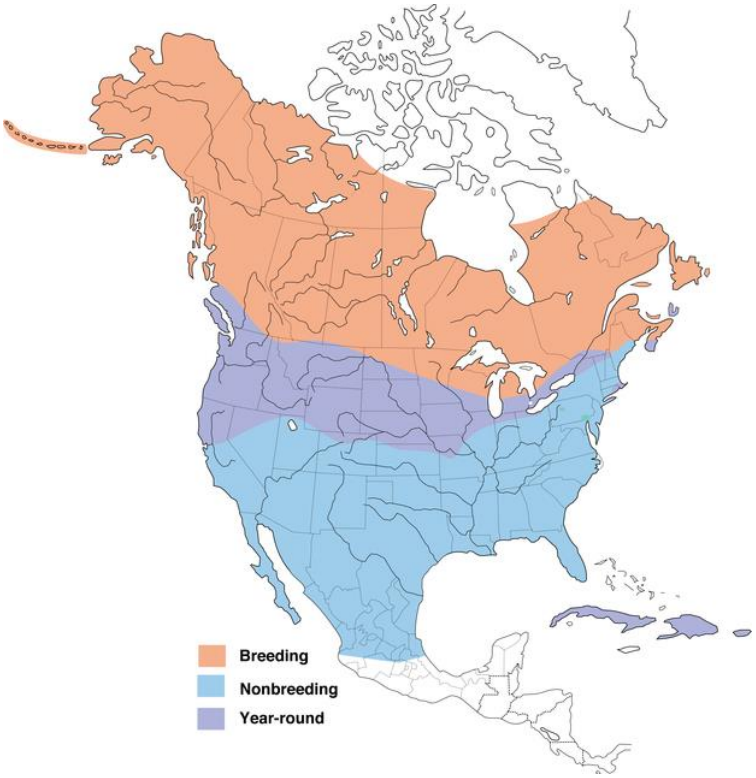

Figure 2: North American range of *Asio flammeus*. (Map courtesy of Birds of North America, http://bna.birds.cornell.edu/bna, maintained by the Cornell Lab of Ornithology)

Figure 3: Potential Short-eared Owl breeding habitat in Thunder Basin National Grassland, Wyoming. (Photo courtesy of Michael T. Wickens)

Figure 4: Range and predicted distribution of *Asio flammeus* in Wyoming.

Figure 5: Short-eared Owl in flight in Lacreek National Wildlife Refuge, South Dakota. (Photo courtesy of Tom Koerner, USFWS)