

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

Element Code: ABNSB10012

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Athene cunicularia* (Molina) *hypugaea* (Bonaparte)
COMMON NAME: Western Burrowing owl, North American burrowing owl, Billy owl, ground owl, long-legged owl, prairie dog owl, prairie owl
SYNONYMS: *Speotyto cunicularia hypugaea*, *Strix hypugaea* Bonaparte
FAMILY: Strigidae

AUTHOR, PLACE OF PUBLICATION: *Strix hypugaea* Bonaparte, Amer. Orn., vol. 1, 1825, p. 72.

TYPE LOCALITY: *Strix hypugaea* "Western United States = Plains of the Platte River."

TYPE SPECIMEN: *Athene cunicularia hypugaea* USNM 151022 (adult female). F. Stephens, 29 May 1894. Upper Lake, Lake Co., California, 1400 ft., in Auk 12(4): 372, October 1895.

TAXONOMIC UNIQUENESS: One of four in the genus *Athene*. Up to 18 subspecies currently recognized; 7 in North and Central America, including the Caribbean Basin. *Athene cunicularia hypugaea* is the only sub-species that occurs in Arizona and western North America. *A. c. floridana* occurs in Florida.

DESCRIPTION: This is a small, ground-dwelling owl. Total length for both sexes averages between 19.5-25.0 cm (7.68-9.85 in), the wingspan 58.42 cm (23.0 in), and their mass 150 g. Unlike most owls, males are slightly larger than females. Head is round, lacking ear tufts. They have a distinct oval facial ruff, framed by a broad, buffy-white eyebrow-to-malar stripe on the interior part. The iris is usually bright lemon yellow; tends to be paler in females. Wings relatively long and rounded, with 10 brown buffy-white barred primaries (3 outermost with inner webs sinuated); tail is short giving a top-heavy appearance, with 12 brown and buffy-white barred rectrices. Their legs are extremely long, dark gray, extending about 1.5 inches beyond the tail. Bristle-like feathers on legs and feet, white to beige. Their dorsum is brown; back, scapulars, and crown profusely spotted with buffy white. Throat and undertail coverts are white; remainder of underparts of adults buffy-white with broad brown barring on both sides. Females are generally darker than males overall, particularly in worn plumage (see description in Haug et al 1993).

AIDS TO IDENTIFICATION: They have extremely long legs, and bars on the chest, wings, and tail. Most other small owls have a streaked breast, not a spotted one. Unlike most other owls, this owl is often found in large colonies.

ILLUSTRATIONS:

- Color photo (Haug et al, 1993:1)
- Color photo (Terres, 1980:651)
- Color photo (Farrand, Jr., 1988:234)
- Color drawing (National Geographic Society, 1999:257)
- B&W drawing (Johnsgard, 1988:173-174)

TOTAL RANGE: Throughout much of western North America, from southern British Columbia (last confirmed in 1979), Alberta, Saskatchewan and Manitoba, south to the tip of Baja California. They withdraw from the northernmost portions of their breeding range in winter.

RANGE WITHIN ARIZONA: Occurs locally in open areas, generally year-round, with only a few winter records on the Colorado Plateau in the northeastern part of the state. From the Navajo Nation, broad valleys near Seligman, along the bottomlands of the Colorado River, the lower Colorado River valley, the Yuma area, southern and southeastern Arizona, and agricultural areas of Maricopa and Pinal Counties.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Accomplished vocalists capable of at least 17 different vocalizations, with a frequently heard sound a two-note *coo-coo*, which is similar to the male courtship song except the second note is held a little longer. At night, utters high mournful cry *coo-coo-roo* or *co-hoo*, like call of a dove or roadrunner but higher pitched. A harsh *kak-kak-kak* appears to be a startle call in response to a perceived danger, while young owls disturbed in their burrow make a buzzing sound like a rattlesnake. Most reported vocalizations associated with breeding and nest defense. They are much less vocal when not breeding. Non-vocal sounds include loud bill snaps, used primarily when feeling threatened.

Burrowing owls hunt in flight, from perches, and on the ground. They are adept fliers and often take prey from midair, or sometimes hovering above prey items, dropping rapidly to capture the intended victim. Hunting style varies with type and activity of prey pursued, time of day, and vegetative substrate.

Throughout most of their range in Arizona, they mainly are non-migratory, however, they disperse widely. It is believed that populations in northern Arizona are migratory. In non-migratory populations, they use and maintain burrows year-round. Home range size is approximately 2.0 acres (BISON 2000). Although they are most active during the period from late afternoon until full dark, they can be observed at almost any time of the day. They commonly perch on fence posts or on top of mounds outside their burrows. High ambient temperatures seem to limit their daytime activities (deVos Jr., *in* Glinksi 1998). Burrowing owls show a higher tolerance for carbon dioxide, compared with other birds, apparently a

response to nesting in burrows. Burrows provide protection from weather extremes, as well as from water loss at high temperatures. Neither hibernation nor torpor verified in this species (Haub et al 1993). They sleep and roost in mouth of nest burrow, satellite burrow, or depression in ground.

Lifespan is not well known. Burrowing owls are able to live at least 9 years in the wild and over 10 years in captivity (Kennard, 1975 in Terres 1980). Mortality includes encounters with motor vehicles, while flying across roads, and their many natural enemies. Mammals, particularly badgers (*Taxidea taxus*), are major predators of burrowing owls. Other mammalian predators may include dogs, domestic cats, opossums (*Didelphis virginiana*), weasels (*Mustela* spp.), and skunks (*Mephitis* spp.). Avian predators may include Swainson's Hawks (*Buteo swainsoni*), Ferruginous Hawks (*B. regalis*), Merlins (*Falco columbarius*), Prairie Falcons (*F. mexicanus*), Peregrine Falcons (*F. peregrinus*), Great Horned Owls (*Bubo virginianus*), Red-tailed Hawks (*B. jamaicensis*), Cooper's Hawks (*Accipiter cooperii*), and American Crows (*Corvus brachyrhynchos*).

REPRODUCTION: A predominately monogamous bird, they nest in single pairs (pair bonds not permanent) or, more commonly, in small colonies. They usually nest in abandoned burrows of small mammals, including prairies dogs and ground squirrels, often modifying or enlarging the nest burrow by digging with their feet. Due to human encroachment, such as new housing developments, conversion of agricultural and prairie, etc., artificial nest boxes are used for relocating birds. Natural nest cavities generally are a burrow sloping down for 1.5 to 3.0 feet from the surface, and then level and about 5-10 ft. long, about 5 inch diameter, and with a nest chamber of 12-18 inches. Nests lined with whatever material is available nearby, including weed stalks, dung, and feathers or bits of small mammal skins; the use of feces and feed remains as nest lining, is possibly to provide camouflage for the owls' scent from mammalian predators.

Generally are single brooded bird, a second clutch may be produced, if the first one is lost. Clutch size ranges from 4 to 10 eggs, with an average of 6-7 eggs per nest. The eggs are nearly round, smooth and pure white. Nests with eggs are observed from late March through June in southern regions and mid-May to mid-August in more northern regions (i.e. North Dakota). Incubation occurs by both sexes for 27-30 days. Male provides food during incubation and early nestling stages. Hatchlings are altricial (eyes closed, unable to leave nest), ptilopaedic (partially covered with down, usually over back and lower parts), and nidicolous (remain in nest and cared for by parents). Contour feathers are developed by approximately 14 days of age, and fledging occurs at between 40-44 days post hatching. Female does all the brooding, while the male does all the hunting during this period, bringing food to the female then to be given to young. Young begin chasing and feeding on insects, and using satellite burrows at 7-8 weeks of age.

FOOD HABITS: Burrowing owls are opportunistic feeders, taking both invertebrates and vertebrates. In Arizona, they feed primarily on large insects and small mammals, as well as fish, reptiles, amphibians, birds and even prickly pear cactus seeds. Insects usually hunted

during daylight hours, while small mammals hunted more often after dark. Foraging microhabitat typically shortgrass, mowed or overgrazed pastures. Drinking observed in the wild with increases in ambient temperatures (Haub et al 1993).

HABITAT: Variable in open, well-drained grasslands, steppes, deserts, prairies, and agricultural lands, often associated with burrowing mammals. Burrowing owls are at times observed open areas such as vacant lots near human habitation, golf courses and airports.

ELEVATION: Arizona: 650 - 6,140 ft (198-1873 m). New Mexico: lower elevations of 2,800-5,500 ft (854-1676 m), and middle elevations of 5,000-7,000 ft. (1525-2135 m).

PLANT COMMUNITY: Per Biota Information System of New Mexico (BISON 2000), "Great Basin Shrubsteppe with open to dense stands of shrubs and low trees, including big sagebrush (*Artemisia tridentata*), saltbush (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), or creosote bush (*Larrea divaricata*). Chihuahuan Desert Scrub of open stands of creosote bush and large succulents (*Ferocactus pringlei* and *Echinocactus platyacanthus*) in southern New Mexico and southwest Texas. Mohave Desert Scrub located between the Great Basin desert scrub and the Sonoran desert scrub, it is intermediate between them, sharing plant species of both but containing the endemic arboreal leaf succulent, Joshua tree (*Yucca brevifolia*). Annual grasslands dominated by wild oat (*Avena* spp.), ripgut brome (*Bromus rigidus*), soft chess (*B. mollis*), bur clover (*Medicago hispida*), and filaree (*Erodium* spp.) with less than 5 percent wood cover."

POPULATION TRENDS: Per Haug et al (1993), "Breeding Bird Survey (BBS) data from 1980 to 1989 show significant declines in west-central Kansas and adjacent parts of Nebraska and Oklahoma, the western Panhandle of Texas, the Trans Pecos region of Texas, and southern New Mexico. Same data set shows significant increases in the Lower Sonoran Deserts and Lower Colorado River Valley in western Arizona and adjacent California, and in the Interior Valley of California. Analysis of Christmas Bird Counts (James and Ethier 1989) suggests a decline in numbers since the mid-1970s. Local populations are believed more prone to extinctions, as seen in California (Johnson 1992). In Canada, a decrease in numbers and range in all western provinces. In Florida, range has expanded northward, nearly to Georgia."

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:

SC (USDI, FWS 1996)
[C2 USDI, FWS 1994]

STATE STATUS:

1B (AGFD SWAP 2012)

OTHER STATUS:

Bureau of Land Management Sensitive
(USDI, BLM AZ 2000, 2005, 2008,
2010)

Forest Service Sensitive (USDA, FS Region 3 2007, 2013)

PR, Determined Subject to Special Protection in Mexico. (NORMA Oficial Mexicana NOM-059-SEMARNAT-2010)

A, Determined Threatened in Mexico (MFESL 1994)

Group 4, full species level (NNDFW, NESL 2005, 2008)

MANAGEMENT FACTORS: Conserving burrowing mammal colonies is of primary importance to sustaining viable burrowing owl populations. They respond positively to grazing, but have a negative response (nest site loss) from human efforts to control squirrels and prairie dogs by poisoning (BISON 2000). Habitat alteration, fragmentation, and loss of edge habitat are causing population declines as well.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Per Estabrook and Mannan (1998), long-term monitoring is needed to establish trends in burrow occupancy and population fluctuations; more information is needed on the type and abundance of prey species used, and the use of urban habitat for foraging.

LAND MANAGEMENT/OWNERSHIP: DOD, BIA, State Land Department, Private

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

Genus name: from Greek goddess of wisdom, Pallas Athene, to whom the owl was a sacred bird; species name: Latin, minor, burrower (Terres 1980).

Often placed in the monotypic genus *Speotyto*.

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