

Bendire's Thrasher (*Toxostoma bendirei*)

Legal Status

State: Species of Special Concern

Federal: Bureau of Land Management Sensitive; U.S. Fish and Wildlife Service Bird of Conservation Concern

Critical Habitat: N/A

Recovery Planning: N/A

Notes: IUCN Conservation Status: Vulnerable (BirdLife International 2012) and on the American Bird Conservancy U.S. WatchList of Birds of Conservation Concern (CDFG 2011).



Photo courtesy of Stephen Dowlan.

Taxonomy

Bendire's thrasher (*Toxostoma bendirei*) was first collected and described by Major Charles E. Bendire in 1872 near current downtown Tucson, Arizona. At the time of its first description, Robert Ridgeway believed it to be a female of another species (Curve-billed thrasher, *T. curvirostre*) and Elliot Coues was hesitant on its taxonomy (Coues 1873).

Rossem (1942) described two additional races of Bendire's thrasher occurring in Sonora based on their coloration. Based on these descriptions, Miller et al. (1957) and Mayr and Greenway (1960) recognize three subspecies: *T. b. bendirei*, *T. b. candidum*, and *T. b. rubricatum*. However, these subspecies are not recognized by the American Ornithologists' Union (1998), Unitt (2004), and Phillips (1986) and Phillips (1986) states that the differences in appearance of *T. b. candidum* and *T. b. rubricatum* are those due to season, wear, and fading.

Bendire's thrasher is considered a member of the curve-billed thrasher complex which includes the curve-billed thrasher, ocellated thrasher (*T. ocellatum*), and gray thrasher (*T. cinerium*) (England and Laudenslayer Jr. 1993). It has been proposed that isolation during glacial periods resulted in the differentiation among the members of the complex of species (England and Laudenslayer Jr. 1993).

Physical characteristics of the species are detailed by England and Laudenslayer Jr. (1993).

Distribution

General

The exact distribution of this species is poorly understood due to its secretive behavior, migratory movements, and lack of research (England and Laudenslayer Jr. 1993). In general, this species is found in the southwestern U.S. deserts ranging from southeastern California, southernmost Nevada, southernmost Utah, southern Colorado south through New Mexico, and throughout the Sonora desert. In Mexico, the species distribution is believed to be in Sonora with wintering to Tiburon Island and northern Sinaloa (Blake 1953). The species appears to be mostly confined to the Mojave Desert (Unitt 2004), and northwestern Mexico deserts (England and Laudenslayer Jr. 1993).

Bendire's thrasher is known to breed from southeastern California, southern Nevada, southern Utah, south-central Colorado, western and throughout New Mexico (Darling 1970), south to central Sonora, and throughout Arizona (Miller et al. 1957; Phillips et al. 1964; England and Laudenslayer Jr. 1989a, 1989b; AOU 1998). Within New Mexico and California, breeding appears irregular leaving many suitable sites unoccupied (England and Laudenslayer Jr. 1993).

In winter, Bendire's thrasher leaves the northern areas of its breeding range (England and Laudenslayer Jr. 1993). Bendire's thrashers that breed in California are thought to winter in southern Arizona, southwestern New Mexico, and Sonora, Mexico (England and Laudenslayer Jr. 1989a, 1989b). One record also exists for the species detection as far south as southern Sinaloa, Mexico (Bent 1948).

Distribution and Occurrences within the Plan Area

Historical

Overall, there are approximately 62 historical (i.e., pre-1990) Bendire's thrasher occurrence records in the Plan Area (CDFW 2013; Dudek 2013). These occurrences are located in eastern Kern County, throughout San Bernardino County, and central Riverside County (Figure SP-B03) with the majority of occurrences detected in San Bernardino County.

Within the Plan Area, most occurrences have historically occurred within or near the Mojave National Preserve and between Victorville and Joshua Tree National Park (Figure SP-B03) with approximately 38 records near or within the Mojave National Preserve in eastern San Bernardino (Figure SP-B03). Twenty-one additional records are documented between Victorville and south to Joshua Tree National Park. There are also three more disjunct records at the southern end of the Turtle Mountains, at the Naval Air Warfare Center China Lake, and south of Kern. Historically, this species was considered to breed primarily in the Mojave Desert (Grinnell and Miller 1944; Garrett and Dunn 1981), was considered common in summer in areas of northeastern San Bernardino County, and considered a sparse summer resident in the Joshua Tree National Monument-Yucca Valley area (McCaskie 1974; Remsen 1978).

Recent

Currently, there are approximately 11 recent (i.e., since 1990) Bendire's thrasher occurrences in the Plan Area in the following locations: Mojave National Preserve, east of Barstow, in and near Lucerne Valley, within or near Yucca Valley, near the junction of I-8 and SR-177, and near Lake Havasu City (CDFW 2013; Dudek 2013; Figure SP-B03).

In general, the species current distribution is similar to its historical distribution. Although plenty of undisturbed habitat exists, the reasons for the species rarity in California are not clear (Unitt 2004). It has been estimated that the population may be fewer than 200 pairs throughout California (Remsen 1978). However, the exact distribution and population status of this species is unknown.

Natural History

Habitat Requirements

Bendire's thrashers typically breed in open grasslands, shrubland, or woodland with scattered trees and shrubs (England and Laudenslayer Jr. 1993). The vegetation within occupied areas may vary depending on the elevation which ranges from 0 to 5,900 feet (England and Laudenslayer Jr. 1993). At high elevations the species may be associated with sagebrush

(*Artemisia* sp.) and some junipers (*Juniperus* sp.). At lower elevations it is associated with deserts and grasslands, such as the Mojave desert scrub. Characteristic plant species within areas where it occurs include Joshua trees (*Yucca brevifolia*), Spanish Bayonet (*Y. baccata*), Mojave Yucca (*Y. schidigera*), cholla cactus (*Opuntia* spp.) and/or other succulents, palo verde (*Cercidium* spp.), mesquite (*Prosopis* spp.), catclaw (*Acacia* spp.), desert-thorn (*Lycium* spp.), and agave (*Agave* spp.) (England and Laudenslayer Jr. 1989a, 1989b, 1993).

Bendire's thrashers may occasionally use vegetation around human habitation and agriculture when the habitat structure resembles natural habitat and curve-billed thrashers are absent (Gilman 1915a, Phillips et al. 1964, Rosenberg et al. 1991).

Little information exists for specific habitats used in migration or on wintering grounds, although wintering habitat plant community structure is similar to that used during the breeding season (England and Laudenslayer Jr. 1993).

Table 1. Habitat Associations for Bendire's Thrasher

| Land Cover Type | Land Cover Use | Habitat Designation | Habitat Parameters | Supporting Data |
|-----------------|--------------------|---------------------|---|-----------------------------------|
| Desert scrub | Breeding, foraging | Primary | Typically breeds in open grasslands, shrubland, or woodland with scattered trees and shrubs | England and Laudenslayer Jr. 1993 |

Foraging Requirements

Bendire's thrashers mainly consume insects and other arthropods; however, they may also consume seeds and berries (Ambrose Jr. 1963). The only quantitative study on the stomach contents of this species found ants, termites, and Lepidoptera larvae to dominate (Ambrose 1963). Anecdotal reports of birds foraging or carrying prey to the nest suggest that grasshoppers, beetles, caterpillars, and other larvae or pupae that it obtains near or on the ground dominate the diet (Woodbury 1939, Engels 1940, Bent 1948).

Typically, Bendire's thrashers forage on the ground but may also search vegetation for insects and pick fruit (Engels 1940; Ambrose 1963). This species uses its bill to peck, probe, and hammer in the ground (Engels 1940). They may occasionally use their bill to dig, but may not be efficient in this use (Ambrose 1963). They are not known to scratch the ground with their feet (Ambrose 1963).

Reproduction

In California, territorial behavior begins when the species returns to the breeding grounds beginning in mid-March through mid-June (England and Laudenslayer Jr. 1989a, 1989b). In Arizona, this species may return to breeding sites in small unmated flocks as early as the beginning of February (earliest date February 9; see Brown 1901). There is no additional information on how pair formation begins, where it occurs, or the process of nest construction in this species (England and Laudenslayer Jr. 1993).

Nests have been reported with eggs in early March (Arizona; Brown 1901) and late March (California; England and Laudenslayer Jr. 1993) suggesting nest building begins shortly after arriving to the breeding grounds. Clutches are typically 3-4 eggs (Brown 1901). Historical data reviewed by England and Laudenslayer Jr. (1993) suggest, although is not definitive, the breeding begins earlier in the southeast and advances across to the northwest of their breeding range.

Bendire's thrashers have been known to produce a second clutch in a season (England and Laudenslayer Jr. 1989a, 1989b). Only one record exists for the occurrence of a third brood in a season (Gilman 1915a).

Bendire's thrashers typically breed in dry scrub and cacti of desert areas. Nests may be low in a tree, shrub, or cactus clumps and usually 2 to 4 feet off the ground; occasionally 12 feet high (Baicich and Harrison 1997). The most common nest host plants include cholla, juniper, mesquite, Joshua trees and other yuccas (England and Laudenslayer Jr. 1993; Darling 1970).

Table 2. Key Seasonal Periods for Bendire's Thrasher

| | Jan | Feb | Mar | April | May | June | July | Aug | Sep | Oct | Nov | Dec |
|-----------|-----|-----|-----|-------|-----|------|------|-----|-----|-----|-----|-----|
| Breeding | | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Migration | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Wintering | ✓ | | | | | | | | | ✓ | ✓ | ✓ |

Sources: England and Laudenslayer Jr. 1989a, 1989b, 1993, see Figure 4.

Spatial Behavior

There is no information on the specific territoriality behavior of this species. Overall, this species is migratory in the northern portion of their range and a permanent resident in the southern portion. In the northern portion of their range, dispersal may begin directly after breeding (England and Laudenslayer Jr. 1993).

Ecological Relationships

There is one record of a Bendire's thrasher nest being parasitized by a brown-headed cowbird (*Molothrus ater*) (three Bendire's thrasher eggs with one cowbird; Friedman 1934).

Information does not exist for the level of predation on this species. However, there is one record for a Gila woodpecker (*Melanerpes uropygialis*) pouncing on a Bendire's thrasher that successfully escaped (Gilman 1915b). Gilman (1915b) has observed Gila woodpeckers beginning to attack Bendire's thrashers.

Young in post-breeding flocks have been observed to be mixed with a few curve-billed and Crissal thrashers (*T. crissale*) (Scott 1888). In general, Bendire's thrashers may be observed in pairs or immediately after breeding in small flocks. However, they are usually inconspicuous except when singing (England and Laudenslayer Jr. 1993).

Ambrose (1963) suggests that possible competition with curve-billed thrashers for an exhausted food supply was contributing to the population decline. Curve-billed thrashers are sympatric throughout parts of this species range (Tweit 1996; Engels 1940; Ambrose 1963; Tomoff 1974).

Population Status and Trends

Global: Suspected decline; however, trends are poorly documented (BirdLife International 2013). Population estimated to be 170,000 (Audubon 2013).

State: Not clear

Within Study Area: Not clear

Information is lacking on the exact population status and trends of Bendire's thrashers. Unfortunately, population trends cannot be reliably estimated for this species from the North American Breeding Bird Survey (see *Regional Credibility* in Sauer et al. 2008). Records from the Breeding Bird Survey counts (from Arizona, California, Colorado, Nevada, New Mexico, and Utah) are infrequent for this species, and no significant trends could be detected for the period from 1965 to 1979 (Robbins et al. 1986; England and Laudenslayer Jr. 1993).

Declines over 37 years (1966–2003) are estimated at 34.5% (BirdLife International 2013). It is suggested that population may have declined in areas of Arizona between 1940 and 1960 (Ambrose 1963). Unfortunately, the historical and most current field investigations (England and Laudenslayer Jr. 1989a, 1989b) were inadequate to determine the population status or trends of the species in California.

Remsen (1978) suggested the total California population was under 200 pairs. Due to these concerns, the species was listed on the California Department of Fish and Game Birds Species of Special Concern (Remsen 1978). As such, there is concern for the status of this species due to their disjunct distribution, seemingly isolated populations, and unknown population sizes. However, in New Mexico, one report suggests the range of the species may have expanded into areas with junipers due to overgrazing (Darling 1970). Populations around Tucson may have been reduced by urbanization (density of 0.2 birds/100 acres in desert areas and none in urban; Emlen 1974) and agricultural efforts near the Gila River (Rea 1983).

Threats and Environmental Stressors

Although more research needs to be conducted, Remsen (1978) suggests the Bendire's thrasher is threatened by habitat destruction/alteration

(specifically with the harvesting of Joshua trees and yucca), overgrazing, and off-road vehicle use in their breeding habitats. This species may also be threatened by loss of breeding habitat to urban and agricultural development as well as military operations (Shuford and Gardali 2008). However, without any existing quantitative information regarding population densities, most of the information on threats comes from anecdotal descriptions of the species (England and Laudenslayer Jr. 1989a, 1989b).

Ambrose (1963) suggests that possible competition with curve-billed thrashers for an exhausted food supply was contributing to the population's decline. Curve-billed thrashers are sympatric throughout parts of this species range (Tweit 1996; Engels 1940; Ambrose 1963; Tomoff 1974). However, Engels (1940) suggested that the means of ecological separation of these species cannot be concluded.

Anecdotal reports suggest that populations may persist in agricultural areas bordered by mesquite and other shrubs (Ambrose 1963) as well as in rural areas with dwellings near vegetation (Gilman 1915a; Rea 1983).

Conservation and Management Activities

There is no information on other management actions for any states in this species range (England and Laudenslayer Jr. 1993).

Data Characterization

In general, there is a lack of information of Bendire's thrashers throughout their range.

Management and Monitoring Considerations

England and Laudenslayer Jr. (1989b) concluded that (1) the breeding population of Bendire's thrashers was more widely distributed than previously documented, and (2) there is inadequate understanding of this species ecology and population. They recommended several long-term research and population monitoring considerations:

1. Conduct long-term (10+ years) monitoring of isolated populations throughout the Mojave Desert.

2. Survey habitat that appears suitable but lacking breeding records to locate additional breeding populations.
3. Survey the Colorado Desert to identify breeding locations and habitats use; current data suggest possible regular breeding in small numbers.
4. Examine the species breeding biology (e.g., reproductive phenology, food habits, nesting ecology, foraging habits) in order to build a basic understanding of the species that may inform future management recommendations.
5. Examine the impact of desert land use on this species (e.g., urbanization, grazing, off-road vehicle use, removal of select vegetation species). The results of these efforts may also inform management on other species impacted by desert land use.

Shuford and Gardali (2008) also suggest the following monitoring: (a) examine possible competition between northern mockingbirds (*Mimus polyglottus*) and Bendire's thrashers to determine their effect on the species, (b) create conservation management areas for the species on public (BLM) lands, (c) examine factors influencing the species reproductive success and annual survivorship, and (d) identify areas that serve as population sources and sinks.

Species Modeled Habitat Distribution

This section provides the results of habitat modeling for Bendire's thrasher, using available spatial information and occurrence information, as appropriate. For this reason, the term "modeled suitable habitat" is used in this section to distinguish modeled habitat from the habitat information provided in Habitat Requirements, which may include additional habitat and/or microhabitat factors that are important for species occupation, but for which information is not available for habitat modeling.

The model generated 2,216,932 acres of modeled suitable habitat for Bendire's thrasher in the Plan Area. Appendix C includes a figure showing the modeled suitable habitat in the Plan Area.

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