

San Clemente Loggerhead Shrike
(Lanius Ludovicianus Mearnsi)

5-Year Review:
Summary and Evaluation



Photo by Don Brubaker, USFWS

U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
Carlsbad, California

August 2025

5-YEAR REVIEW

San Clemente Loggerhead Shrike (*Lanius ludovicianus mearnsi*)

GENERAL INFORMATION

Species: San Clemente Loggerhead Shrike (*Lanius ludovicianus mearnsi*), a bird subspecies

Date listed under the Endangered Species Act: August 11, 1977

Federal Register citation: Service 1977 (42 FR 40682–40685)

Classification: Endangered

Recovery Plan: Recovery Plan for the Endangered and Threatened Species of the California Channel Islands. Final, January 26, 1984.

Recovery Plan Addendum: Recovery Plan Amendment for the Endangered and Threatened Species of the California Channel Islands. October 4, 2019.

Recovery Priority Number: 12 (subspecies with moderate degree of threat and low recovery potential) is the current recovery priority number (see below for recommended change to 6).

BACKGROUND

Under the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*), the U.S. Fish and Wildlife Service (Service), referred to as “we” in this document, maintain lists of endangered and threatened wildlife and plant species (referred to as the List) in the Code of Federal Regulations (CFR) at 50 CFR 17.11 (for wildlife) and 17.12 (for plants). Section 4(c)(2)(A) of the Act requires us to review each listed species’ status at least once every 5 years.

Most Recent Status Review: Service 2020a. San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*) 5-year Review: Summary and Evaluation. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California. 2 pp.

We initiated the previous status review for San Clemente loggerhead shrike on February 10, 2020 (Service 2020b, pp. 4692–4694). The review was finalized on May 20, 2020, and recommended no change in status.

Federal Register Notice Announcing this Status Review: On October 16, 2024, we published a *Federal Register* notice announcing initiation of the 5-year review of this species, and the opening of a 60-day period to receive information (Service 2024, pp. 83510–83514). We did not receive any comments regarding the San Clemente loggerhead shrike.

Species Overview and Habitat: The San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*; shrike) is subspecies of loggerhead shrike; a medium sized, predatory songbird (Ridgeway 1903, p. 108; Eggert *et al.* 2004, pp. 2129–2132; Rutledge *et al.* 2017, p. 51). The shrike is found only on San Clemente Island (SCI), California, which is an island administered by the U.S. Navy (Navy) for military testing and training. The shrike breeds in canyons that support suitable shrub structure to support nesting, predominantly in the southern 2/3 of the island. Shrikes are resident, remaining on the island during the non-breeding season, when they use more of the island area, including both breeding canyons and other areas not frequented

during the breeding season. Sex is not determined morphologically, instead researchers determine sex of captive birds by genetic analysis from feather samples, and the birds are banded. In the field, sex is determined during the breeding season either by these bands or behavioral observations.

ASSESSMENT

Information Acquired Since the Last Status Review

This 5-year review was conducted by the Service's Carlsbad Fish and Wildlife Office. Data for this review were solicited from the public and interested parties through a *Federal Register* notice announcing this review on October 16, 2024. We also contacted the Navy to request data or information we should consider in our review. Additionally, we conducted a literature search and reviewed information in our files.

SUMMARY OF NEW INFORMATION SINCE 2020

Since the last 5-year review we received annual survey/monitoring reports as well as annual reports detailing the Navy's implementation of a recovery program including predator management, captive breeding, and release of captive-bred shrikes. We also received information pertaining to fires and fire management. Survey results and other information reflect the small size of the shrike population and the continued presence of managed and unmanaged stressors/threat to the species.

Distribution and Abundance

The shrike is a non-migratory island endemic that has historically occupied most of San Clemente Island. The species is now distributed primarily within the southern 2/3 of the island. Breeding occurs mostly in canyons that support canyon woodland and maritime desert scrub, and on the eastern escarpment slopes that support maritime sage scrub. In the past 10 years, the breeding distribution has also expanded onto the island's southern plateau as *Baccharis* savannah vegetation recovers and expands, providing suitable nesting substrate.

Although once described as "tolerably common" on SCI by early researchers (Grinnell 1897, p. 19), shrike numbers had declined from 50–75 pairs estimated in 1973 to an estimated 25 pairs when placed on the Endangered Species List in 1977 (Service 1977, p. 40683). The population declined even further after listing, when only 14 adult shrikes were detected during comprehensive survey efforts conducted in 1998. Our most recent 5-year review finalized in 2020, estimated 63 adult loggerhead shrikes populated SCI, and distribution on the island had expanded to include nesting locations in canyons on both the eastern and western sides of the island.

The Navy's intensive recovery program has continued to sustain the shrike population and the distribution on the island remains similar to the distribution at the time of our last 5-year review. However, the population size has declined despite population augmentation efforts of the recovery program. The *potential* breeding population is estimated by tabulating the number of adult shrikes detected during intensive surveys in March each year. Since 2020 the potential

breeding population has declined from 63 shrikes in 2020 to 52 in 2025 (Booker 2025a, pers. comm., p. 1) (Figures 1–3).

Annual population growth rate (λ) of the *potential* breeding population has undulated from 2020 through 2023, rising above 1 in 2022 and 2023 (2020 = 0.93, 2021 = 0.64, 2022 = 1.44, and 2023 = 1.03). The *effective* breeding population (all adults observed breeding March 1 through September 30 annually) followed a similar pattern of rises and falls (2020=32, 2021=47, 2022=38, 2023=44, and 2024=58) but overall remained low (Figure 2). The subspecies is still extremely vulnerable to ongoing threats, resulting in low resiliency for the population.

Genetics

Rutledge *et al.* (2017, pp. 49–51) found historically close allele associations with shrikes on Catalina Island (*Lanius ludovicianus anthonyi*), but significant shifts in allele frequency were detected for San Clemente. These shifts were attributed to bottlenecking, which has occurred since the start of the captive breeding program and may have occurred in the wild as well due to small population size.

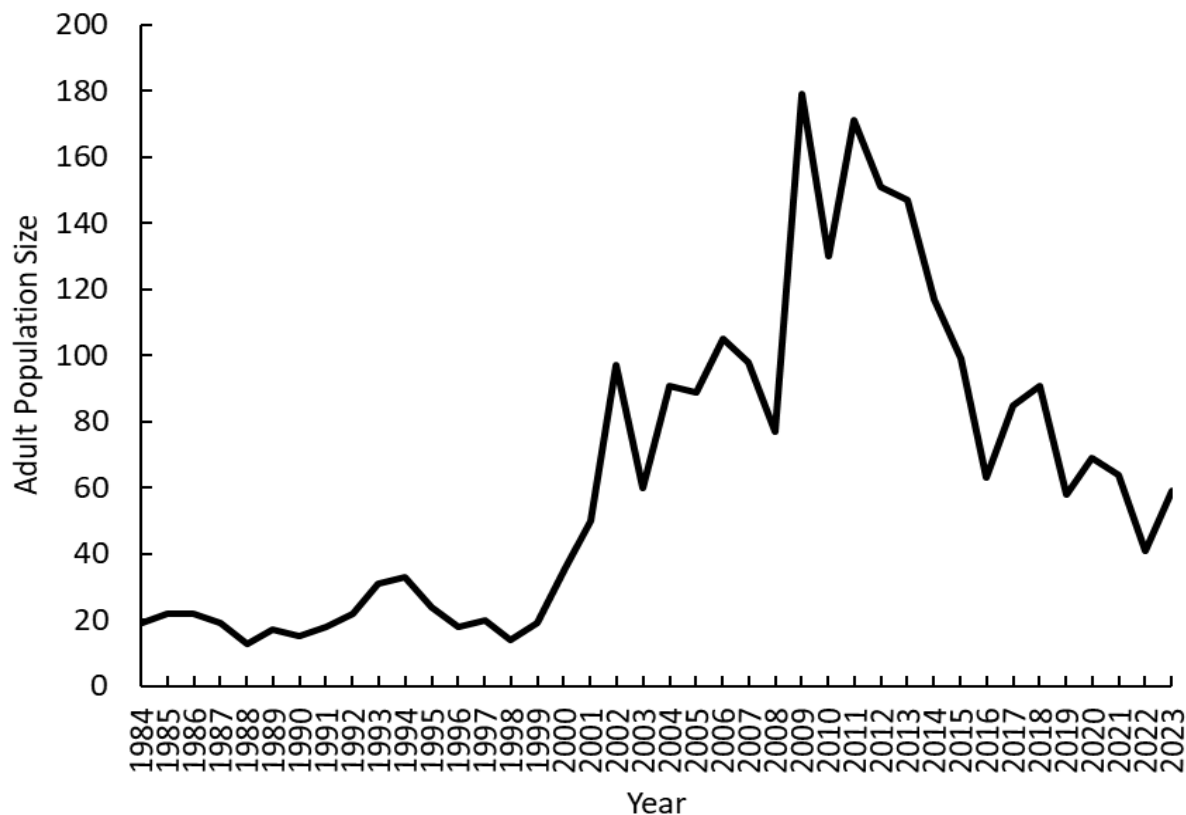


Figure 1. Potential breeding population of San Clemente loggerhead shrikes on San Clemente Island, California, 1984–2023 (Booker 2025b).

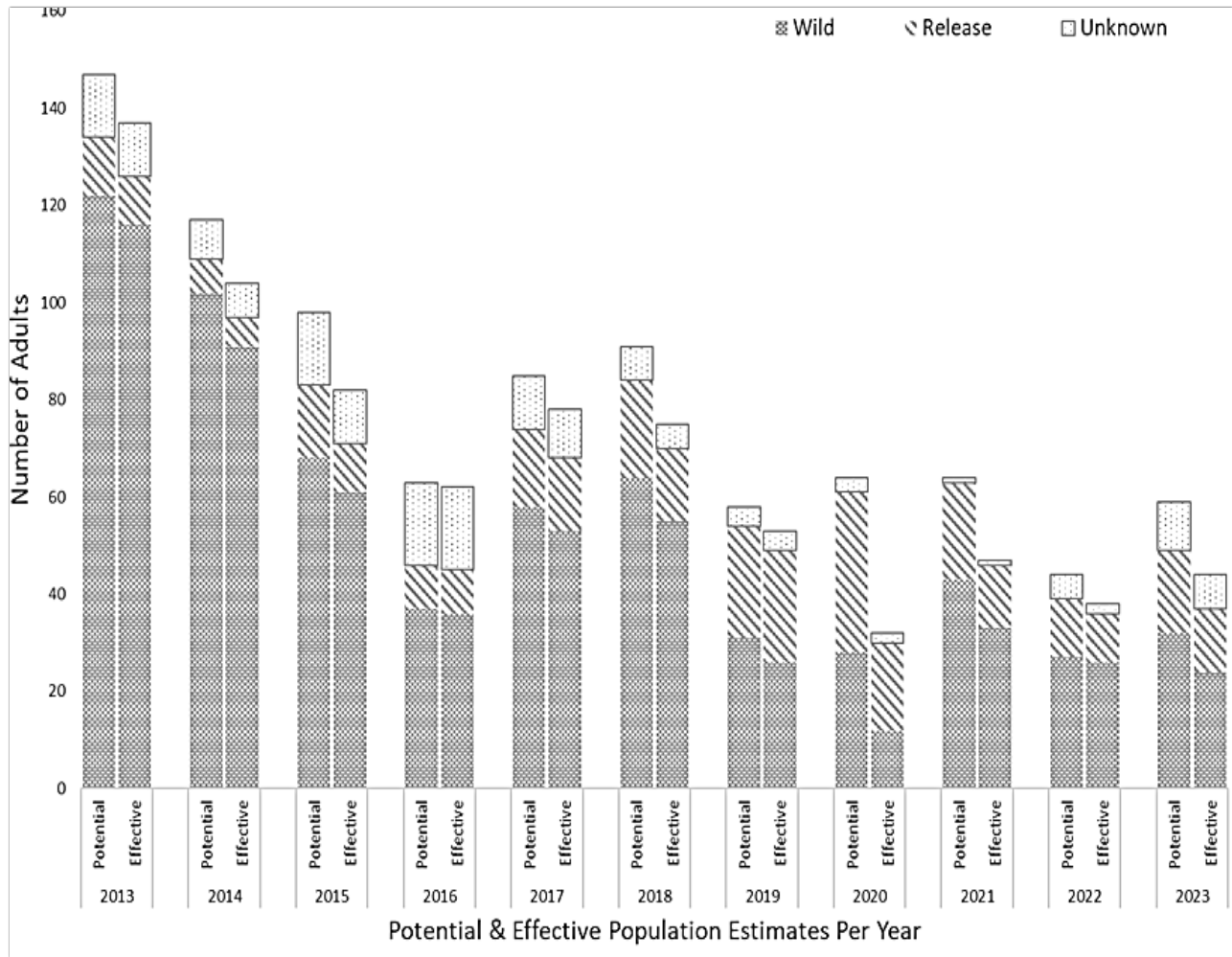


Figure 2. Estimated number San Clemente loggerhead shrikes from potential breeding and effective breeding population estimates (numbers represent the number of live adults or breeding adults observed from March 1 to September 30). Proportion of shrikes that were wild, from captive-release, and unknown origin is illustrated from 2013–2023 on San Clemente Island, California (Booker 2025b).

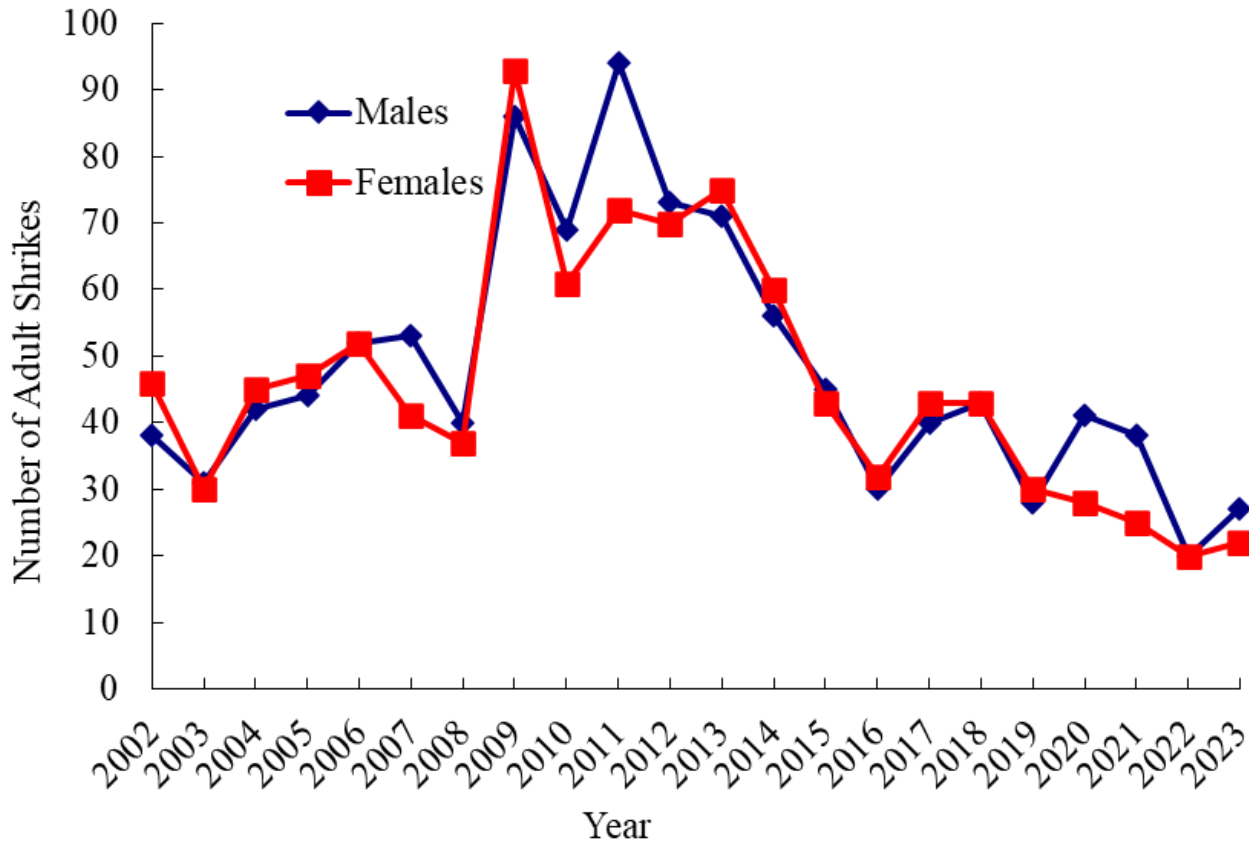


Figure 3. Comparison of adult male and female San Clemente loggerhead shrike numbers on San Clemente Island, California, based on known-sex shrikes that were part of the potential breeding population (observed alive March 1 to September 30) for 2002–2023.¹

Recent Conservation Efforts

Fire Management

Fire management on SCI focuses on prevention, suppression, and containment. The Navy is currently updating its Fire Management Plan based on improved modeling and suppression approaches. The Navy has shifted from fire retardant drops to fuel breaks along roadways for containment approaches and has been able to expand the number of aerial firefighting assets during critical fires (i.e., 2024).

In 2024, a large fire ignited in the Shore Bombardment Area (SHOBA) area and spread northwards into occupied shrike nesting canyons, encompassing approximately 8,371 acres (ac) [3,388 hectares (ha)] (Appendix). Initial surveys after the fire have documented vegetation reestablishment and shrikes now reoccupy many of the same burned canyons (Appendix).

¹ Prior to 2006, contractual obligations only required that 40 pairs be monitored per year; thus, additional undocumented shrikes may have been present. Additionally, no field staff were on island March 18 to May 22, 2020, due to COVID-19. (Booker 2025b, p. 1).¹

Continued monitoring within the fire footprint would be needed to determine near and long-term impacts of the fire on the shrikes.

Shrike Recovery Program

The Navy implements a recovery program for the shrike and has worked cooperatively with many partners [San Diego Zoo Wildlife Alliance, Institute for Wildlife Studies, San Diego State Soil Ecology and Research Group, Point Reyes Bird Observatory, Endangered Species Recovery Council, Animal and Plant Health Inspection Service (APHIS) - Wildlife Services, and the Service]. The recovery program includes captive propagation and release, intensive monitoring, predator management, species research, and targeted shrike habitat enhancement. The captive propagation and release program has been an important tool in the continued existence of the subspecies and will continue being an important tool in the future recovery of the subspecies on the island. Island vegetation, including shrike habitat, is continuing to recover after the Navy's successful removal of introduced herbivores from the island and active efforts at habitat restoration.

Conservation Breeding and Population Augmentation

From 2020 to 2025 the shrike captive propagation and release program (henceforth conservation breeding program) has continued to breed a captive shrike population—which averages 60 adults—to produce juveniles for release to augment the wild population. The release (population augmentation) aspect of the recovery program is predicated on the breeding success of birds in captivity for the number of juvenile releases. The release program has also continued to release adults through solo female releases to off-set wild population sex skews and releases of adult males with dependent juveniles. Using multiple release strategies maximizes program flexibility and success. The number of shrikes released has increased from 14 in 2020 to 42 in 2025. Table 1 summarizes the number of reared juveniles and number of released shrikes.

Newly developed techniques that contribute to species recovery include ongoing diet modifications [oyster shell for breeding females, and supplemental food (additional kingworms) during molt] and pre-release training, including antipredator training. The program is continuing to adapt breeding and rearing techniques to the needs of the population, including new protocols for completing pair introductions in larger aviaries with a faster turn-around time and new protocols for fostering captive chicks to wild pairs.

Predator Management

The shrike predator research and ecosystem management project continued to control nonnative shrike predators [i.e., feral cats (*Felis catus*) and black rats (*Rattus rattus*)] throughout 2020 to 2025. This project also conducted small mammal trapping to assess rodent population levels as an index of shrike prey (mice) and predators (rats). There is a positive correlation between rat management and shrike fledglings that reach independence, although the exact relationship is unknown. Overall, yearly number of nonnative predators removed was variable from 2020 to 2024 and ranged between 178 to 408 for feral cats and 199 to 607 for black rats (Table 2).

The predator research and ecosystem management project has continued to investigate technologies and tools for predator management. From 2020–2025, the project investigated the use of a sound

deterrent system for predators, which has not proved effective in the first round of testing. They have started an investigation into the use of a rat-specific poison, which is on-going.

Table 1. Breakdown of San Clemente loggerhead shrike releases.

Year	Number of Reared Juveniles	Number of Released Shrikes
2020	21	14
2021	43 (34 captive, 9 wild foster)	32
2022	31 (29 captive, 2 wild foster)	25
2023	55	49
2024	46	40
2025	48	42 ^A

^A Total includes 10 additional birds planned for release between August and September 2025.

Table 2. Yearly breakdown of predator control removals on the island.

Year	Feral Cats Removed	Black Rats Removed	Rodenticide used at Shrike Sites ^A
2020	380	607	21
2021	408	199	30
2022	217	100	36
2023	178	321 (97 ^B)	31
2024	306	400 (93 ^B)	33

^A Rodenticide used to reduce rat abundance at shrike breeding, release, and captive breeding sites.

^B Additional opportunistic rat captures as bycatch by the Island Fox Monitoring Project.

Habitat Restoration

Impacts from habitat modification and erosion that occurred as a result of grazing and browsing are being restored by the Navy’s ongoing efforts to reestablish native plant communities that support the shrike (SERG 2025, entire). Figure 4 maps these outplanting sites, while Table 3 gives the yearly breakdown of total outplantings. Retired sites are areas that were planted in prior years and outplantings are no longer being conducted at those locations.

Threats

The shrike was listed as endangered under the Act in August 1977 due to loss of habitat associated with overgrazing, depredation by feral cats, low population size, and potential for introduction of invasive species (Service 1977, entire) (Table 1). Shrub habitat impacted by overgrazing continues to recover and erosion scars are healing after the successful removal of nonnative ungulates in 1992. In addition, the Navy is continuing efforts to reestablish native plants, including those that support shrike nesting. Since our last 5-year review, the Navy planted 3,611 individual native plants. The general condition of habitat impacted by historical overgrazing has improved, however

some of the gains in shrub reestablishment may periodically be reversed by the occurrence of large fires, such as occurred in 2024 (see below).

Table 3. Outplanting of sensitive plant taxa conducted from 2020 to 2025.

Year	Number of Individuals Planted ¹
2020	696
2021	1,123
2022	776
2023	463
2024	449
2025	509
TOTAL	3,611

¹ Complete outplanting breakdown by site and individual species is described in SERG (2025, entire).²

Predation

Depredation by feral cats continued to function as a stressor to the population; however, this threat is managed by an ongoing predator management program that targets nonnative predators including feral cats (Lewis *et al.* 2025, entire). With management, the cat population has been reduced and the threat to shrikes from depredation appears significantly reduced. Further analysis has shown that birds actually comprise a very small percentage of the cat diet on SCI, based on gut-content analysis whereas rodents and lizards comprised most of the diet (Parsons *et al.* 2020, pp. 10–11).

Predation by other taxa—particularly black rats—presents a more significant threat to the shrike, as a larger proportion of failed nests have been attributed to rat depredation. Black rats are managed as part of the Navy’s Predator Research and Ecosystem Management project, and there is a positive correlation between rat management and shrike fledglings that reach independence. Rats on SCI remain difficult to control due to the potential for impacts to native taxa associated with rodenticide, limitations on management ability in the vicinity of an active nest (due to the sensitivity of shrikes to human disturbance around the nest) and difficulty in trapping rats in the canyon woodland habitat. Native species, including the endemic San Clemente Island fox (*Urocyon littoralis clementae*) and peregrine falcon (*Falco peregrinus*) also prey upon shrikes.

² Note, this is a comprehensive total of all native outplantings, some of which may not directly benefit the shrike.

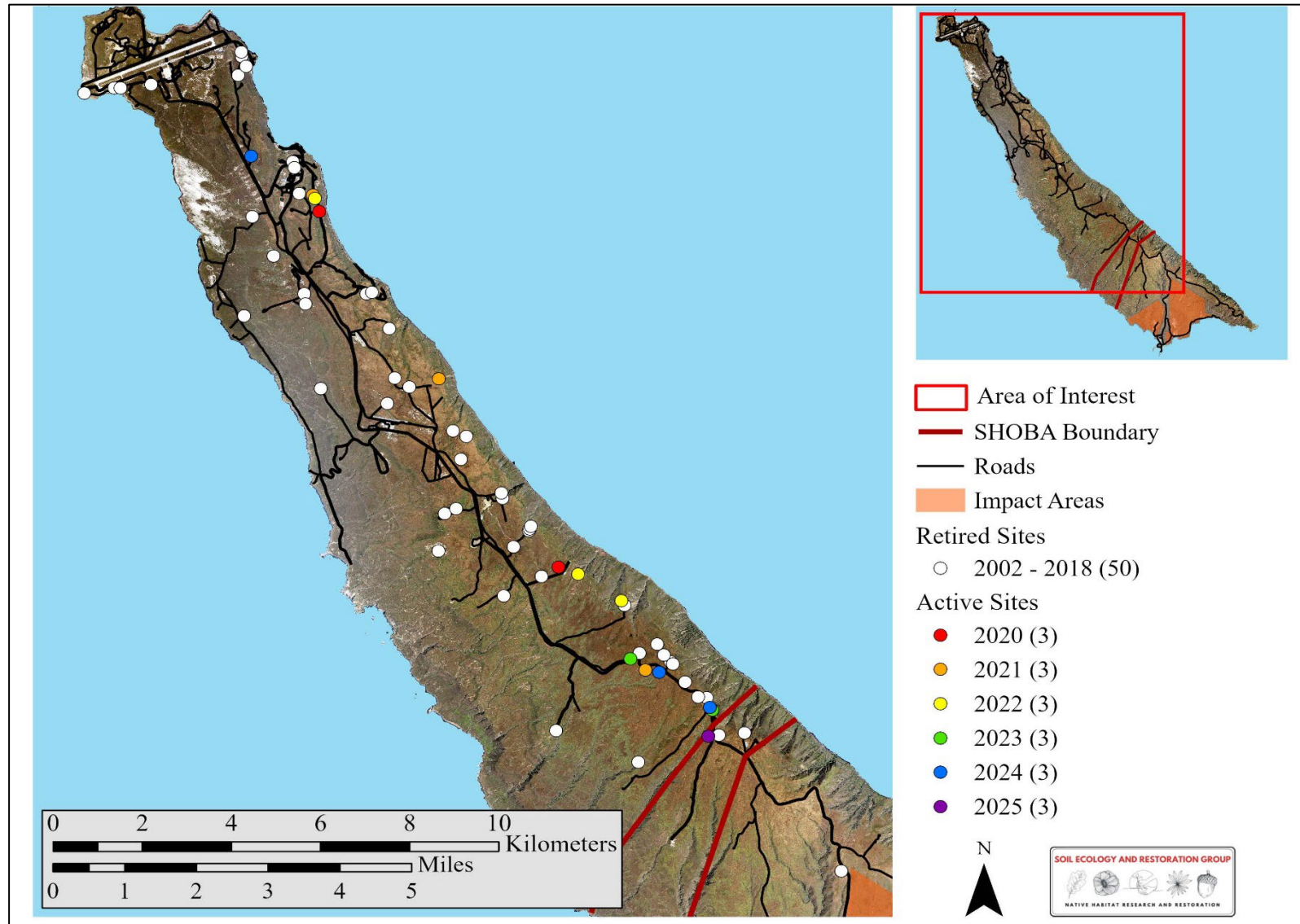


Figure 4. Outplanting sites to restore habitat for the San Clemente loggerhead shrike from 2020–2025 (SERG 2025, p. 30).

Wildfire

Wildfire presents a continued stressor on the shrike, however, impacts of fire and the effects of fires on shrike conservation are complex. The Navy addresses the threat associated with fire, as feasible and consistent with military training needs, through implementation of the Wildland Fire Management Plan (Navy 2009, entire). Although fires have the potential to remove nesting shrubs and harm shrikes, fires recorded at SCI have rarely destroyed nesting substrates (shrubs and trees) because most nesting substrate is located deep in canyons, and most fires have burned outside these nesting areas. In addition, fires temporarily open the understory of forbs and grasses, which may improve visibility for ground foraging by shrikes. Fires likely negatively impact prey abundance (i.e., numbers of lizards, mice, and insects present post fire), which could reduce available resources for foraging and negatively impact shrikes. However, in some instances, fires can result in improved visibility for predator managers, and potentially increase effectiveness of feral cat control, providing an indirect benefit to shrikes.

Wildfire still has the potential to be a catastrophic single event, and since our last 5-year review, several significant fires have occurred on SCI. For example, in July 2024, the Escarpment Fire burned approximately 8,371 ac (3,388 ha), including canyons occupied by shrikes (Appendix). Surveys within previously burned areas on the island, however, indicate that vegetation (including shrubs) is rebounding. In 2025, shrikes have already been detected nesting in and around areas that burned in 2024. These findings suggest the shrike-fire relationship is complex and not completely understood at this time. Future monitoring and data examination may help better understand this dynamic. Threats associated with land use and erosion are addressed, as feasible and consistent with military training needs, through project review under the National Environmental Policy Act, implementation of the Navy's Integrated Natural Resource Management Plan (2013b), and the Erosion Control Plan (2013a).

Climate Change

Drought and climate change present current and emerging threats to the shrike. Climate change in the form of drought and timing of rainfall appear to be the single largest threat to shrike (Booker 2025b, pers. comm., p. 1). Dry years have been shown to lower over-winter survival and recruitment, while heavy rains can cause nest failures or abandonments. Drought conditions are also thought to severely limit small mammal prey populations. Very wet years can increase predatory rat numbers and decrease mouse numbers, a food source, while also increasing heavy vegetation cover, limiting foraging success. Finding management strategies to overcome impacts of climate change into the future would be an important part of shrike recovery.

Introduced Nonnative Species

San Clemente Island habitats and species, including the shrike, will continue to be vulnerable to introduction of species that are not native to the island. This threat can be reduced by implementation of a variety of biosecurity measures. There is an increasing awareness for the need of biosecurity on SCI and other Channel Islands, and the Navy is expanding their biosecurity program on SCI. Biosecurity is likely to be increasingly important to managing future threats from invasive species. Since our last 5-year review, there have been reports of a rabbit (unidentified

species) on the island between January and March 2025 that resulted in efforts for its location and removal. The Navy instituted control methods to detect and eliminate the rabbit and it is presumed dead (Booker 2025b, pers. comm., p. 9). In May 2025, a nonnative gopher snake (*Pituophis catenifer*) was recovered from the north end of SCI. The snake was removed and is currently subject to a genetics study to identify its likely region of origin, which will inform biosecurity efforts in the future. The Navy has heavily invested in and is continuing an eradication program for Argentine ants at SCI. However, ant infestation areas have spread in some areas and, if not controlled could further impact nesting shrikes. These unintended introductions of nonnative species are a possible emerging threat.

Table 4. Review of past and current threats assessed for the San Clemente loggerhead shrike.

Threat	Listing (1977)	Recovery Plan (1984) ^a	5-year Review (2020)	5-year Review (2025)
Feral Ungulates	X	X	-	-
Erosion	-	-	-	-
Fire	-	-	X	X
Predation	X	-	X	X
Land Use	-	-	X	X
Small Population Size	X	-	X	-
Climate Change (Drought)	-	-	X	X

^a Specific cause for the decline of the San Clemente loggerhead shrike was largely unknown at this time (Service 1984, entire).

Summary of Threats

The San Clemente loggerhead shrike occurs on San Clemente Island that is owned and managed by the U.S. Navy. Despite current efforts to recovery the species, the predominant threats described above [fire, predation, land use, and climate change (drought)] continue to impact the species and threats across the landscape have not substantially changed since the 2020 status review.

CONCLUSION

When listed as endangered in 1977 the population of San Clemente loggerhead shrikes was estimated between 15–35 individuals and in 1998, only 14 adult shrikes were detected during comprehensive survey efforts. The Navy initiated a recovery program in the early 1990s and has continued to support predator management and captive breeding, rearing, and release of shrikes into suitable habitat across the island. As a result of the recovery program, the number of adult shrikes rose to 179 in 2009; however, in more recent years, the population has declined despite the recovery effort. The number of potential breeding adults has declined from 63 in 2020, during our last status review, to 52 adult shrikes in 2025 (Booker 2025a, pers. comm., p. 1). Shrikes are facing the same predominant threats as outlined in the 2009 and 2020 status reviews, including fire, predation, land use, and climate change (drought). The population is still vulnerable to extinction as evidenced by the continuous low number of breeding adults surveyed. While the sustained small

population size has decreased genetic diversity, a decrease in fitness has not been documented. However, the loss of genetic diversity and subsequent impacts from inbreeding depression continues to be an ongoing concern into the future. Continued captive breeding and reestablishment efforts have prevented extinction and will continue to be required in the future to support potential recovery efforts.

The new information and updated occurrence status does not substantially alter the species' status or the results of our five-factor analysis in the 2020 5-year review. Therefore, we conclude that San Clemente loggerhead shrike remains a federally endangered subspecies and recommend no change in listing status.

Change in Recovery Priority Number

The San Clemente loggerhead shrike has a recovery priority number of 12, which is defined as a subspecies that faces a moderate degree of threat and has a low recovery potential (Service 1983, p. 51985; Service 2020, p. 1). Upon completion of this 5-year review, we conclude that the recovery priority number should be changed. The subspecies currently has a high degree of threat and low potential for recovery because of elevated predation pressures and impacts from climate change, including drought. Despite extensive management efforts, persistently low shrike abundance underscores the severity of threats to the population. Due to the reliance on ongoing management and the continued challenges to ameliorate threats, we are recommending a change of the recovery priority number from 12 to 6.

RECOMMENDATIONS FOR FUTURE ACTIONS

The recommended actions listed below are to be initiated over the next 5 years to reduce threats to the San Clemente loggerhead shrike. We recognize that conservation of this taxon will require cooperation and coordination with partners to minimize impacts from current threats and aid with future restoration efforts.

1. Continue intensive monitoring of the shrike population to facilitate recovery actions and impact avoidance.
2. Conduct post-fire monitoring and evaluation to assess the impact or response of shrikes to the 2024 Escarpment Fire. Assess the availability and quality of shrike breeding and breeding season foraging habitat, continued use of past breeding sites in fire footprint, breeding success, foraging use and/or success, and continue site specific predator management. As part of the evaluation, compare metrics above within and outside of areas burned in the Escarpment Fire.
3. Continue to implement and refine the Conservation Breeding Program to maximize the fitness of birds released and optimize the number of shrikes scheduled for release in any given year in accordance with regular input from the Shrike Working Group. Continue to investigate methods to increase survival skills, including predator avoidance training to boost fitness of released birds.

4. Prioritize funding and implementation of the SCI Biosecurity Plan to reduce the potential for invasive species' introduction including the development of rapid detection rapid response protocol for likely new invasive species with high potential to impact shrike.
5. Continue to better understand the correlation and potential causes between black rat management and nest success (as measured by independent juveniles produced).
6. Maintain spatial data on shrike nest sites, occupied status, and breeding success relative to fire footprints and severity to better understand the impacts of fire on shrikes.
7. Continue to investigate possible correlations between weather (potentially using Normalized Difference Vegetation Index, albedo, precipitation, temperature), prey abundance (small mammal population assessments/trapping, invertebrate assessments), and shrike population metrics to help inform climate change impacts on future management.
8. Continue to implement predator removal programs to control cats, black rats, and other nonnative rodents, in accordance with the best available science and data, and explore the potential for eliminating these species from San Clemente Island as control and eradication techniques evolve.
9. Continue vegetation restoration and/or invasive plant management to support expansion and maintenance of suitable shrike habitat throughout San Clemente Island.

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FIELD OFFICE APPROVAL

Lead Field Supervisor, Fish and Wildlife Service

Approved

Jonathan Snyder
Acting Field Supervisor

Appendix

Recommended Citation:

U.S. Fish and Wildlife Service. 2025. San Clemente Loggerhead Shrike (*Lanius ludovicianus mearnsi*) 5-year review: summary and evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. 17 pp.

APPENDIX

2024 Escarpment Fire Footprint Figure

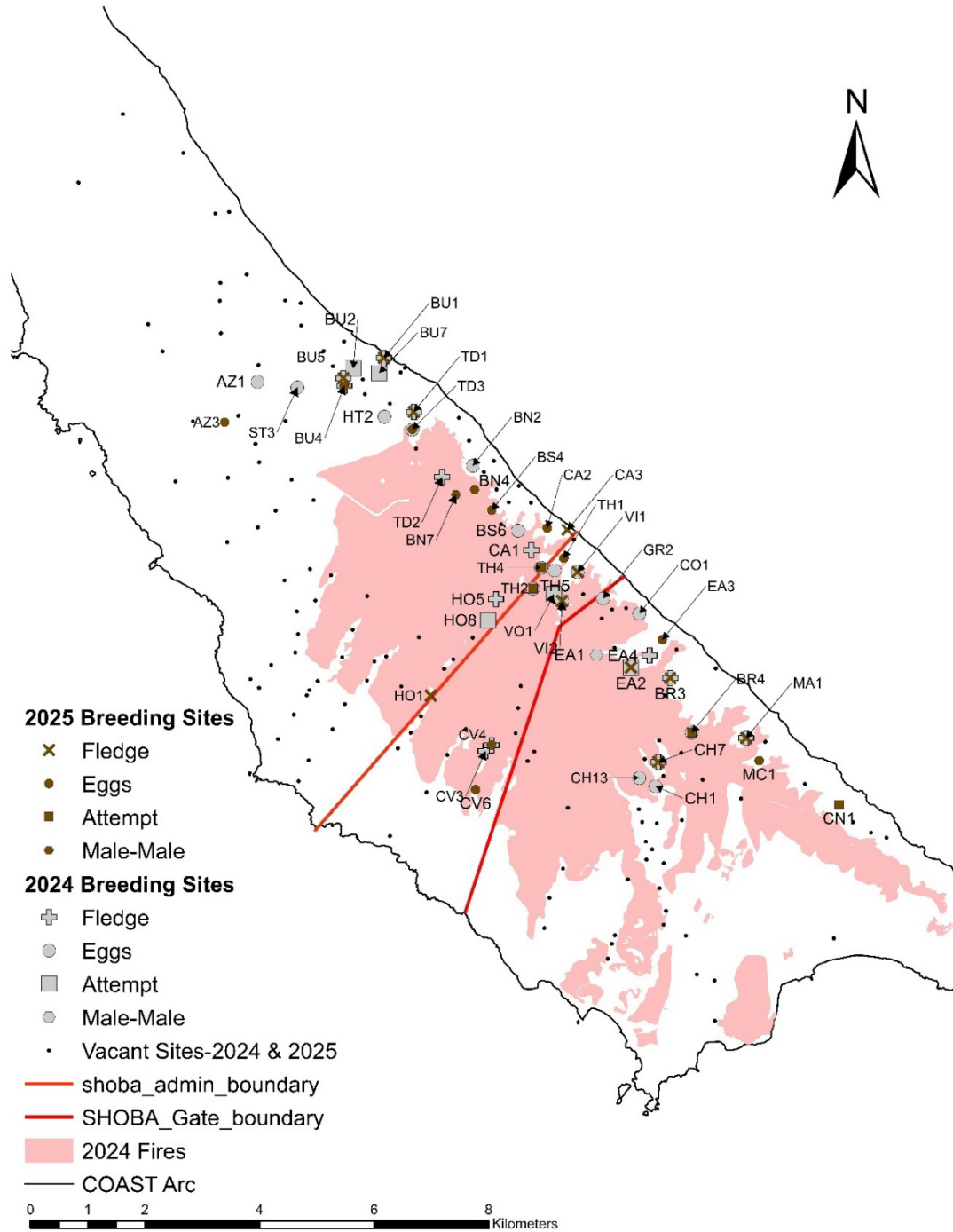


Figure A1. Footprint of 2024 Escarpment Fire along with San Clemente loggerhead shrike breeding sites before the fire (2024 sites) and after the fire (2025 sites). Map shows most breeding sites are on the east slope canyons, with significant of overlap before and after the 2024 fire.