ISLAND LOGGERHEAD SHRIKE (*Lanius ludovicianus anthonyi*)

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Criteria Scores

Population Trend	Range Trend	Population Size	Range Size	Endemism	Population Concentration	Threats
15	5	10	10	10	0	20

Special Concern Priority

Currently considered a Bird Species of Special Concern (year-round), Priority 1. This subspecies was not included on the original prioritized list (Remsen 1978), or on CDFG's (1992) unprioritized list. It was assigned a category 2 candidate status by the USFWS (1991) until that category was eliminated (USFWS 1996).

Breeding Bird Survey Statistics for California

Data inadequate for trend assessment at the subspecies level (Sauer et al. 2000). A average of 1.29 birds recorded/route using ten years of breeding bird survey (BBS) data from Santa Catalina island (USGS 2001).

General Range and Abundance

The island loggerhead shrike is endemic to California where it is a resident breeder on Santa Rosa, Santa Cruz and Santa Catalina islands and a intermittent breeder on San Miguel and Anacapa islands (AOU 1957, Jones and Collins in press). Numbers have declined on all breeding islands in recent years such that it is today very uncommon and local on Santa Cruz and Santa Catalina, but is still fairly common on Santa Rosa (Jones and Collins in press).

The island loggerhead shrike is a weakly differentiated race that is closely allied with the San Clemente loggerhead shrike (*L. l. mearnsi*) and with adjacent mainland loggerhead shrikes (*L. l. gambeli*; Miller 1931, A. Rea in Phillips 1986). There is moderately strong morphological (plumage coloration and morphometrics) and substantial genetic (mtDNA) differentiation between

the two island (*L. l. anthonyi* and *L. l. mearnsi*) and adjacent mainland subspecies (*L. l. gambeli*) (Miller 1931, Johnson 1972, Mundy et al. 1997).

Seasonal Status in California

Occurs year round; breeding season generally extends from mid-February until late July and occasionally to mid-September (Jones and Collins in press).

Historical Range and Abundance in California

Most of the early records of shrike distribution on the islands are brief, anecdotal comments that only allow qualitative estimates of population status following human influence. Howell (1917) stated that numerically *L. l. anthonyi* was "one of the rarest birds in the country," yet he listed it as a "fairly common resident" on most of the islands. Grinnell and Miller (1944:382) recorded this subspecies as "fairly common" on Santa Cruz Island and "less numerous" on the other islands. They suggested that the total population of *L. l. anthonyi* was small due to its limited geographic range and to the normal spacing of individuals.

Santa Rosa Island. Island loggerhead shrikes were listed as "abundant" in July 1892 (C. P. Streator unpubl. field notes) and as "much in evidence" in November 1927 (H. H. Sheldon unpubl. field notes).

Santa Cruz Island. Historically island loggerhead shrikes have been variously reported as "extremely common" (Blake 1887), "comparatively common" (Sheldon 1928 in Daily 1990), and "fairly common" (Willett 1912, 1933; Grinnell and Miller 1944).

Santa Catalina Island. Howell (1917:89) considered this species "rather rare" on Santa Catalina in the early 1900s while others listed it as less numerous than on Santa Cruz island (Willett 1933, Grinnell and Miller 1944).

Recent Range and Abundance in California

The distribution and relative abundance of island loggerhead shrikes on the Channel Islands appears to have changed during the later part of the 20th century. Island loggerhead shrikes bred

occasionally on San Miguel island until 1976 and on West Anacapa island until 1978 (Jones and Collins in press). Since the late 1970s, island loggerhead shrikes are not know to have nested on either of these two islands (Jones and Collins in press). Vegetation stripping from herbivores (goats, sheep, and cattle) and rooting by feral pigs has degraded scrub, woodland and grassland habitats which are known to be important as breeding and foraging habitat for the island loggerhead shrike. Also, predation from feral cats has probably contributed to the decline of this species on Santa Catalina. Since there is no quantitative information regarding the number of island loggerhead shrikes on these islands prior to the introduction of exotic species, it is difficult to assess the degree to which their populations have declined on each of the islands.

Santa Rosa Island. Until the latter part of the 20th Century, island loggerhead shrikes were considered a fairly common and widespread breeding resident on Santa Rosa island (Jones and Collins in press). Miller (1951) found them "much more numerous on Santa Rosa Island than on Santa Cruz." In 1968, Diamond (unpubl. field notes) listed the species as "widespread and fairly common" but only reported finding them in "small numbers." NPS landbird monitoring surveys conducted between 1994 and 1998 recorded an average of 0.076 shrikes per VCP station with shrikes observed at an average of 6.1% (5.2%-6.7%) of the VCP stations (Fancy 2000). Clearly, these recent surveys indicate that today island loggerhead shrikes are uncommon and locally distributed on Santa Rosa island.

Santa Cruz Island. F. Pitelka (unpubl. field notes) recorded this species as "not common, but regularly distributed" in 1948, and Miller (1951) listed them as less common on Santa Cruz island than on Santa Rosa island. Laughrin (1982:21) recorded them as "common" in grassland and coastal sage scrub habitats. Landbird monitoring surveys conducted for seven breeding seasons between 1991 and 2000 recorded an average of 0.038 (0-0.08) loggerhead shrikes per station, with shrikes observed at an average of 3% (0%-5.0%) of the VCP stations (R. Klinger and L. Laughrin

unpubl. data). Today, island loggerhead shrikes are "uncommon and are generally restricted to open areas with scattered brush" (Jones and Collins in press).

Santa Catalina Island. During the 1970s, the island loggerhead shrike was "an uncommon to fairly common and widespread breeding resident in open country throughout; however, it has declined significantly in recent years" (Jones and Collins in press). Based on 10 years of BBS counts, an average of 1.29 shrikes were encountered per 2.5 hours of point counts (USGS 2001). During 10 years of CBCs, an average of 0.083 birds were counted per party hour. Recent island-wide shrike surveys conducted in 1998 and 2001 recorded a total of 27 and 11 shrikes respectively (J. Floberg pers. comm.). Clearly, shrikes have declined in relative abundance on Santa Catalina island during the latter half of the 20th Century.

Ecological Requirements

The ecological requirements of the island loggerhead shrike are largely undescribed, however, they are probably very similar to those described for the San Clemente loggerhead shrike, a closely related island subspecies that has been more intensively studied (see Scott and Morrison 1990). Loggerhead shrikes inhabit ecotones, grasslands and other open habitats with scattered shrubs and trees, suitable perches, bare ground, and low or sparse herbaceous cover (Zeiner et al. 1990, Yosef 1996). Basic habitat requirements for loggerhead shrikes include a selection of elevated perches, sufficient roosting and nesting cover, open foraging areas, and an adequate supply of invertebrate and small vertebrate prey. Like the San Clemente loggerhead shrike, island loggerhead shrikes are nonmigratory and tenaciously occupy separate breeding and winter territories. According to Grinnell and Miller (1944:382), island loggerhead shrikes inhabit "grasslands and brush-covered canyon slopes." On Santa Rosa, shrikes have been found in "canyons, perched over brush patches and at the edges of oaks" (Miller 1951:119). On Santa Cruz, shrikes are usually associated with grassland and coastal sage scrub habitats (Laughrin 1982). On Santa Catalina, they inhabit "open brushy areas, fields and grasslands" (Jones 1991:17).

Height of shrubs and presence of canopy cover are habitat features important for San Clemente loggerhead shrike nesting (Scott and Morrison 1990). Loggerhead shrike nests are generally constructed on a stable branch at medium heights in a densely foliaged shrub or tree and are usually well-concealed (Miller 1931, Bent 1950, Shuford 1993). Like the San Clemente loggerhead shrike, island loggerhead shrikes typically construct their nests in a variety of arborescent shrubs >2m tall, including lemonade berry (*Rhus integrifolia*), Catalina cherry (*Prunus ilicifolia lyonii*), toyon (*Heteromeles arbutifolia*), elderberry (*Sambucus mexicana*), and scrub oak (*Quercus* spp.; Scott and Morrison 1990). Pairs generally raise a single brood but will re-nest following nest failure (Yosef 1996). Island loggerhead shrikes have an extended breeding season which would allow pairs to raise two or more broods in some years (Jones and Collins in press).

Loggerhead shrikes are an efficient search-type predator whose diet is apparently related more to prey abundance, detectability, and size rather that to specific prey type. For foraging shrikes require open and semi-open habitats with scattered taller vegetation. Shrikes generally search for available prey from a variety of elevated perches (1-14m above the ground). Prey are attacked on or near the ground or in flight. *L. l. mearnsi* usually hunt "from perches such as snags, shrubs, and rock outcrops in sparsely vegetated areas," and feed on a wide variety of available prey including small vertebrates (lizards, birds, and mice), molluscs (land snails), and a variety of insects (Scott and Morrison 1990).

Threats

A number of factors are believed to be responsible for the decline of loggerhead shrikes in North America including pesticide contamination (Anderson and Duzan 1978, Morrison 1979), loss of breeding and wintering habitat (Telfer 1992), increase in human disturbance (Hands et al. 1989), and climatic change (Cadman 1985). Degredation and loss of woodland and scrubland habitats from overgrazing by domestic livestock (cattle and buffalo) and feral herbivores (goats and sheep), and from rooting by feral pigs; increased rates of predation of young by native (island fox,

American kestrel and common raven) and introduced (feral cat and black rat) predators; and habitat conversion from changes in grazing regimes and fire frequency and intensity are the principal factors that threaten island loggerhead shrike populations. Productivity of San Clemente loggerhead shrikes has been affected by "higher depredation or competitive pressures, inclement weather during nesting period, genetic inbreeding, anthropomorphic disturbances and lower nutritional status due to food availability or quality" (Mader et al. 2000:33). These factors may also be affecting island loggerhead shrike populations. The small population size of island loggerhead shrikes on the Channel Islands makes them especially vulnerable to extinction from factors such as environmental uncertainty, demographic stochasticity, catastrophes, and/or genetic deterioration (inbreeding depression).

Management and Research Recommendations

Any future research/management actions for recovering *L. l. anthonyi* populations should focus on enhancing survival of each island population via feral herbivore eradication and subsequent habitat restoration, predator control and research.

- Based on data and experience gained from the *L. l. mearnsi* recovery program, develop a series of specific goals for recovering each of the island loggerhead shrike populations.
- Following the successful eradication of feral herbivores from *L. l. anthonyi* inhabited islands, restore woodland and shrubland vegetation as a way to increase the amount of suitable nesting and foraging habitat for *L. l. anthonyi*.
- Enhance prey availability for *L. l. anthonyi* by: (1) creating a patchwork of sparsely vegetated areas using selective controlled burns, mowing, or some other method; (2) increase the availability of suitable shrike perches; and (3) reduce the extent of dense uniform cover of tall exotic grasses.

- Complete feral animal eradication programs and support the implementation of ecological restoration plans proposed by the Santa Catalina Island Conservancy for Santa Catalina island, and The Nature Conservancy and National Park Service for Santa Cruz island.
- Control and/or eradicate feral cats on Santa Catalina island in order to educe the overall level of cat predation on young island loggerhead shrikes. This may entail implementing measures to protect breeding shrikes and their young from feral cat predation.
- Initiate field studies to gather basic descriptive attributes (e. g. phenology, breeding biology, ecology, population demography (life tables), and food habits) that can be used to fill in data gaps that exist in nearly all aspects of the life history of the island loggerhead shrike.
- Conduct research to identify specific habitat requirements (vegetative and physiographic), and ecological conditions that will support self-sustaining shrike populations; in particular determine demographic rates for each of the island loggerhead shrike populations.

Monitoring Needs

The BBS and CBC being run on Santa Catalina island does not adequately monitor changes in the population dynamics of *L. l. anthonyi*. Land-bird monitoring programs using off-trail and on-road variable circular plots (VCPs) as the basic unit for monitoring landbird density are in the process of being implemented on Santa Catalina (J. Floberg pers. comm.) and Santa Rosa islands (McEachern 2000, L. Dye pers. comm.), and have been run on Santa Cruz island for seven years (L. Laughrin pers. comm.).

VCP-based landbird monitoring programs should develop data that can be used to (1) promote an index of breeding population size, and (2) monitor overall population changes with respect to changes in habitats. Annual monitoring of island loggerhead shrike populations on the Channel Islands should use a system of on-road and off-trail point count stations systematically placed and stratified by major habitats (Ralph et al. 1993).

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