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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R8-ES-2020-0074; FF09E22000 FXES11130900000 201]

RIN 1018–BE73

Endangered and Threatened Wildlife and Plants; Removing Five Species that Occur on San Clemente Island from the Federal Lists of Endangered and Threatened Wildlife and Plants

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are removing the San Clemente (SC) Bell's sparrow (*Artemisiospiza belli clementeae*) (formerly known as the SC sage sparrow, *Amphispiza belli clementeae*), San Clemente Island (SCI) bush-mallow (*Malacothamnus clementinus*)*,* SCI paintbrush (*Castilleja grisea*)*,* SCI lotus (*Acmispon dendroideus* var. *traskiae*)*,* and SCI larkspur (*Delphinium variegatum* ssp. *kinkiense*) from the Federal Lists of Endangered and Threatened Wildlife and Plants (Lists). The bird species and four plant species occur only on SCI, one of the California Channel Islands off the southern coast of California. The delistings are based on our evaluation of the best available scientific and commercial information, which indicates that the status of each species has improved and threats to the species have been eliminated or reduced to the point that the species have recovered and no longer meet the definitions of either endangered or threatened species under the Endangered Species Act of 1973, as amended (Act). Accordingly, the protections provided by the Act will no longer apply to these species.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF

PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule, supporting documents used in preparing this rule, the post-delisting monitoring plans, and the comments received on the proposed rule are available for public inspection at *https://www.regulations.gov* under Docket No. FWS-R8-ES-2020-0074.

FOR FURTHER INFORMATION CONTACT: Scott Sobiech, Field Supervisor, Carlsbad Fish and Wildlife Office, 2177 Salk Avenue, Suite 250, Carlsbad, CA 92008; telephone 760–431–9440. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species may be removed from the Federal Lists of Endangered and Threatened Wildlife and Plants (i.e., "delisted") if it is determined that the species has recovered and no longer meets the definition of an endangered species or a threatened species. Delisting a species can only be completed by issuing a rule.

What this document does. This rule removes the SC Bell's sparrow (*Artemisiospiza belli clementeae*) (formerly known as the SC sage sparrow, *Amphispiza belli clementeae*), SCI bush-mallow (*Malacothamnus clementinus*), SCI paintbrush (*Castilleja grisea*), SCI lotus (*Acmispon dendroideus* var. *traskiae*), and SCI larkspur (*Delphinium variegatum* ssp. *kinkiense*) from the Federal Lists of Endangered and Threatened Wildlife and Plants (Lists) based on the species' recovery.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of one or more of the five factors described in section 4(a)(1) of the Act: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We must consider these same factors in delisting a species.

We have determined that the five SCI species are not in danger of extinction now nor are they likely to become so in the foreseeable future based on a comprehensive review of their status and listing factors. Specifically, our recent review indicated that the Navy's successful removal of nonnative herbivores (goats, sheep, pigs, cattle, mule deer) led to recovery of vegetation in areas of severely degraded habitat on SCI and to the recovery of these five species to the point that they no longer require protections under the Act. Accordingly, the species no longer meet the definition of endangered or threatened species under the Act.

We developed species status assessment (SSA) reports for the five species, in cooperation with an SSA team and the Navy. The SSA reports represent a compilation of the best scientific and commercial data available concerning the status of these species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

Peer review and public comment. In each of the five respective SSAs, we evaluated the species' needs, current conditions, and future conditions to inform our May 5, 2021, proposed rule (86 FR 23882). We sought peer review from independent specialists and evaluated their comments to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We considered all comments and information we received during the public comment period on the proposed delisting rule and the draft PDM plan when developing this final rule.

Previous Federal Actions

On May 5, 2021, we proposed to delist these five SCI species from the Federal Lists of Endangered and Threatened Wildlife and Plants (86 FR 23882). Please refer to that proposed rule for a detailed description of previous Federal actions concerning these species. The proposed rule and supplemental documents are provided at *https://www.regulations.gov* under Docket No. FWS-R8-ES-2020-0074.

Summary of Changes from the Proposed Rule

On December 9, 2021, following the closing of the public comment period on the proposed rule and while this final rule was being drafted, we received from the U.S. Navy (hereafter, "Navy") a draft description of the proposed action and alternatives for the San Clemente Island Training and Testing Environmental Analysis, which identified proposed changes in training activities and proposed designation of new training areas in habitat occupied by the five SCI species. In response to this new information, we coordinated with the Navy to identify appropriate avoidance and minimization measures, and the Navy reaffirmed commitment to incorporate minimization measures into future training activities (Golumbfskie-Jones 2022, *in litt,* p. 1).

We also refined the analysis of current and future conditions as presented in Version 1.0 of each of the SSAs in response to this new information by including the proposed training areas in the analysis and revising the anticipated erosion and adjacency impact zone at the periphery of assault vehicle maneuver areas (AVMA) and landing zones (LZs). In the proposed rule, under extreme conditions in the future scenarios, we considered that all plants in an entire watershed could be impacted by training if an AVMA occurred in the same watershed. As revised, we instead analyzed impacts to occur up to 500 feet around the areas, as 500 feet more accurately reflects the impacts of training that could extend beyond the boundaries of AVMAs and LZs based on observations of baseline conditions surrounding existing AVMAs and LZs and in consideration of the erosion control measures the Navy will continue to implement. Thus, incorporation of a 500-foot impact zone beyond the boundary of these areas provides a more biologically accurate assessment for future condition, compared to the proposed rule, where we assumed that all plants in the watershed would be lost.

The results of our analysis were incorporated into the respective SSAs, which are available as Version 1.1. Future condition of each species in Version 1.1 of each SSA was assessed using the same methodology as in the original SSAs, with the following expectations: (1) Future military training would be limited to the high-use training footprints identified in the SSA Version 1.1; (2) fire impacts to species considered would occur within the same areas of the island that experienced two or more fires during the period 2007–2018; (3) impacts within high-use training and frequent fire footprints would increase; and (4) impacts outside high-use training and frequent fire footprints would be minimal. No change in the fire footprint (beyond that contemplated in the original SSA) is considered because it is unlikely there will be changes in ignition sources or fire management, and thus future fire patterns should remain comparable to historical fire patterns. As described below, and with the exception of changes made as a result of Navy input, we made no substantive changes to this final rule based on comments received on our proposed rule by Federal and State partners, or based on comments received from the public during the public comment period.

Summary of Comments and Recommendations

In our May 5, 2021, proposed rule to delist the five SCI species (86 FR 23882), we requested that all interested parties submit written comments on the proposed delistings and our draft PDM plan by July 6, 2021. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposed delistings and draft PDM plan. A newspaper notice inviting general public comments was published in the San Diego Union-Tribune (major local newspaper) and also announced using online and social media sources. We received five comments from the public on the proposed rule, and we received no requests for a public hearing. While all of the commenters expressed general views that the five SCI species should remain listed under the Act, none provided substantive information that required changes to this final rule.

Final Delisting Determination

Species Information

Below, we present a review of the taxonomy, life history, ecology, and overall status of the five SCI species, referencing data where appropriate from the SSAs that were finalized for each of the five species.

Overview of San Clemente Island

The five species addressed in this final rule are endemic to SCI, the southernmost island of the California Channel Islands, located 64 miles (mi) (103 kilometers (km)) west of San Diego, California. The island is approximately 56 square mi (145 square km, 36,073 acres (ac), or 14,598 hectares (ha)) (Junak and Wilken 1998, p. 2) and is long and narrow: 21 mi (34 km) long by 1.5 mi (2.4 km) wide at the north end, and 4 mi (6.4 km) wide at the south end (USFWS 1984, p. 5). The island consists of a relatively broad open plateau that slopes gently to the west. Conspicuous marine terraces line the western slope of the island, while steep escarpments drop precipitously to the rocky coastline on the eastern side along the southern 75 percent of its coastline. Many canyons, some of which are up to 500 feet (ft) (152 meters (m)) deep, dissect the southern part of the island. Mount Thirst, the highest point on the island, rises to approximately 1,965 ft (599 m) (Navy 2013a, p. 1.4).

SCI is located in a Mediterranean climatic region with a significant maritime influence. Average monthly temperatures range from 58 degrees Fahrenheit (°F) (14 degrees Celsius (°C)) to 66 °F (19 °C), with a monthly maximum temperature of 72 °F (22 °C) in August and a monthly minimum of 51 °F (10 °C) in December (Navy 2013a, p. 3.11). Average monthly relative humidity varies from 54 to 86 percent depending on location and time of year, and the island experiences dramatic fluctuations in annual rainfall, averaging 6.6 inches (in) (16.8 centimeters (cm)) (Navy 2013a, pp. 3.11, 3.13). Precipitation is received mainly from November through April, with little from May through October. In addition to precipitation, low-level stratiform clouds and fog drip during the typical dry season provide moisture to the SCI ecosystem (Navy 2013a, pp. 3.9, 3.13). The central plateau is characterized mainly by native and nonnative grassland communities. Marine terraces on the western side of the island support maritime desert scrub communities, and the steep eastern escarpment supports grassland and sagebrush communities. Deep canyons that incise both the east and the west sides of the island support limited canyon woodland communities.

San Clemente Bell's Sparrow

A thorough review of the taxonomy, life history, and ecology of the SC Bell's sparrow is presented in the SSA report (USFWS 2022a). The SC Bell's sparrow (*Artemisiospiza belli clementeae*; Chesser et al. 2012), formerly called the SC sage sparrow, is a non-migratory subspecies of Bell's sparrow endemic to SCI. It is a grayish-brown-colored sparrow with a small dark breast spot, complete white eye rings, and distinctive white and black malar stripes. It is approximately 5.1–5.9 in (13–15 cm) long, and weighs, on average, 0.59 ounces (16.8 grams) (Martin and Carlson 1998, p. 2; Turner et al. 2005, p. 27).

The SC Bell's sparrow was once close to extinction, with a low of 38 individual adults reported in 1984 (Hyde 1985, p. 30). The population was estimated to be 316 in 1981, 38 in 1984, and 294 in 1997 (Beaudry et al. 2003, pp. 1–2), based on transect surveys on the marine terraces of the west shore of the island. In the period 1999–2011, transect surveys continued predominantly in boxthorn habitat on the west shore, and population estimates ranged from 452 to 1,544 SC Bell's sparrows (USFWS 2022b, p. 27). As the native shrub habitat recovered following the removal of the nonnative grazing and browsing animals, the distribution of SC Bell's sparrow expanded on SCI (Meiman et al. 2019, pp. 2–4). Observations of Bell's sparrows in areas of the island outside the marine terraces on the west shore increased. In 2012, breeding season survey methodology was modified (Meiman et al. 2019, pp. 3–4) to include survey plots randomly distributed throughout the island. Using this approach, new plots are selected for survey each year. Implementation of this survey methodology resulted in an island-wide estimate of 2,267 Bells' sparrow territories (4,534 adult sparrows) in 2013. The population estimates ranged from 4,194 to 7,656 adult Bell's sparrows in the period 2013–2018 (USFWS 2022a, p. 25). While the SC Bell's sparrow is now distributed widely across the island (see figure 1, below), its density varies greatly spatially and among vegetation types. SC Bell's sparrows may be found in some habitat mapped as grasslands; however, many grassland areas do not support SC Bell's sparrows, likely due in part to the lack of shrub cover. Recent estimates of potential available habitat have increased from approximately 4,196 ha (10,369 ac) in 2009 (USFWS 2009, p. 8) to approximately 13,132 ha (32,449 ac) (Meiman et al. 2018, p. 5).

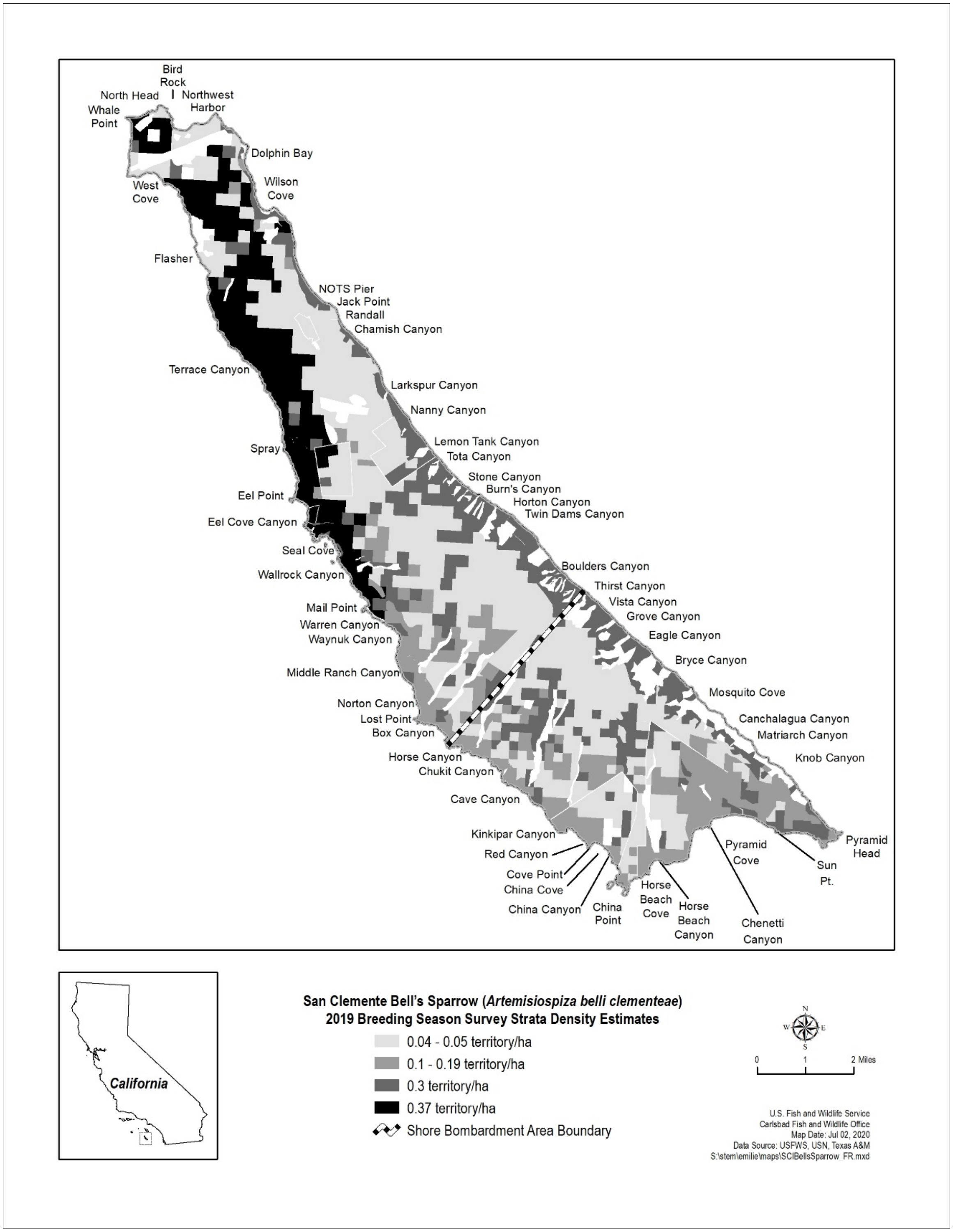

Figure 1—Map showing distribution of San Clemente Bell's sparrow on San Clemente Island, CA.

Boxthorn-dominated plant communities, particularly along the northwest shoreline and marine terraces, support high-quality habitat that provided refugia to the Bell's sparrow when the population was lower. Boxthorn habitat along the northwestern shoreline and marine territories remains densely populated, supporting a significant percentage of the SC Bell’s sparrow population. This area is particularly important to the species. In addition, moderate to high population densities are also found in sagebrush and shrub habitat along the steep eastern slope. SC Bell’s sparrows are present in significantly lower densities in mixed shrub, cactus, and grassland (grass/herb) habitats along the central plateau (Meiman et al. 2018, p. 18).

SC Bell’s sparrows inhabit most plant communities on SCI, including maritime desert scrub in *Lycium* (boxthorn) phase, *Opuntia* (prickly pear) phase, and *Cylindropuntia* (cholla) phase; maritime sage scrub; canyon shrubland/woodland; and grasslands (USFWS 2022a, pp. 20–21). Within these plant communities, SC Bell’s sparrows show an affinity for areas dominated by shrubs and cacti (*Opuntia* sp.). SC Bell’s sparrows demonstrate a positive association with structural shrub cover (Meiman et al. 2015, p. 33), as they typically use shrubs for nesting substrate and use the gaps between and area underneath shrubs for foraging. The abundance of shrubs, including boxthorn, has been positively correlated with sparrow density (Turner 2009, pp. 53–54). High grass cover has been correlated with lower sparrow densities and larger territory sizes, which may indicate that grasses are not likely important resources during the nesting season (Turner 2009, pp. 53–54).

The SC Bell’s sparrow is a ground gleaner and eats available insects and spiders, and seeds taken from the ground and low vegetation. During the winter, SC Bell’s sparrows feed on prickly pear and cholla cactus fruit and on moths (Hyde 1985, p. 24). The initiation of breeding activity and the length of the nesting season appear to be tied to precipitation patterns (Kaiser et al. 2007, pp. 48–49; Meiman et al. 2018, p. 36). Breeding activity usually peaks in March and April and lasts through late June or July. Clutch size ranges from one to five eggs, with asynchronous hatching after 12 to 13 days of incubation conducted mostly by the female (Martin and Carlson 1998, p. 9). SC Bell’s sparrows can breed during their first year. A pair can produce multiple clutches, with some pairs producing multiple successful broods in favorable years (Martin and Carlson 1998, p. 9; Kaiser et al. 2008, p. 36). SC Bell's sparrows express site fidelity each nesting season, and juveniles disperse from the natal area during their first winter.

Amounts and distribution of rainfall affect the timing and extent of vegetation growth and flowering, which likely affects resource availability for SC Bell's sparrows. During drought years, SC Bell's sparrows may not reproduce at all, or a subset of the population may suppress breeding (Kaiser et al. 2007, p. iv; Stahl et al. 2010, p. 48; Meiman et al. 2019, p. 35), which can result in depressed populations following prolonged periods of severe drought. Less severe or shorter duration dry periods, however, do not appear to result in significant population changes, as evidenced by recent dry periods and relatively stable SC Bell's sparrow population estimates. SC Bell's sparrows appear to respond to favorable precipitation patterns and resulting conditions by producing multiple clutches, which typically drive population numbers up in years that follow "good" precipitation years (Kaiser et al. 2007, p. iv; Stahl et al. 2010, p. 50).

San Clemente Island Bush-mallow

A thorough review of the taxonomy, life history, and ecology of the SCI bush-mallow is presented in the SSA report (USFWS 2022b). SCI bush-mallow (*Malacothamnus clementinus*) is a rounded shrub in the Malvaceae (mallow family) (Slotta 2012; 77 FR 29078, p. 29080, May 16, 2012). Plants are generally 2.3 to 3.3 ft (0.7 to 1 m) tall with numerous hairy branched stems arising from the base of the plant (Munz and Johnston 1924, p. 296; Munz 1959, pp. 122–125; Bates 1993, p. 752). Flowers are clustered in the uppermost leaf axils, forming interrupted spikes 3.9 to 7.9 in (10 to 20 cm) long (Munz 1959, p. 125). Flowers are bisexual and variously described as having pink or white and fading lavender petals (Munz and Johnston 1924, p. 296; Bates 1993, p. 752).

The historical range and distribution of SCI bush-mallow on SCI is unknown because botanical studies were not conducted on the island prior to the introduction of ungulates beginning in the 1800s (Kellogg and Kellogg 1994, p. 4). At the time of listing, one site at Lemon Tank Canyon on the eastern side of the island and two additional locations of two to three small plants in China Canyon on the southern end of the island were known (42 FR 40682, p. 40683, August 11, 1977; USFWS 1984, p. 48). Since listing, new locations of SCI bush-mallow have been discovered among the generally southwesterly facing coastal terraces and their associated escarpments in the southern and middle regions of SCI (Junak and Wilken 1998, pp. 1–416, Geographic Information System (GIS) data; Junak 2006, pp. 1–176, GIS data; Tierra Data Inc. 2008, pp. 1–24, appendices and GIS data; SERG 2010a and 2010b, GIS data). Most of the known locations occur throughout the southwestern region of the island. The main southern distribution of SCI bush-mallow is disconnected from the Lemon Tank Canyon locality by approximately 4 mi (6.4 km). Many of these new locations have been documented since feral mammals were removed, suggesting that plants may have reemerged from underground stems that survived grazing by feral herbivores (Junak 2006, pers. comm. in 77 FR 29078, p. 29086, May 16, 2012), although experts doubt that rhizomes would be able to store enough energy to sprout after a long period of dormancy without sending up shoots in the interim (Munson 2022, pers. comm.; Rebman 2019, pers. comm.; Morse 2020, pers. comm.).

The current abundance and distribution of SCI bush-mallow is estimated to total approximately 5,611 individuals at 222 locations occupying 15 watersheds (see figure 2, below) (USFWS 2022b, pp. 29–31). Because distinguishing genetically distinct individuals among groups of stems is difficult, counts or estimates of individuals have most often been used collectively to refer to both genetically distinct individuals (genets) and clones (ramets) (USFWS 2022b, p. 26). In the current estimate, individuals refer to individual plants and not necessarily to genetically distinct individuals, since the number of genetically distinct individuals is unknown. Because of access restrictions due to risk of unexploded ordnances, occurrences within areas subject to bombardment have not been assessed recently enough to be included in this estimate but are likely still extant.

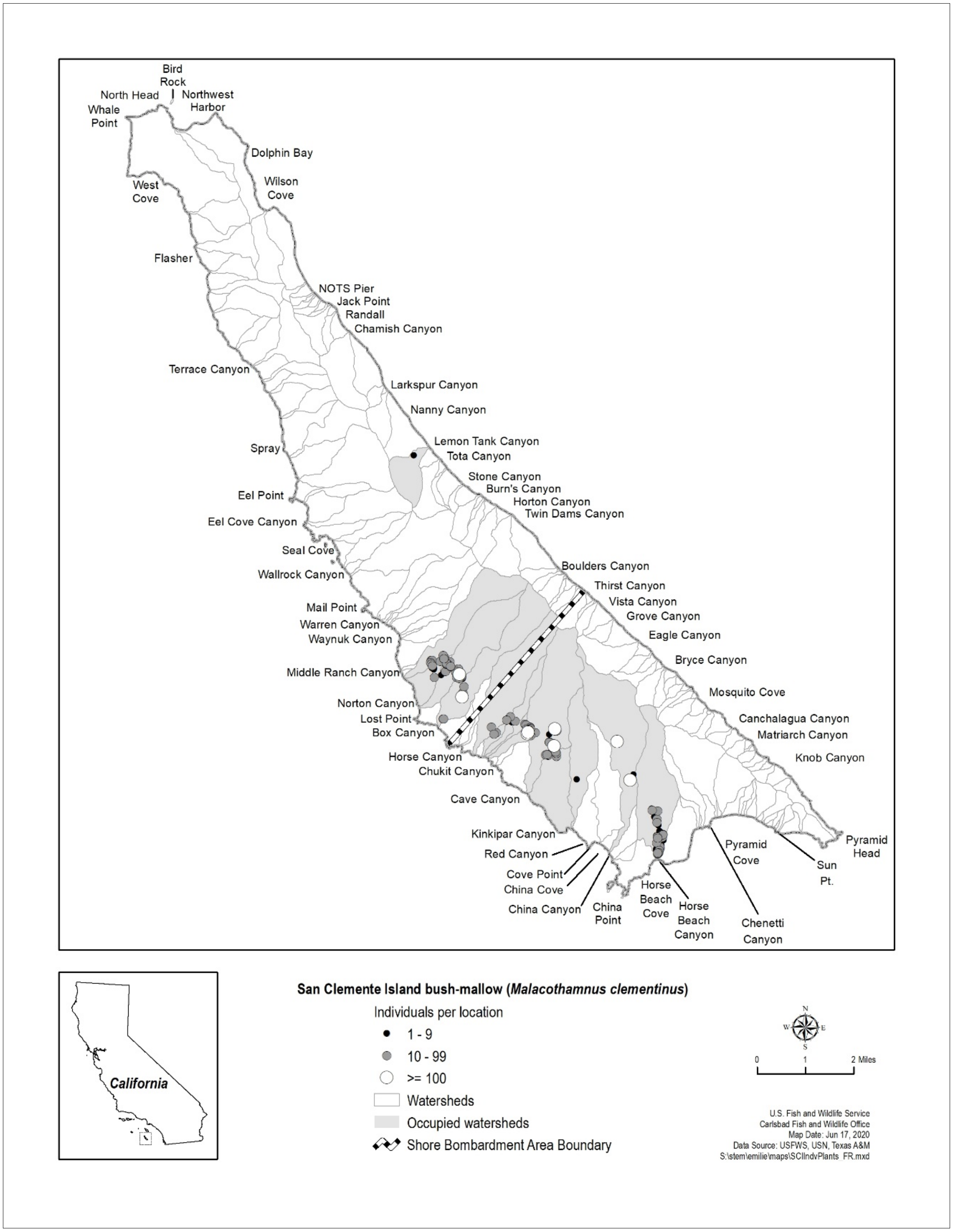

Figure 2—Map showing distribution of San Clemente Island bush-mallow on San Clemente Island, CA.

SCI bush-mallow occurs in a variety of habitats on SCI. Historically, it was observed on rocky canyon walls and ridges, presumably because foraging goats did not browse those areas. Since removal of nonnative feral ungulates, SCI bush-mallow has been found at the base of escarpments between coastal terraces on the western side of the island within maritime cactus scrub (Navy 2002, pp. D–19, D–20), and it can also occur on low canyon benches and in rocky grasslands. Moisture that collects in rock crevices and at the base of canyon walls and escarpments may provide favorable conditions for this species (Junak 2006, pers. comm. in 77 FR 29078, p. 29094, May 16, 2012). Based on its habitat range on the island and the ease of cultivating the plant, SCI bush-mallow appears to tolerate a broad range of soil types (USFWS 1984, p. 50). It is often associated with maritime cactus scrub vegetation on coastal flats at the southwestern end of the island (Junak and Wilken 1998, p. 256).

SCI bush-mallow flowers in the spring and summer, typically from March to August (Kearney 1951, p. 115; California Native Plant Society 2011). It is generally thought that SCI bush-mallow is pollinated by insects; potential pollinators incidentally observed in the wild include wasps and butterflies (USFWS 2007c, p. 9). Although no specific pollinator for this species is known, the shape of the flowers suggest that it is not limited to a specific pollinator and instead can be pollinated by different pollinators (Muller and Junak 2011, p. 33).

While each plant can produce large numbers of seeds, recorded seed production in natural occurrences of SCI bush-mallow has been very low (Helenurm 1997, p. 51; Junak and Wilken 1998, p. 291; Helenurm 1999, p. 39). Germination rates in seed trials are also low, only 4 to 35 percent (Evans and Bohn 1987, p. 538; Junak and Wilken 1998, p. 291). Hypotheses for low seed set and germination rates include low pollinator visitation rates, reduced pollinator diversity, partial self-incompatibility (i.e., plants need to be pollinated by a non-closely related individual), limited survey efforts, and that seed germination may be stimulated by fire (USFWS 2022b, pp. 22–23). However, it is difficult to determine the cause of the apparent low reproductive output noted, whether low reproductive output is still an issue currently, and whether fire assists germination.

SCI bush-mallow can reproduce vegetatively, or clonally, by sprouting from rhizomes (Evans and Bohn 1987, p. 538), as well as sexually by seeds, although sexual recruitment is likely low. The ability to spread vegetatively by underground rhizomes results in patches of spatially separate but genetically identical individuals (Evans and Bohn 1987, p. 538). Occurrences are likely a mix of both genetically unique individuals (genets) and clonal individuals (ramets) that are connected underground. Although difficult to discern between ramets and genets in the field, most groups of plants are composed of ramets from an unknown number of genets, consistent with other plant species exhibiting strong clonal growth. Although growth and spread of the population has been thought to be mostly clonal (Muller and Junak 2011, p. 50), evidence of sexual reproduction includes two seedlings identified in the field (by the presence of cotyledons) on a recently burned site in 2014 (Munson 2022, pers. comm.). While the distribution of SCI bush-mallow is much greater than was known at the time of listing, difficulty and confusion with discerning between ramets and genets and low reproductive output create uncertainty about whether it is reproducing sexually or only clonally.

Two different studies of population genetics have been conducted (Helenurm 1997; Helenurm 1999). These genetic assessments along with field observations indicate that overall genetic diversity is low, but there is some level of genetic diversity within and among patches of SCI bush-mallow (i.e., based on these studies, not all individuals are clones in each area). However, due to the limitations of techniques, neither study is conclusive. Genetic diversity is presumed to have declined since the introduction of feral browsers and grazers, but we do not know historical or current levels of genetic diversity or normal rates of sexual versus asexual reproduction, so no comparisons can be made.

Overall, genetic diversity within SCI bush-mallow is still very low compared with other island endemic plant taxa (Helenurm 1999, p. 40).

This species may be subject to drought stress to some extent (from 25 to 89 percent of individuals sampled), which may reduce flowering (Muller and Junak 2011, p. 58). This species may be drought deciduous as is a closely related species of bush-mallow, *Malacothamnus fasciculatus*, but there are no physiological studies to support this conjecture; the similar phenology of SCI bush-mallow and its habitat attributes support the suggestion (Muller and Junak 2011, p. 32).

Although no information is available regarding the fire tolerance of SCI bush-mallow, other species in the same genus (e.g., *Malacothamnus fremontii*) rapidly become established after fire (Rundel 1982, p. 86). Seed germination in other species in the genus is stimulated by fire, and there is evidence that fire may also have a positive effect on SCI bush-mallow (Keeley et al. 2005, p. 175). Because of its ability to resprout from rhizomes and the adaptation of other species in the genus to fire, it is thought that SCI bush-mallow is likely resistant to fire and that its seeds may even respond positively to fire (USFWS 2008b, p. 77).

San Clemente Island Paintbrush

A thorough review of the taxonomy, life history, and ecology of the SCI paintbrush is presented in the SSA report (USFWS 2022e).

SCI paintbrush (*Castilleja grisea*) is a highly branched perennial subshrub in the broomrape family (Orobanchaceae) endemic to SCI (Chuang and Heckard 1993, p. 1021) and is the only representative of the genus *Castilleja* found on the island (Helenurm et al. 2005, p. 1222). SCI paintbrush is typically 11.5 to 31.5 in (29 to 80 cm) in height and covered with dense white, wooly hairs. Most *Castilleja* species have bisexual flowers disposed in terminal spikes. The flowers of SCI paintbrush are yellow.

SCI paintbrush is thought to have been relatively common on SCI in the 1930s and subsequently declined as a result of unchecked grazing by introduced feral herbivores (Helenurm et al. 2005, p. 1222). The complete historical range of SCI paintbrush on SCI is unknown because botanical studies were not completed before the plant's decline. Herbarium records documented the species on the south and east sides of the island before the time of listing (California Consortium of Herbaria 2019, records for *C. grisea*). By 1963, SCI paintbrush was reported as rare or occasional (Raven 1963, p. 337). Since the complete removal of feral ungulates from SCI by 1992, SCI paintbrush has been detected across the southern two-thirds of the island (Keegan et al. 1994, p. 58; Junak and Wilken 1998, p. 1-416, GIS data; Junak 2006, p. 1-176, GIS data; Tierra Data Inc. 2008, p. 1-24, appendices and GIS data; SERG 2010a and 2010b, GIS data). The current abundance and distribution of SCI paintbrush is estimated to comprise 601 locations totaling 42,104 individuals occupying 87 watersheds (see figure 3, below) (USFWS 2022e, pp. 27–29).

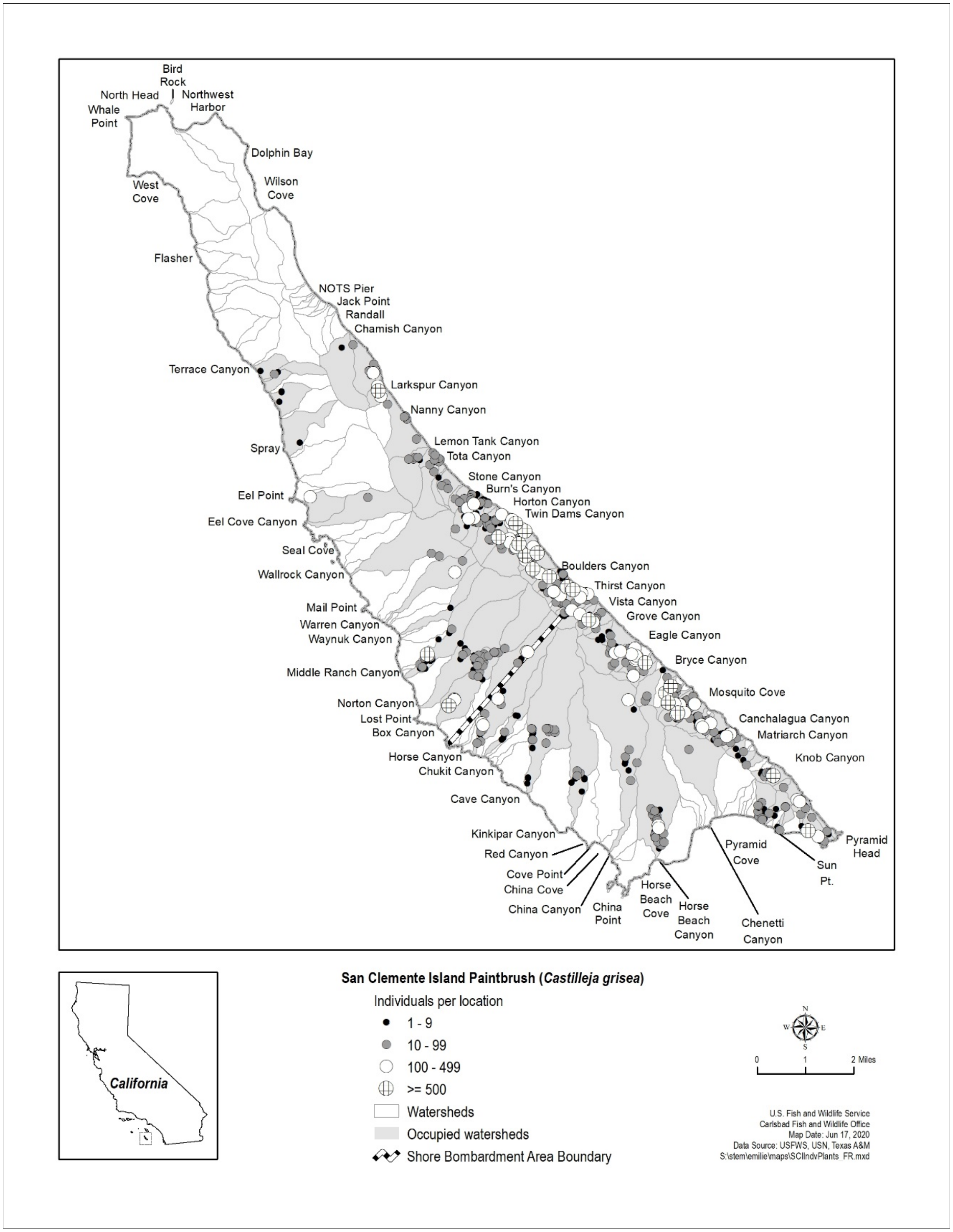

Figure 3—Map showing distribution of San Clemente Island paintbrush on San Clemente Island, CA.

Over time, the range of SCI paintbrush has expanded, and it now occupies a broad range of habitats across the island. SCI paintbrush is often associated with two major vegetation types: Canyon woodland (which encompasses approximately 696 ac (282 ha)), and maritime desert scrub (which encompasses approximately 6,228 ac (2,520 ha)). Aspect varies widely, but generally plants are found on flats and steep rocky slopes from 0–70 degrees (CNDDB 2019; Navy 2017, p. 11–24; Vanderplank et al. 2019, p. 5), and the species is found almost exclusively on non-clay soils and rocky outcrops (Vanderplank et al. 2019, p. 5). SCI paintbrush can colonize disturbed areas, and the species likely has the potential for further range expansion on SCI (Navy 2008a, pp. 3.11–3.20; Vanderplank et al. 2019, p. 5).

All members of the genus *Castilleja* are considered hemiparasitic, meaning that its roots are capable of forming parasitic connections to roots of other plants (Heckard 1962, p. 27). Plants within the genus are capable of photosynthesis and can exist without a host, but they are able to derive water, nutrients, and photosynthates from a host plant if present (Heckard 1962, p. 25). Members of the genus *Castilleja* appear to form parasitic connections with a wide range of host plant species from a wide range of families (Heckard 1962, p. 28; Atsatt and Strong 1970, p. 280; Marvier 1996, p. 1399; Adler 2002, p. 2704; Adler 2003, p. 2086; Muller 2005, p. 4). Although studies to verify host-connections have not been done, numerous plant species are associated with SCI paintbrush (Junak and Wilken 1998, p. 82; Muller 2009, pers. comm., in 77 FR 29078, p. 29096, May 16, 2012). The generalist host-selection of *C. grisea* likely aided recovery of this species as the vegetation recovered following the removal of feral browsers and grazers (Muller and Junak 2011, pp. 16–17).

SCI paintbrush typically flowers between February and May, producing yellow bisexual flowers (Chuang and Heckard 1993, pp. 1016–1024; Navy 2013a, p. 3-203). SCI paintbrush is likely self-incompatible (unable to produce viable seed through self-fertilization), as observed in other species of the genus (Carpenter 1983, p. 218; Junak and Wilken 1998, p. 84). Results of a population genetic study were consistent with an outcrossing breeding system (Helenurm et al. 2005, p. 1225). SCI paintbrush is most closely related to, and shares floral traits with, other species in the genus primarily adapted for bee pollination (Chuang and Heckard 1991, p. 658), but both insect and hummingbird pollination of *Castilleja* have been reported (Grant 1994, p. 10409; Junak and Wilken 1998, p. 84).

Although the lifespan of SCI paintbrush is unknown, its larger stature and woodier habit (general appearance or growth form) suggest it may be longer lived, which would be consistent with an estimated lifespan of 5–15 years based on observations made during repeat visits to occupied sites (Munson 2022, pers. comm.). Based on life-history, the persistence of interbreeding groups of plants may depend upon frequent production of seed (Dunwiddie et al. 2001, p. 161) as no evidence of clonal growth has been found (Muller and Junak 2010, p. 42). Population growth is primarily by recruitment from existing populations from plants that emerged from the soil seedbank following removal of feral herbivores or from plants that survived those impacts (Muller and Junak 2010, p. 42). However, the increase in SCI paintbrush's range, along with the discovery of new individuals along trails or near buildings that people frequent (O'Connor 2022, pers. comm.), suggests that the establishment of new population centers may be relatively common. The degree of fire tolerance of SCI paintbrush is unknown. It is not specifically adapted to fire, but it is likely resilient to occasional fires and has been seen to persist in areas after fires, although severe fires can kill plants and reduce numbers of individuals in a location (Muller and Junak 2011, p. 16;; Tierra Data Inc. 2005, p. 80; Vanderplank et al. 2019, p. 13).

San Clemente Island Lotus

A thorough review of the taxonomy, life history, and ecology of the San Clemente Island lotus is presented in the SSA report (USFWS 2022d).

SCI lotus (*Acmispon dendroideus* var. *traskiae*) is a semi-woody, flowering subshrub in the legume or pea family (Fabaceae). It is endemic to SCI (Isely 1993, p.

619) and is one of five taxa in the genus *Acmispon* found on the island (Tierra Data Inc. 2005, p. C–8; Brouillet 2008, pp. 388–392).

SCI lotus is typically less than 4 ft (1.2 m) tall with slender erect green branches (Munz 1974, pp. 449–450; USFWS 1984, p. 59; Allan 1999, p. 82). Each leaf has three to five leaflets, each approximately 0.2 to 0.3 in (5 to 9 millimeters (mm)) long (USFWS 1984, p. 59; Allan 1999, p. 82). SCI lotus has small yellow flowers that are bisexual and arranged in one to five flowered clusters on stalks that arise from axils between the stem and leaf of terminal shoots (Junak and Wilken 1998, p. 256). Pistils are initially yellow, turning orange then red as the fruit matures (USFWS 1984, p. 59).

The 1977 listing rule mentioned that SCI lotus occurred at Wilson Cove on the north end of the island, but no other details were available (42 FR 40682, p. 40683, August 11, 1977). In the 1984 recovery plan, SCI lotus were restricted to six "populations" associated with rocky areas, with the largest number of plants growing in the Wilson Cove area (USFWS 1984, p. 59). Only a few herbarium specimens of SCI lotus exist, making historical distribution and condition difficult to assess. Based on herbarium records, California Natural Diversity Database (CNDDB) records, and the recovery plan, the historical range includes occurrences in the northern part of the island (Wilson Cove) down to the southern point (Pyramid Head). Since the final removal of all feral herbivores by 1992, the distribution of this taxon has steadily increased (77 FR 29078, p. 29110, May 16, 2012). By 1997, roughly 50 percent of documented occurrences of these plants were found in the vicinity of Wilson Cove, and by 2004, 75 percent of the distribution of this taxon was found beyond this area and extended to the southernmost part of the island (USFWS 2007b, pp. 4–5).

The most recent survey data show the distribution of SCI lotus spans the length of the island from Wilson Cove to the southern tip east of Pyramid Cove, approximately 19 mi (31 km) (Junak and Wilken 1998, p. 261; Junak 2006, Map A–C; Vanderplank et al.

2019, p. 27). The majority of locations tend to be clustered on north-facing slopes on the eastern side of the island (Vanderplank et al. 2019, p. 7). SCI lotus tends to occur in small groups of 10 to 50 individuals (Allan 1999, p. 84). The statuses of some historical locations are unknown because they occur in areas with restricted access, such as due to unexploded ordnances, or have not been surveyed in a long time. Based on repeated surveys within some watersheds, 15 previously occupied watersheds are no longer considered occupied (USFWS 2022d, p. 26). However, the overall number of watersheds in which SCI lotus is documented increased from 4 reported during 1980–1989 surveys, to 50 reported in the period 2010–2014 (USFWS 2022d, p. 21). Despite limitations of the survey data (e.g., not all areas were surveyed during every survey period), the data indicate that the number of individuals and the range of SCI lotus have increased over time, and SCI lotus's current distribution is estimated to be 249 locations within 57 watersheds totaling 20,743 individuals (see figure 4, below) (USFWS 2022d, pp. 24–27).

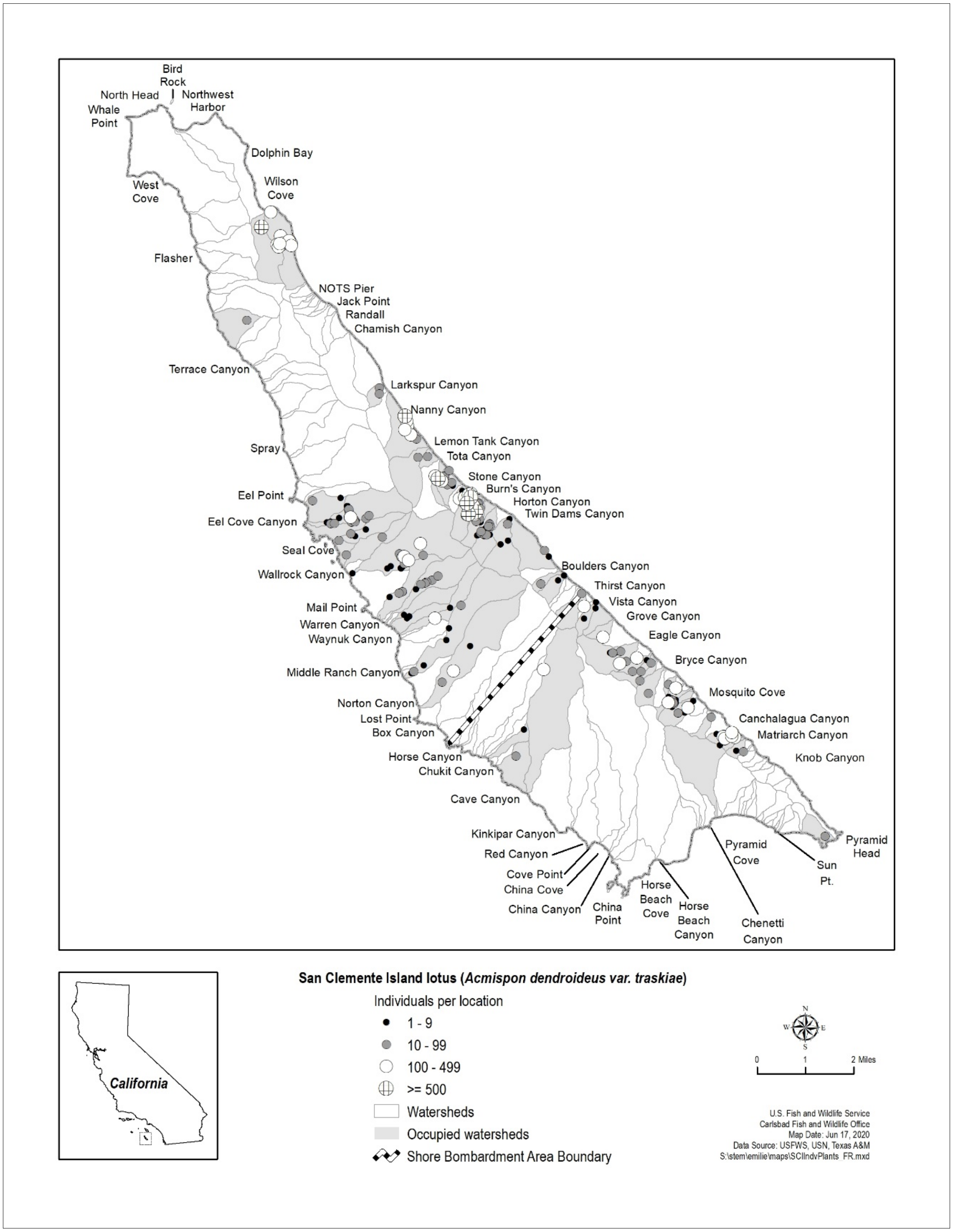

Figure 4—Map showing distribution of San Clemente Island lotus on San Clemente Island, CA.

SCI lotus establishes on north- and east-facing slopes and ridges at elevations ranging from 25 to 1,400 ft (7.6 to 463 m) and is found in canyon bottoms or along ridgelines (Junak 2006, p. 125). It appears to preferentially establish and grow somewhat colonially around rock outcrops and among large boulders situated in grassland areas and along the interface between grassland and maritime sage scrub (Allan 1999, p. 84; Navy 2002, p. D–9); SCI lotus also readily occupies disturbed sites and locations close to buildings, roads, and pipelines (Navy 2013b, p. 3-201). It occurs on well-drained soils where adequate soil moisture is available to the plant (Junak and Wilken 1998, p. 256; Navy 2002, p. D–9) and occurs mostly on clay to rocky soils (Vanderplank et al. 2018, p. 7). SCI lotus is generally associated with two habitat types on the island: canyon woodland supported on approximately 696 ac (282 ha) and maritime desert scrub along the northeastern escarpment supported on approximately 6,228 ac (2,520 ha) (Navy 2002, pp. 3.57, 3.58).

SCI lotus is short-lived, with a reported lifespan of less than 5 years (USFWS 2008b, p. 113); however, individuals near Wilson Cove have been observed to live longer than 6 years (Emily Howe 2017, pers. comm. in Vanderplank et al. 2018, p. 6). Like other legumes, the roots of plants in the genus *Acmispon* to which SCI lotus belongs are able to fix atmospheric nitrogen, making it available to plants in the form of ammonia, enriching the soil and making members of the genus *Acmispon* important post-fire colonizers (Sørensen and Sessitsch 2007 in Vanderplank et al. 2018, p. 4).

SCI lotus flowers between February and August, peaking from March to May (Junak and Wilken 1998, p. 256; USFWS 2008b, p. 113), with halictid bees (a family of small solitary bees that typically nest in the ground), bumblebees, and small beetles observed foraging on the flowers (Junak and Wilken 1998, p. 257; Allan 1999, pp. 64, 85). A sister taxon (*Acmispon glaber* [syn. *Lotus scoparius*]) flowers in response to available moisture from fog and precipitation, primarily winter rainfall (Vanderplank and Ezcurra 2015, p. 416), which may also be true of SCI lotus. The taxon is self-compatible, meaning it is capable of self-fertilization, and can self-pollinate (Allan 1999, pp. 85–86), but plants may also rely on insects for more effective pollination (Arroyo 1981, pp. 728–729).

On average, a single SCI lotus individual can produce approximately 36 to 64 flowering shoots, 118 to 144 flowers per shoot, and 4 to 6 seeds per fruit (Junak and Wilken 1998, p. 257). This information suggests that, under ideal conditions, an individual can produce a high volume of seeds (16,000 or more). Like most legumes, SCI lotus seeds require scarification (weakening or opening the seed coat to promote germination) or gradual seed coat degradation to germinate (Wall 2011, pers. comm. in 77 FR 29078, p. 29095, May 16, 2012). SCI lotus is thought to have high long-term survival in the seed bank. Germination rates for seed stored for 6 years dropped only from 80 percent to 76 percent; one seed lot displayed 65 percent germination after more than 30 years in storage (Cheryl Birker 2017, pers. comm. in Vanderplank et al. 2019, p. 6).

The majority (67 percent) of SCI lotus's genetic variability is found among, rather than within, occurrences (Allan 1999, p. 61). However, more recent genetic work (McGlaughlin et al. 2018, p. 754) has shown moderate levels of genetic diversity in the species, with gene flow between neighbor populations. The genetic diversity of SCI lotus is equal to or higher than that of the mainland variety of the same species, *Acmispon dendroideus* var. *dendroideus*, and SCI lotus also contains unique and highly divergent genotypes (Wallace et al. 2017, pp. 747–748). SCI lotus has hybridized with *A. argophyllus* var. *argenteus* in disturbed areas in Wilson Cove (Liston et al. 1990, pp. 239–240; Allan 1999, p. 86). Based on intermediate characteristics, the hybrid plants appear to be first generation (F1 generation) plants from a cross between the two varieties. It is not known whether these plants can produce viable seeds by backcrossing between the hybrids or with the putative parent plants (Allan 1999, p. 86).

The fire tolerance of SCI lotus is not well understood. Based on SCI lotus's growth characteristics and occurrence increases in areas affected by fire, and the fire adaptations of related taxa, SCI lotus may be resilient to at least occasional fire. Because it is short-lived and likely relies on its seed bank for recruitment, fire may benefit this taxon by opening up areas of bare ground for seedling germination (USFWS 2007b, p. 7). However, frequent fires could exceed its tolerance of fire severity and frequency and exhaust the seed bank in repeatedly burned areas (USFWS 2007b, p. 11; USFWS 2022d, pp. 20–21).

San Clemente Island larkspur

A thorough review of the taxonomy, life history, and ecology of the SCI larkspur is presented in the SSA report (USFWS 2022c). The SCI larkspur (*Delphinium variegatum* ssp. *kinkiense)* is an herbaceous perennial in the buttercup family (Ranunculaceae). It grows 6 to 33 in (14 to 85 cm) in height but generally is less than 20 in (50 cm) tall (Koontz and Warnock 2012, no pagination). The flowers are light blue to white in color and are bilaterally symmetrical with five petal-like sepals and four smaller petals. The uppermost sepal is a straight or downcurved spur that is characteristic for the genus.

SCI larkspur is one of two subspecies of *Delphinium variegatum* that occur exclusively on SCI, the other being Thorne's larkspur (*Delphinium variegatum* ssp. *thornei*). The island subspecies are currently distinguished primarily by flower color, with Thorne's larkspur generally having bright blue (i.e., darker), slightly larger flowers than the SCI larkspur, which generally has white flowers, consistent with distinctions noted in earlier works (Dodd and Helenurm 2000, p. 125; Koontz and Warnock 2012, no pagination). SCI larkspur occurs mostly in the northern portion of the island, and Thorne's larkspur occurs in the southern portion of the island. However, in the middle of the island (and on the far southern end), the two flower colors coexist in many locations, with varying proportions of each color, and flower colors ranging from pure white to dark purple. While ambiguity of the subspecies classifications, mostly within the central areas of the island, has caused some confusion regarding true range and distribution, the currently accepted taxonomic treatment recognizes the two subspecies and is followed in our assessment.

The historical range and distribution of SCI larkspur on SCI is unknown because botanical studies were not completed before the plant's decline. The final listing rule (42 FR 40682; August 11, 1977) did not provide specific information regarding the SCI larkspur's distribution and abundance. The 1984 recovery plan noted that the subspecies occurred in six or seven locations (USFWS 1984, pp. 17, 35). The true range and distribution of SCI larkspur on SCI is somewhat unknown due to the ambiguity of the subspecies classifications, particularly in the central areas of the island where SCI larkspur and Thorne's larkspur co-occur, as do plants exhibiting characteristics intermediate between the two subspecies. While various delineations have been used to classify mixed occurrences (USFWS 2022c, p. 22), SCI larkspur is generally found mid-island on gentle slopes on the eastern side of the island, although the species has also been detected at higher elevations on the west side of the island (USFWS 2022c, p. 22). Since grazing pressure was removed on SCI, both subspecies of *Delphinium variegatum* have been noted to have expanded dramatically (O'Brien 2019, pers. comm.). The species' ability to go dormant also contributes to difficulties in determining population counts. The current distribution and abundance estimate of SCI larkspur is 18,956 individuals within 22 watersheds (see figure 5, below). Occupancy at two additional watersheds has been reported, but population counts are not available at these locations (USFWS 2022c, pp, v., 36).

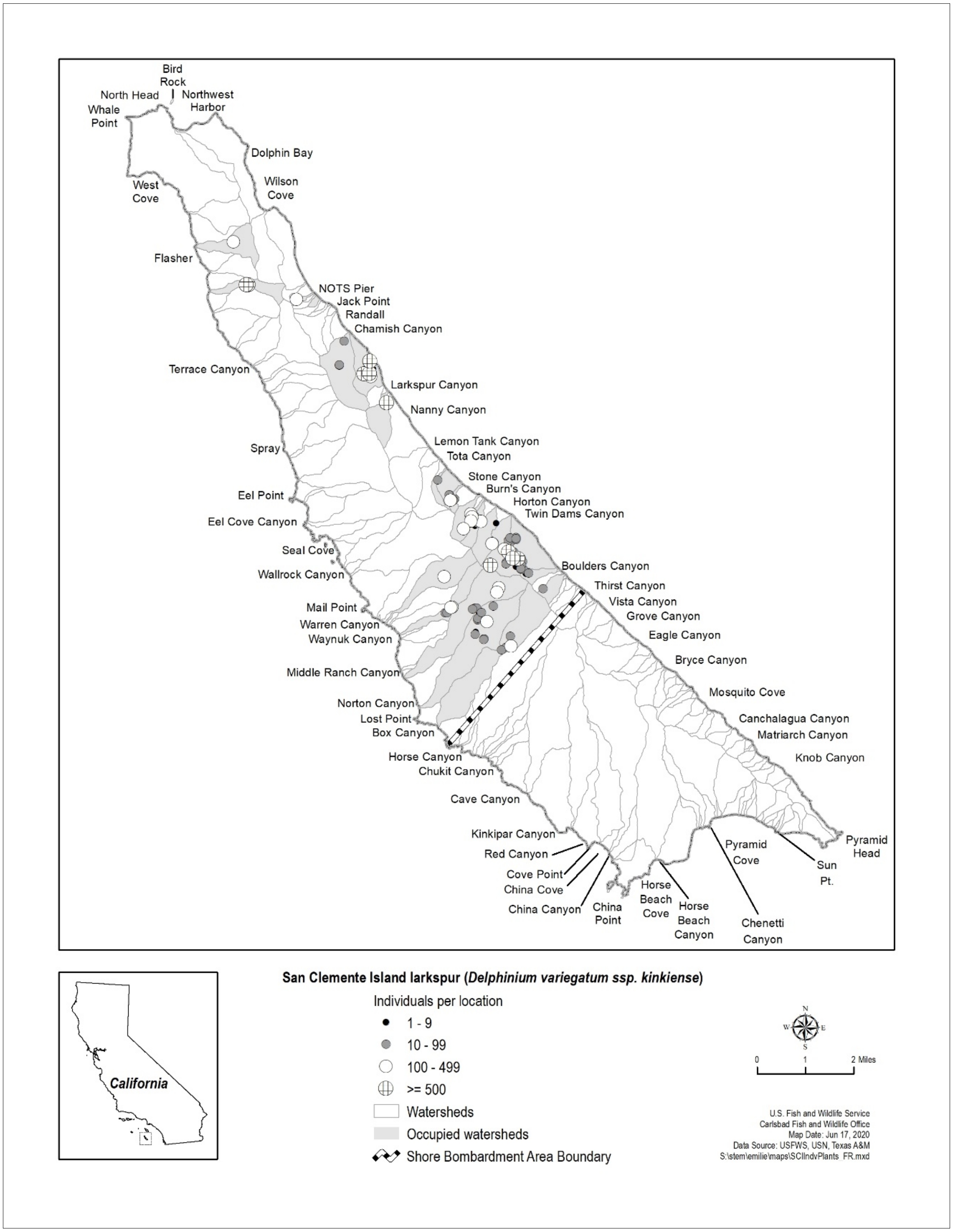

Figure 5—Map showing distribution of San Clemente Island larkspur on San Clemente Island, CA.

SCI larkspur is found in a broad range of habitats within the same general vegetation types and is widespread across the island. SCI larkspur is generally found within mid- to high-elevation grasslands on the east side of the northern and central portions of the island where it occurs in clay, loam, and rocky soils with soil depths ranging from shallow to deep; however, it is more often associated with non-clay soils (Vanderplank et al., 2022.). Reported habitats have included coastal grasslands (Koontz and Warnock 2012, no pagination), as well as grassy slopes and benches, open grassy terraces, and chaparral and oak woods (Warnock 1993 in USFWS 2008a, p. 12). Currently, SCI larkspur occurs primarily on the east side of the island on gentle slopes with northern, northwestern, and eastern exposures. The higher elevation plateau supports grasslands dominated by the native perennial bunch-grasses interspersed with annual forbs while the mid- and lower-elevation grasslands tend to be less floristically diverse and dominated by introduced annual grasses. They are primarily found within vegetation communities dominated by *Artemisia californica*, nonnative grasslands, and *Baccharis pilularis* (Vanderplank et al., 2022.).

Flower production in *Delphinium* can be highly variable and may be dependent upon quite localized weather conditions (Lewis and Epling 1959, p. 512) and soil moisture (Inouye et al. 2002, pp. 545, 549). Plants may not flower until reaching 2 to 3 years of age (e.g., Waser and Price 1985, p. 1727 in reference to *D. nelsonii*).

SCI larkspur generally flowers from March to April (California Native Plant Society 2001, in USFWS 2008a, p. 3), but has been documented flowering from January to April (Koontz and Warnock 2012, no pagination). Blue and white flowered *Delphinium* species are largely pollinated by bumblebees (Waser and Price 1983, p. 343; Waddington 1981, p. 154). Several different species of pollinators have been observed visiting SCI larkspur (USFWS 2022c, p. 28; Junak and Wilken 1998, p. 120; Munson 2022, pers. comm.; SERG 2015b, p. 13). Given the spur-length of San Clemente Island larkspur, bumblebees or hummingbirds may be the primary pollinators (Jabbour et al. 2009, p. 814). Successful outcrossing within island populations indicates that pollination is effective; therefore, populations of pollinators are likely to be ample.

Like most other California larkspurs, SCI larkspur can survive below ground when conditions are unfavorable and may remain dormant and not appear above-ground for one or more years. The species begins to go dormant shortly after flowering, remaining dormant until early in the rainy season. Although we have no information on the lifespan of SCI larkspur, based on information regarding other species of larkspurs, it is likely that the subspecies is relatively long-lived (USFWS 2022c, p. 28). Because of the species' ability to go dormant, and additionally because flower production in *Delphinium* can be highly variable and may be dependent upon quite localized weather conditions, exact numbers of individuals are difficult to locate and count.

In comparison with other endemic plant species, *Delphinium variegatum* appears to be typical in its pattern of genetic diversity relative to its geographic range at both the population and taxon levels (Dodd and Helenurm 2002, p. 619). However, in comparison with other *Delphinium*, the genetic variation observed for the insular taxa of *D. variegatum* appears to be low. The data suggest that there is a higher level of gene flow among adjacent populations. If estimates of historical gene flow are indicative of current patterns, then gene flow among the 24 island populations studied appears to be high enough to prevent genetic differentiation among them. This finding is consistent with the general low level of genetic differentiation found among populations of other species in the genus *Delphinium* (Dodd and Helenurm 2002, pp. 619–620).

Little is known regarding the fire tolerance of SCI larkspur. However, its dormancy period (roughly May or June through November) and the fire season generally coincide (O'Connor 2022, pers. comm.; Navy 2009, p. 4.22). The possible benefits of fire to SCI larkspur include reduction in competitive shading and/or nutrient uptake, which would likely increase flowering and possibly visibility to pollinators.

Recovery

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Recovery plans must, to the maximum extent practicable, include objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the Lists.

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently and that the species is robust enough that it no longer meets the definition of an endangered species or a threatened species under the Act. In other cases, we may discover new recovery opportunities after having finalized the recovery plan. Parties seeking to conserve the species may use these opportunities instead of methods identified in the recovery plan. Likewise, we may learn new information about the species after we finalize the recovery plan. The new information may change the extent to which existing criteria are appropriate for identifying recovery of the species. The recovery of a species is a dynamic process requiring adaptive management that may, or may not, follow all guidance provided in a recovery plan.

In 1984, we published the Recovery Plan for the Endangered and Threatened Species of the California Channel Islands (recovery plan); it addresses the five species in this final rule, plus some additional species (USFWS 1984, entire). The recovery plan preceded the 1988 amendments to the Act outlining required elements of recovery plans. As such, the recovery plan does not include recovery criteria, but followed guidance in effect at the time it was finalized. Rather than including specific criteria for determining when threats have been removed or sufficiently minimized, the recovery plan identifies six objectives to achieve recovery of the Channel Island species. Given the threats in common to the species addressed, the recovery plan is broad in scope and focuses on restoration of habitats and ecosystem function. The six objectives identified in the recovery plan are:

- Objective 1: Identify present adverse impacts to biological resources and strive to eliminate them.
- Objective 2: Protect known resources from further degradation by: (a) Removing feral herbivores, carnivores, and selected exotic plant species; (b) controlling erosion in sensitive locations; and (c) directing military operations and adverse recreational uses away from biologically sensitive areas.
- Objective 3: Restore habitats by revegetation of disturbed areas using native species.
- Objective 4: Identify areas of San Clemente Island where habitat restoration and population increase of certain addressed taxa may be achieved through a careful survey of the island and research on habitat requirements of each taxon.
- Objective 5: Delist or downlist those taxa that achieve vigorous, self-

sustaining population levels as the result of habitat stabilization, habitat restoration, and prevention or minimization of adverse human-related impacts.

- Objective 6: Monitor effectiveness of recovery effort by undertaking baseline quantitative studies and subsequent follow up work (USFWS 1984, pp. 106–107).

The Navy has taken a variety of recovery actions to achieve the recovery plan's objectives. These include:

- Removing all feral herbivores, which was achieved in 1992.
- Monitoring and control of the expansion of highly invasive, nonnative plant species on an ongoing basis since the 1990s (O'Connor 2022, pers. comm.).
- Implementing a nonnative wildlife program (nonnative predator management) initiated by the Navy in 1992 (USFWS 2008b, p. 172).
- Conducting and funding surveys, research, and monitoring to better understand the ecology and habitat requirements of sensitive species and monitoring their status and the effectiveness of recovery efforts.
- Conducting long-term vegetation monitoring studies.
- Conducting propagation and outplanting (transplant individuals from the greenhouse to vegetative communities) of non-listed native species through a contract with the San Diego State University Soil Ecology and Restoration Group (SERG) (Navy 2013a, p. 3-5). Although the restoration efforts were not specifically designed for the benefit of the species addressed in this final rule, restoration of the island's vegetation communities has helped to improve habitat suitability for the subject species by reducing the spread of invasive, nonnative plants and restoring ecological processes.
- Conducting annual reviews of fire management and fire occurrences, allowing for adaptive management to minimize the frequency and spread of fires. For example, in 2017, after a large fire that burned part of the eastern escarpment had seemingly gone out, the fire restarted the next day and response was therefore delayed. This occurrence

prompted a change in how the Navy monitors fires that are thought to be extinguished (O'Connor 2022, pers. comm.).

- Addressing assault vehicle-related erosion through development of an erosion control plan for the AVMAs (Navy 2013b, entire). The Navy also incorporates erosion control measures into all site feasibility studies to minimize impacts from erosion and avoid impacts to listed species.

San Clemente Island Integrated Natural Resources Management Plan

Contributions to meeting the recovery objectives include adoption and implementation of the SCI Integrated Natural Resources Management Plan (INRMP). The Navy adopted the SCI INRMP in 2002 (Navy 2002, entire) and updated it again in 2013 (Navy 2013a, entire). An INRMP is intended to guide installation commanders in managing their natural resources in a manner that is consistent with the sustainability of those resources, while ensuring continued support of the military mission (Navy 2002, p. 1-1). The INRMP identifies goals and objectives for specified management units and their natural resources, including measures to protect, monitor, restore, and manage special status species and their habitats. The Navy identifies and addresses threats to special status species during the INRMP planning process. If possible, threats are ameliorated, eliminated, or mitigated through this procedure.

The SCI INRMP outlines management actions for invasive species control island-wide, including near listed species; biosecurity protocols; restoration of sites that support sensitive plants; habitat enhancement for sensitive and listed species; fuel break installation to minimize fire spread; and fire suppression to protect endangered, threatened, and other priority species. The Navy also developed and implements specific plans for some management issues, including the SCI Wildland Fire Management Plan; Erosion Control Plan; and the Naval Auxiliary Landing Field San Clemente Island

Biosecurity Plan. For additional details on the Navy's implementation of recovery efforts, see "Conservation Actions and Regulatory Mechanisms," below.

Interim progress on achieving the recovery objectives resulted in improvements in the status of SCI paintbrush and SCI lotus such that our 2007 5-year reviews recommended reclassification (USFWS 2007a, p. 14; USFWS 2007b, p. 17), and both species were subsequently reclassified from endangered species to threatened species (78 FR 45406, July 26, 2013). We also recommended in our 2007 5-year review for SCI bush-mallow and 2008 5-year review for SCI larkspur that they be reclassified as threatened (USFWS 2007c, p. 22; USFWS 2008a, p. 26).

While the recovery plan did not include specific metrics, the plan's objectives have largely been achieved for these five species through removal of nonnative herbivores and subsequent recovery of native plant communities, and through restoration and management actions implemented by the Navy to improve habitat and control threats related to erosion, invasive species, fire, and land use. As a result of these actions, habitat has been sufficiently restored and managed on the island and supports self-sustaining populations for each of these five taxa.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for threatened and endangered species. In 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR parts 17 and 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020 and 84 FR 44752; August 27, 2019).

However, on July 5, 2022, the U.S. District Court for the Northern District of California vacated the 2019 regulations (Center for Biological Diversity v. Haaland, No. 4:19-cv-05206-JST, Doc. 168 (N.D. Cal. July 5, 2022) (CBD v. Haaland)), reinstating the regulations that were in effect before the effective date of the 2019 regulations as the law governing species classification and critical habitat decisions. Subsequently, on September 21, 2022, the U.S. Circuit Court of Appeals for the Ninth Circuit stayed the district court's July 5, 2022, order vacating the 2019 regulations until a pending motion for reconsideration before the district court is resolved (In re: Cattlemen's Ass'n, No. 22-70194). The effect of the stay is that the 2019 regulations are the governing law as of September 21, 2022.

Due to the continued uncertainty resulting from the ongoing litigation, we also undertook an analysis of whether this final rule would be different if we were to apply the pre-2019 regulations. That analysis, which we described in a separate memo in the decisional file and posted on *https://www.regulations.gov*, concluded that we would have reached the same proposal if we had applied the pre-2019 regulations because both before and after the 2019 regulations, the standard for whether a species warrants delisting has been, and will continue to be, whether the species meets the definition of an endangered species or a threatened species. Further, we concluded that our determination of the foreseeable future would be the same under the 2019 regulations as under the pre-2019 regulations.

The Act defines an endangered species as a species that is "in danger of extinction throughout all or a significant portion of its range," and a threatened species as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether any species is an "endangered species" or a "threatened species" because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We consider these same five factors in reclassifying a species from an endangered species to a threatened species or removing a species from the Lists (50 CFR 424.11(c) through (e)).

We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors. The SSAs estimated the future condition of each species at 20–30 years, and we use that timeframe as the foreseeable future in this rule.

Analytical Framework

The SSA reports document the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including assessments of the potential threats to the species. The SSA reports do not represent our decisions on whether any of the species should be delisted or reclassified under the Act. They do, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA reports; the full SSA reports can be found at Docket No. FWS-R8-ES-2020-0074 on *https://www.regulations.gov*.

To assess species viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, severe wildfire); and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes, successional changes to habitat). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decisions.

Summary of Biological Status and Threats

Below, we review the biological condition of the species and their resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

Each of the five SCI species occurs as a single population with no natural division in their ranges. However, for assessing species resilience and for monitoring and tracking the plant species in the future, we divided the species' ranges into watershed units to quantify threats across the range. Watersheds were suggested for use in delineation for monitoring purposes by the Navy (Vanderplank et al. 2019, pp. 6–7), as every point on the island can be easily assigned to a watershed, and watershed boundaries on SCI are not expected to change significantly during the 20- to 30-year timeframe of this analysis. These units are not meant to represent "populations" in a biological sense; rather, these units were designed to subdivide the species' ranges in a way that facilitates assessing and reporting the variation in current and future resilience across the range. In the SSAs for the plant species, we assessed the species' ability to withstand stochastic events in each watershed, and how these occupied watersheds contribute to the viability of the entire island population (the species). Note that this way of delineating analysis units within which to measure resiliency does not follow the methods used in the July 26, 2013, rule reclassifying SCI paintbrush and SCI lotus (78 FR 45406), and it is therefore not directly comparable. However, the watersheds that are represented correspond to the extant occurrences described in the July 26, 2013, reclassification rule (USFWS 2022d, pp. 82–85; USFWS 2022e, pp. 89–92).

To assess species resilience for SC Bell's sparrow, we followed the approach used in annual breeding season surveys. Annual breeding season surveys divide the island into eight vegetation strata, estimate the SC Bell's sparrow density in each strata, and extrapolate the density across the strata to obtain a population estimate for the strata. We assessed the resiliency of the subspecies within each of these strata in terms of the estimated population size, and combined the strata results to assess the resiliency of the subspecies. The vegetation strata do not represent "populations" in a biological sense; as with the plant species, these units subdivide the species' range in a way that facilitates assessing and reporting the variation in current and future resilience across the range.

Species Needs

Our SSA framework generally includes identifying the species' ecological requirements for survival and reproduction at the individual, population, and species levels. However, population-level and species-level needs, such as number of individuals or reproductive success necessary to maintain an occurrence, level of gene flow or dispersal, etc., are not well understood for any of the five species. Where information is lacking or incomplete, we make certain scientific assumptions based on principles of conservation biology to conduct our analyses. In each of the plant SSAs, we make the assumption that, for the plant species, higher numbers of individuals within a watershed correlate with greater resilience and, conversely, watersheds with fewer individuals or with only one occupied location within the watershed have lower resiliency. Similarly, for SC Bell's sparrow, our models in the SSA assume that density correlates with greater resilience, and that vegetative strata with greater densities have greater resilience.

Risk Factors for the San Clemente Island Species

We reviewed the potential risk factors (i.e., threats, stressors) that could be affecting the five SCI species now and in the foreseeable future. In this final rule, we will discuss only those factors in detail that could meaningfully impact the status of the species. Those risks that are not known or unlikely to have effects on the status of the SCI species, such as disease or seed predation, are not discussed here, but are evaluated in the SSA reports. Many of the threats and risk factors are the same or similar for each of the species. Where the effects are expected to be similar, we present one discussion that applies to all species. Where the effects may be unique or different to one species, we address that species specifically. Many of the risk factors affect both habitat (quantity and quality) and individuals of the species (disturbance, injury, or mortality). The primary risk factors (i.e., threats) affecting all the SCI species are: (1) Past, current, and future land use, including military training activities (Factors A and E from the Act); (2) erosion (Factor A); (3) invasive species (Factors A and E); (4) fire and fire management (Factors A and E); and (5) climate change (Factors A and E). Additional risk factors for some of the species include predation (Factor C), drought (Factors A and E), small population size (Factor E), and reduced genetic diversity (Factor E). Finally, we also reviewed the conservation efforts being undertaken for the species.

Past Land Use

The current habitat conditions for listed species on SCI are partly the result of historical land use practices. SCI was used legally and illegally for sheep ranching, cattle ranching, goat grazing, and pig farming (77 FR 29078, p. 29093, May 16, 2012; Navy 2013a, p. 2-3). Goats and sheep were introduced early by the Europeans, and cattle, pigs, and mule deer were introduced in the 1950s and 1960s (Navy 2013a, p. 3-185). These nonnative herbivores greatly changed the vegetation of SCI and were the main cause of the SCI species' decline (42 FR 40682, p. 40683, August 11, 1977). Persistent grazing and browsing defoliated large areas of the island, and the animals' trampling caused trail proliferation, which exacerbated erosion, altering plant communities on SCI and leading to severe habitat degradation and loss of suitable habitat that likely curtailed the range of endemic plants and animals on the island. Grazing and ranching on the island also facilitated the introduction and spread of nonnative plants (Navy 2002, p. 3-31).

All nonnative ungulates were removed by 1992 (Keegan et al. 1994, p. 58; 77 FR 29078, p. 29093, May 16, 2012). Since then, the vegetation on SCI has rebounded, and habitat conditions have improved, leading to changes in the cover of native and nonnative plants on the island, further evidenced by the increases in endangered and threatened taxa since the feral animals were removed (Uyeda et al. 2019, pp. 6, 22, 30). While nonnative herbivores have been successfully removed and are no longer directly affecting native plant communities, continuing impacts include areas vulnerable to erosion that have not fully recovered, the presence of invasive species, and the interaction of nonnative grasses with fire. The past and continuing effects of erosion, invasive species, and fire are discussed further below.

Overview of Current Land Use

SCI is owned by the Navy and is the primary maritime training area for the Pacific Fleet and Sea Air and Land Teams (77 FR 29078, May 16, 2012). The island also supports training by the Marine Corps, the Air Force, the Army, and other military organizations. As the westernmost training range in the eastern Pacific Basin, where training operations are performed prior to troop deployments, portions of the island receive intensive use by the military (Navy 2008a, p. 2.2).

Infrastructure, including runways, buildings, fuel distribution network, training facilities, berthing areas, and associated development, is concentrated at the northern half of the island. The remainder of the island supports scattered operations buildings, training facilities, an electrical distribution system, and Ridge Road running along the central plateau of the island. In addition to existing infrastructure, military exercises and training activities occur within designated training areas on the island and have the potential to affect the SCI species (see table 1, below). Altogether, 34.8 percent of the island's area is currently in one of these training areas, although training does not occur uniformly within each area. Military training activities can involve the movement of assault vehicles and troops over the landscape and can include live munitions fire, incendiary devices, demolitions, and bombardment.

The Shore Bombardment Area (SHOBA) occupies roughly the southern third of the island and encompasses approximately 13,824 ac (5,594 ha) (Navy 2008a, p. 2-7, Navy 2009, p. 2-4). Areas of intensive use within SHOBA include two Impact Areas and three Training Areas and Ranges (TARs). Impact Areas support naval gun firing, artillery firing, and air-to-ground bombing (Navy 2008a, p. 2-7; Navy 2013a, p. 2-8). Much of the remainder of SHOBA serves as a buffer around Impact Areas; thus, 59 percent of SHOBA is not within intensive training areas subject to direct training activities. Some areas, particularly the escarpment along the eastern coast, have limited training value because precipitous terrain hinders ground access.

Due to military training activities, land use has been considered a threat to listed species on SCI. Training and other land use activities have multiple potential impacts, including trampling or crushing individuals or groups of plants; disturbance of nesting birds or injury or mortality of nestlings; and habitat impacts including disturbances to soil and vegetation, spread of nonnative plant species, creation of road ruts and trails, compaction of soils, and fires (USFWS 2008b, pp. 96–99). Erosion, nonnative species, and fire are discussed separately from military training in this final rule.

TABLE 1—SUMMARY OF CURRENT MILITARY TRAINING AREAS AND THEIR POTENTIAL THREATS TO SPECIES ON SAN CLEMENTE ISLAND, CA

Training area	Size (Acres)	Percent of island*	Use	Threat/Stressor
Assault Vehicle Maneuver Areas (3)	1,060.5	2.9%	Vehicular maneuvering	Soil erosion, trampling, devegetation (habitat removal);

				disturbance, injury, or mortality of individuals
Infantry Operations Area	8,827.6	24.5%	Dispersed foot traffic	Trampling, soil erosion; disturbance, injury, or mortality of individuals
Training Areas and Ranges (TARs) (20)	1,968.2	5.5%	Varies by TAR: demolition, small arms, combat, etc.	Varies by TAR, but limited to trampling, fires, localized ground disturbance; disturbance, injury, or mortality of individuals
Impact Areas (2)	3,399.7	9.4%	Bombing, live fire	Devegetation (habitat removal), fires; disturbance, injury, or mortality of individuals

*Because several training areas overlap, percentages total more than the 34.8 percent of the island's area located in training areas.

Overview of Future Land Use

The Navy is drafting an environmental assessment to evaluate future training areas, exercises, and frequency on SCI. Training frequency and intensity in existing training areas will increase in the future, and new training areas, including landing zones (LZs), AVMAs, and a new TAR may be established. Up to 19 new helicopter LZs may be designated, and we anticipate impacts associated with training could occur within about 500 feet of each LZ. Future training may include up to 13 new AVMAs, 6 of which overlap with existing training areas. We anticipate impacts associated with this training could occur within about 500 feet of each AVMA. Future training also includes one new TAR (TAR 23), which will be located on the northwestern shore of SCI, within significant high-quality boxthorn habitat that is proposed as an SCI Bell's Sparrow Management Area. For our analysis in this final rule, we assessed these additional training areas, the anticipated impacts, and the conservation measures the Navy will implement to ensure the viability of the five SCI species.

TABLE 2—SUMMARY OF PROPOSED MILITARY TRAINING AREAS AND THEIR POTENTIAL IMPACTS TO SPECIES ON SAN CLEMENTE ISLAND, CA

Training area	Size (Acres)	Percent of island	Use	Threat/Stressor
Landing Zones	432	1.2%	Landing and staging of aircraft	Soil erosion, trampling, devegetation (habitat removal), disturbance, injury, or mortality of individuals

Assault Vehicle Maneuver Areas	879	2.4%	Vehicular maneuvering	Soil erosion, trampling, devegetation (habitat removal); disturbance, injury, or mortality of individuals
Training Area and Range #23	587	1.6%	Sniper use	Trampling, localized ground disturbance; disturbance, injury, or mortality of individuals

Land Use for Military Training

San Clemente Bell's sparrow—SC Bell's sparrows may be adversely affected in habitat within and surrounding current and future training areas. Potential adverse effects include modification and degradation of habitat, as well as the disturbance, injury, or death of individual SC Bell's sparrows and loss of active SC Bell's sparrow nests (USFWS 2008b, p. 174). However, because the timing, intensity, and frequency of training activities vary widely and SC Bell's sparrow density also varies, impacts associated with training in various training areas is very difficult to predict or measure. In addition, SC Bell's sparrow may tolerate an undetermined level of adjacent training-related disturbance. For example, monitoring of SC Bell's sparrow densities in habitat adjacent to two TARs within high-density SC Bell's sparrow habitat did not detect major changes to SC Bell's sparrow densities in the time period 2015–2018 (Meiman et al. 2019, pp. 9, 20–23, 38–39).

Plants—Military training activities within training areas (primarily the Infantry Operations Area, TARs, and AVMAs) can entail the movement of vehicles and troops over the landscape and thus include the potential of trampling or crushing individuals or groups of plants, or removal of habitat. Naval gun firing, artillery firing, and air-to-ground bombing occurs within the Impact Areas, and can result in the destruction of habitat, injury or mortality of individual plants, and fires. Where the distributions of the plant taxa overlap with training areas, there is potential for impacts to individuals and to habitat. Tables 3 and 4, below, detail the number of locations, individuals, and percent of population of each of the plant taxa that could occur within current and future training areas. Percent of populations within training areas range from less than 1 percent to 13 percent. However, all land within each training area is not used for training, and frequency and intensity of training vary among areas and uses, such that only a subset of individuals within any training area is likely to be affected. Additionally, some effects are minor, such as trampled leaves or broken branches (i.e., injury but not mortality), and frequency of training impacts may allow sufficient time for individuals and habitats to recover.

Conservation Actions To Be Implemented by the Navy

The Navy will incorporate conservation and minimization measures into plans for current and future training areas to reduce potential for impacts, including erosion control measures for recently proposed AVMAs (comparable to significant erosion control measures at existing AVMAs), fire management measures to address recently proposed training areas (in an updated SCI Wildland Fire Management Plan, and SC Bell's sparrow minimization measures identified in the SSA, regardless of listing status of the five species.

TABLE 3—NUMBERS OF LOCATIONS, WATERSHEDS, AND INDIVIDUALS OF PLANT TAXA THAT OCCUR WITHIN EXISTING MILITARY TRAINING AREAS ON SAN CLEMENTE ISLAND (SCI)
[USFWS 2022B, P. 45; USFWS 2022C, P. 52; USFWS 2022D, P. 36; USFWS 2022E, P. 37]

Species	Locations	Watersheds	Individuals	Percent of population
SCI paintbrush	74	19	2,089	4.34%
SCI lotus	4	4	22	0.11%
SCI larkspur	10	4	1,847	9.74%
SCI bush-mallow	42	1	731	13%

TABLE 4—NUMBERS OF LOCATIONS, WATERSHEDS, AND INDIVIDUALS OF PLANT TAXA THAT OCCUR WITHIN POTENTIAL MILITARY TRAINING AREAS ON SAN CLEMENTE ISLAND (SCI)
[USFWS 2022B, P. 45; USFWS 2022C, P. 52; USFWS 2022D, P. 36; USFWS 2022E, P. 37]

Species	Locations	Watersheds	Individuals	Percent of population
SCI paintbrush	7	6	50	0.12%
SCI lotus	11	1	651	3.14%
SCI larkspur	0	0	0	0%
SCI bush-mallow	0	0	0	0%

Summary—While ongoing military training activities have the potential to impact all five SCI species, the majority of locations and habitats currently occur outside intensive training areas. Within training areas that overlap with the species' distributions, many effects are expected to be infrequent, minor, or temporary. Additionally, the Navy is committed to protecting and managing natural resources on the island through revision and continued implementation of the SCI INRMP (Navy 2013a), which outlines measures for managing land and water resources on the island, including listed and sensitive species, and which will be revised as needed to incorporate additional measures to address impacts from future training. Other conservation plans being enacted by the Navy will also be modified as needed to address future impacts. Training is expected to continue within the revised training footprint used for this analysis, but intensity of training could increase in the future. Changes to training have and will continue to be subject to environmental review under applicable laws and regulations, and impacts to federally listed and sensitive species will be evaluated (O'Connor 2022, pers. comm.). Projects and changes in training areas are subject to the Navy's site approval and review process, which includes identifying avoidance and minimization measures for plant communities and sensitive species, including measures that are recommended in the SCI INRMP (Navy 2013a, pp. 4-23, 4-28). Coupled with ongoing management of related threats (including wildland fire, soil erosion, invasive species) under the SCI INRMP and implementation of post-delisting monitoring, it is highly unlikely that future changes in military training on SCI will impede or reverse advances in the recovery of these five species.

Invasive and Nonnative Species

Along with the introduction of feral, nonnative herbivores, many other nonnative species have been introduced to the island. While nonnative, feral grazers have been completely removed from SCI, other nonnative species have become established and have the potential to negatively affect species and their habitats. These include feral cats (*Felis catus*), black rats (*Rattus rattus*), and many species of nonnative plants, especially nonnative annual grasses. Feral cats and black rats can prey on eggs, chicks, and adult SC Bell's sparrows. Nonnative plant species may alter ecological processes and habitats, while also directly competing with native plant species.

Predation by black rats and feral cats—Since listing, predation on SC Bell's sparrow by introduced black rats and feral cats and by native predators has been documented (USFWS 2022a, p. 57). While total population sizes of feral cats and black rats on the island are unknown and have not been estimated, the Navy conducts management activities for both on the island. Nonnative wildlife management implemented through the INRMP focuses on control of feral cats throughout the island and rodent control near San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*) nest sites (Meiman et al. 2015, p. 2). This program, while unlikely to completely eradicate feral cats and black rats, affords some protection to the SC Bell's sparrow, primarily through cat removal. Black rats remain commonly recorded nest predators (Meiman et al. 2018, p. 26). Despite the persistence of and current inability to eradicate black rats, the SC Bell's sparrow population expanded over the past two decades, increasing in abundance and distribution.

Nonnative plants—Contemporaneous with and likely aided by feral grazing animals, many invasive, nonnative plant species have become naturalized on SCI and are now widespread (USFWS 2022b, pp. 47–49; USFWS 2022c, pp. 57–58; USFWS 2022d, pp. 40–41; USFWS 2022e, p. 43). Nonnative plants can alter habitat structure and ecological processes such as fire regimes, nutrient cycling, hydrology, and energy budgets, and they can directly compete with native plants for water, space, light, and nutrients (77 FR 29078, p. 29117, May 16, 2012). In addition to altering habitat, potential impacts of nonnative plants on the four SCI plant species include precluding germination (i.e., competitive exclusion) and reducing or preventing pollination (e.g., by growing densely around plants and thereby making them less obvious or less accessible to pollinators). The invasion of nonnative annual grasses on the island may have caused the greatest structural changes to habitat, especially on the coastal terraces and in swales (USFWS 2007a, pp. 4–5). Annual grasses vary in abundance with rainfall, potentially changing the vegetation types from shrublands to grasslands and increasing the fuel load in wet years and interacting with fire (Battlori et al. 2013, p. 1119). The effects of fire are discussed separately below.

While nonnative plants, especially nonnative annual grasses, have the potential to adversely affect the listed plant species, nonnative grasses are present but not a dominant component of the plant communities at the majority of occurrences of the four SCI plant species. SCI paintbrush and SCI lotus are often associated with vegetation types where nonnative grasses are present but do not represent a dominant component of the plant community (Junak and Wilken 1998, p. 261; Tierra Data Inc. 2005, pp. 29–42; USFWS 2007b, pp. 6–7; Vanderplank et al. 2019, p. 12). Surveys conducted in 2011 and 2012 found just 4 occurrences (170 individuals) of SCI paintbrush in communities dominated by invasive grasses and no SCI lotus in communities dominated by nonnative grasses (Vanderplank et al. 2019, p. 12). Nonnative grasses do not occur densely within canyons, where SCI bush-mallow occurs, and it does not appear as if grasses are expanding, although they have been present on the island for many decades.

SCI larkspur occurs within grasslands that have experienced a proliferation of nonnative plant species, especially annual grasses. Surveys conducted between 2011 and 2017 found 13 of 74 locations of SCI larkspur in communities dominated by invasive grasses (Navy, unpublished data; Vanderplank et al., 2022).

While nonnative plant species, including nonnative annual grasses, are extensively distributed across SCI both because of post-grazing colonization of weedy species in highly disturbed habitat and accidental introduction of new weeds through human activities, there is no indication they are impeding recovery. Since the removal of feral grazers, all vegetation communities have been recovering, and naturalized grasslands (the most fire-prone of nonnative vegetation communities) currently constitute a small proportion of the island, approximately 10.6 percent of the island area (Navy 2013a, p. 3.59). In addition, the island now has more intact habitats, reduced erosion, and a stronger suite of native competitor species, making the conditions less favorable to invasion. The Navy makes significant efforts to control highly invasive, nonnative perennial grasses and nonnative forbs to preclude their expansion into habitat areas and areas in which weed control would be difficult due to terrain and access challenges, and the Navy has monitored and controlled the expansion of highly invasive, nonnative plant species on an ongoing basis since the 1990s (O'Connor 2022, pers. comm.). Many conservation measures are included in the INRMP to limit the introduction and spread of nonnative plants (Navy 2013a, pp. 3.289–3.290). The Biosecurity Plan (Navy 2016, entire) will continue to effectively control the arrival of potentially invasive propagules. The plan contains actions recommended to avoid introduction of new invasive species and works to prevent and respond to new introductions of nonnative species and bio-invasion vectors. Despite the existence of nonnative plants on SCI, the four SCI plant species have expanded in distribution and abundance since listing (42 FR 40682, August 11, 1977).

Erosion

Degradation of the vegetation due to the browsing of feral goats and rooting of feral pigs modified the island's habitat significantly and resulted in increased erosion and soil loss over much of the island, especially on steep slopes where denuded soils could be quickly washed away during storm events (Johnson 1980, p. 107; Tierra Data Inc. 2007, pp. 6–7; Navy 2013a, pp. 3.32–3.33). Since the feral animals were removed, much of the vegetation has recovered, and natural erosion on the island has decreased significantly (Navy 2013a, p. 3-33; Vanderplank et al. 2019, p. 15). Erosion problems currently are limited to localized areas, and because of topography and soil characteristics, the potential will always exist for localized erosion to occur at sites across the island. Periods of heavy rainfall can cause localized erosion, but these areas are difficult to predict.

In addition to erosion caused by past land uses, current and future military training activities and the existing road network could lead to erosion that could impact species and their habitats. Erosion is a primary concern associated with use of the Assault Vehicle Maneuver Corridor (AVMC). To address this issue, the Navy is implementing the San Clemente Island Erosion Control Plan (Navy 2013b, entire), which includes best management practices to prevent, minimize, and restore impacts to sensitive resources within the AVMC. Implementation of this plan has resulted in prioritization of low-erosion areas within the AVMAs for assault vehicle use and establishment of routes within the AVMAs to reduce loss of vegetation cover and allow for better control of erosion (Vanderplank et al. 2019, p. 16).

The existing road network on SCI includes Ridge Road and approximately 188 linear miles of dirt and paved roadways. These roads can concentrate water flow, causing incised channels and erosion of slopes (Forman and Alexander 1998, pp. 216–217). Increased erosion near roads could potentially degrade habitat, especially along the steep canyons and ridges. On occasion after particularly heavy rainfall events, localized areas of high erosion stemming from roadways have been noted; however, regular road maintenance and repair of associated damage minimizes the potential for such problems to spread. The SCI INRMP includes a management strategy that addresses island-wide erosion. Implementation of the SCI INRMP as well as the Erosion Control Plan (Navy 2013b, entire), which include best management practices to prevent, minimize, and restore impacts to sensitive resources, will continue to prevent erosion from adversely affecting the SCI species and their habitats.

Potential for erosion to affect species depends on whether the species and their habitats occur on soils or topography prone to erosion, and on their proximity to activities that can cause or exacerbate erosion. The SSAs used a 30-m (100-ft) buffer around roads as an appropriate distance over which negative impacts to habitat could be perceptible and should be evaluated. Previously in our analysis, we considered individuals that occur within 152 m (500 ft) of a paved or unpaved road vulnerable to habitat degradation (Forman and Alexander 1998, p. 217; 77 FR 29078, p. 29102, May 16, 2012). However, based on expert opinion and observations on SCI since 2012, increased erosion associated with roads does not extend as far from the road network as previously thought (O'Connor 2022, pers. comm.). Based on these observations, the buffer size considered in our proposed delisting rule was reduced in the SSAs (Versions 1.0 and 1.1) to 30 m (100 ft) for our analysis in this final rule.

SC Bell's sparrow—While habitat for SC Bell's sparrow may be affected by erosion, erosion is generally localized (i.e., not widespread and limited in size) and is unlikely to affect individuals of the sparrow.

SCI paintbrush—SCI paintbrush is found mostly on non-clay soils that are not prone to piping (formation of underground water channels), and no piping or soil erosion channels have been observed in SCI paintbrush locations (Vanderplank et al. 2019, p. 16). Only 2 percent of individuals detected in the 2011 and 2012 surveys were located in areas mapped as clay soils (Vanderplank et al. 2019, p. 16). Along the eastern escarpment, SCI paintbrush is found in steep canyons in proximity to Ridge Road, the primary road that traverses most of the island from northwest to southeast. Roadside occurrences of SCI paintbrush may experience runoff during storm events (Navy 2008a, pp. G.4, G.8). Of the SCI paintbrush current distribution, 144 individuals in 6 watersheds are located within 30 m (100 ft) of a road or the AVMC (USFWS 2022e, p. 41). Island-wide, this represents 7 percent of the total occupied watersheds and 0.2 percent of the total individuals.

SCI lotus—Less than 1 percent of the current population of SCI lotus occurs within training areas where there is an increased potential for erosion caused by military activities. The occurrence of SCI lotus in Wilson Cove is in proximity to Navy facilities where erosion is caused by construction of buildings and parking lots (USFWS 2008b, p. 117). No individuals have been documented to be affected by erosion in this area (SERG 2015a, p. 40). Within the current distribution, 434 individuals in 6 watersheds are located within 30 m (100 ft) of a road (USFWS 2022d, p. 39). Island-wide, these amounts represent 2 percent of the total locations and 2 percent of the total individuals. Locations that could be affected by road impacts (including trampling, erosion, and increased invasive species) exist within five watersheds. Only one of these has 100 percent of their individuals located near a road, and all of the rest have fewer than 20 percent of the individuals or locations in areas considered in this assessment to be at risk of road impacts (USFWS 2022d, p. 39).

SCI larkspur—Less than 10 percent of the current population of SCI larkspur lies within training areas, and none of these plants occur in AVMAs, which are the training areas where potential for erosion is of greatest concern. Of the distribution considered current, only 1 location comprising 70 individuals is located within 30 m (100 ft) of a road. Island-wide, these amounts represent 1 percent of the total locations and 0.3 percent of the total individuals. This location that could see road impacts is just one of five in the watershed, comprising 11 percent of the total individuals in the watershed (USFWS 2022c, p. 56).

SCI bush-mallow—Approximately 13 percent of the current population of SCI bush-mallow lies within training areas, but none of these plants occur in AVMAs, which are the training areas with the greatest potential for erosion. No current locations of SCI bush-mallow occur within 30 m (100 ft) of a road.

The Navy monitors and evaluates soil erosion on SCI to assess priorities for remediation (SERG 2006, entire; SERG 2015a, entire), and efforts are made through revegetation and outplanting to restore areas where erosion occurs (SERG 2016, p. 2). The INRMP requires that all projects with potential erosion impacts include soil conservation measures for best management practices, choosing sites that are capable of sustaining disturbance with minimum soil erosion, and stabilizing disturbed sites (Navy 2013a, pp. 3.33–3.37). In addition, the erosion control plan includes specific guidelines for the development and application of best management practices to minimize soil erosion within these training areas, minimize offsite impacts, and prevent soil erosion from adversely affecting federally listed or proposed species or their habitats and other sensitive resources (Navy 2013b, entire).

Despite existing levels of soil erosion on the island, the distributions of all five species have increased since listing (42 FR 40682, August 11, 1977). Current erosion issues are localized, and erosion is generally decreasing on the island as the vegetation continues to recover. Only a small percentage of individuals and localities of these species occur within training areas or within proximity to roads where activities can cause or exacerbate erosion. Although the erosional processes must be considered at an island-wide scale, impacts from erosion are not rangewide. Instead, impacts are localized (i.e., not widespread and limited in extent) and managed, so potential for loss of individuals due to erosion is limited or unlikely.

Fire and Fire Management

SC Bell's sparrow—Fire can result in habitat loss and the direct mortality of adult SC Bell's sparrows and nestlings (Navy 2018, p. 20). While any fire severity can destroy nests and nestlings, infrequent low-severity fires are unlikely to result in type conversion that eliminates habitat, since shrubs used as nesting and foraging habitat, if burned by a low-severity fire, may recover or resprout. Most fires on SCI have been classified as low severity, which may singe or stress shrubs but not kill or destroy them (USFWS 2022a, pp. 51–57). A burned area, unless experiencing a particularly severe fire, would likely still provide nesting substrate once the shrubs have recovered. Any fire can have a short-term negative impact on SC Bell's sparrows locally. Frequent, widespread or high-severity fires could have a longer term negative impact depending on where and how they burn. A fire-return interval of 3 years or less has been shown to negatively impact woody shrubs on SCI (Keeley and Brennan 2015, p. 3). For instance, a fire that burns a substantial portion of the boxthorn habitat or sagebrush habitat, areas with the highest densities of SC Bell's sparrow, could impact a substantial portion of the SC Bell's sparrow population. For example, the northern boxthorn strata support almost 35 percent of the population (USFWS 2022a, p. 38), and a high-severity fire in this area could have a significant impact on the Bell's sparrow population.

Based on current knowledge of habitat use, with the expansion of SC Bell's sparrows into a broader range of habitats, more of the subspecies' distribution is within areas we expect could be impacted by fire. However, the current fire patterns and severity indicate most fires typically start in the Impact Areas in SHOBA, away from the highest density areas for SC Bell's sparrow. Fires are generally of low severity and burn limited areas due to the application of firebreaks and fire suppression. To date, no fires have broken out and burned the high-density boxthorn habitat around TARs 10 and 17. (USFWS 2022a, p. 50). The Navy is expected to continue implementing its SCI Wildland Fire Management Plan (Navy 2009), and we expect that fires will continue to occur in similar areas and at similar frequency and intensity to that observed between 2010 and 2022 and will affect a limited number of individuals and locations of SC Bell's sparrow.

Plants—Fire is a natural component for regeneration and maintenance of many habitats; however, maritime desert scrub communities on SCI are not found to have been fire-dependent due to maritime-related humidity, limited natural ignition sources, and adaptations of specific indigenous plants. The history of fire on the island prior to 1979 is largely unknown, but fires were set intermittently during ranching to increase the cover of forbs and grasses (Navy 2009, p. 3-2; Navy 2013a, p. 3-47). After the island was purchased by the Navy in 1934, fire became a more common occurrence throughout much of the island. Since 1979, over 50 percent of the island has experienced at least one wildfire with smaller areas on the island having burned up to 10 times between 1979 and 2018 (Navy 2013a, p. 3-47; Navy, unpub. data).

The number and extent of fires (acres burned) varies annually, as does fire severity. Currently, most fires on the island are a result of military training and activities. Most large fires are ignited in the Impact Areas, with most of the acreage burned concentrated in SHOBA (Navy 2013a, p. 3-45). Fire severity data (2007 to present) indicate that most fires are classified as low severity, with vegetation considered lightly burned or scorched. However, 15.6 percent of the acreage burned has been of a severity class that has detrimental effects on shrubs, considered moderately severe to completely burned. At low-severity levels, fires have little effect on shrubs, which resprout and recover easily (Navy 2009, p. 4–52). Typically, due to the patchy nature of fires, not all areas within a fire footprint are burned uniformly; that is, not all plants in a burn polygon are necessarily burned or burned at the same severity (SERG 2012, p. 39). Although fire ignition points are concentrated in the military training areas, fires that escape these areas could potentially spread to other areas of the island. However, due to vegetation and topography, fires have generally been confined to the same areas (Munson 2022, pers. comm.).

Future increased fire frequency from intensified military use and expansion of training into new areas could lead to localized changes in vegetation. The Navy significantly expanded the number of locations where live fire and demolition training can take place in 2008 (USFWS 2008b, pp. 21–37). However, while the number of acres that burn annually varies greatly, the frequency and extent of fire has decreased since the Navy began actively managing fire and implementing the Wildland Fire Management Plan (Navy 2009, entire; USFWS 2022a, p. 56; USFWS 2022b, pp. 53–54; USFWS 2022c, pp. 64–65; USFWS 2022d, pp. 45–47; USFWS 2022e, p. 48). The biggest fire years between the time of listing and now, in 1985 and 1994, burned more than twice the acreage than the two biggest fire years in the last 15 years (2012 and 2017), which occurred since implementation of the Wildland Fire Management Plan (Navy 2009, entire; USFWS 2022a, p. 56; USFWS 2022b, pp. 53-54; USFWS 2022c, pp. 64–65; USFWS 2022d, pp. 45–46; USFWS 2022e, p. 48).

Severe fires can kill shrubs and woody vegetation and alter the vegetation community, while frequent fires may not allow individuals and habitat to recover between fire events and have the potential to exceed a plant's capacity to sustain populations by depleting seed banks and reducing reproductive output (Zedler et al. 1983, pp. 811–815). However, effects to individual species depend on the species' fire tolerance and on the overlap of its distribution with areas where fires are likely to occur.

Fires can impact plants on SCI, but have been generally localized, infrequent, and of low severity, and have burned mostly in regions where these taxa are not documented (USFWS 2022b, pp. 52, 56; USFWS 2022c, pp. 61, 66; USFWS 2022d, pp. 44, 50; USFWS 2022e, pp. 46, 52). In addition, rhizomes and seed banks can help these plants survive and persist post-fire. Though severe fires may kill SCI lotus, some plants are likely to survive and resprout after low-intensity fires (USFWS 2022d, p. 20). Severe fires may also kill individual SCI paintbrush plants, however plants are likely to survive and may benefit from low-intensity fires (USFWS 2022e, pp. 23–24). SCI larkspur does not appear to be significantly affected by fire, likely due to its dormant period coinciding with periods when fires are more likely (USFWS 2022c, pp. 30–31). SCI bush-mallow may be tolerant of fire. Its continued presence in areas that have burned and documentation of resprouting and recovering after fires indicate it is at least somewhat tolerant of fires (USFWS 2022b, p. 25). All four plant species appear to have increased in distribution and population size under the current fire pattern and fire management.

While fires have the potential to burn most places on the island, land use, vegetation, and historical patterns indicate that fires are most likely to burn in the same areas they have historically. Table 5 indicates the number of locations of each of the plant species that have burned (USFWS 2022b, pp. 51–53; USFWS 2022c, pp. 61–65; USFWS 2022d, pp. 45–49; USFWS 2022e, pp. 47–51). The majority of habitat that support these four plant taxa has not burned, and less than 10 percent of the occupied locations have burned more than once in the past 20 years.

TABLE 5—NUMBERS OF LOCATIONS AND INDIVIDUALS OF PLANT SPECIES AFFECTED BY FIRE WITHIN THE LAST 20 YEARS ON SAN CLEMENTE ISLAND (SCI)

Species	Total number of locations	Number of locations burned	Number of locations burned two or more times in 20 years	Percent of locations burned two or more times in 20 years	Number of individuals	Watersheds
SCI lotus	249	26	12	4.8%	855	10
SCI paintbrush	601	133	47	7.8%	8,596	29
SCI larkspur	74	5	0	0%	458	2
SCI bush-mallow	222	68	11	5.0%	2,076	4

Given the historical patterns, most fires have burned outside locations where the four SCI plants species occur. Where plant locations have burned, most of those locations have burned infrequently over the last 20 years, during which period the four SCI plant species have increased in distribution and abundance. If fires become more frequent outside of the current fire footprint or more severe in the future, the species could be adversely affected in areas that burn. However, the Navy is expected to continue implementing its SCI Wildland Fire Management Plan (Navy 2009), and we expect that fires will continue to occur in similar areas and affect a limited number of individuals and locations of the four SCI plant species. We do not view fire as a threat to the listed plants, since they have expanded their ranges significantly with the removal of nonnative herbivores.

Climate Change

Since listing (42 FR 40682, August 11, 1977), the potential impacts of ongoing, accelerated climate change have become a recognized threat to the flora and fauna of the United States (Intergovernmental Panel on Climate Change (IPCC) 2007, pp. 1–52; PRBO 2011, pp. 1–68). Climate change is likely to result in warmer and drier conditions with high overall declines in mean seasonal precipitation but with high variability from year to year (IPCC 2007, pp. 1–18; Cayan et al. 2012, p. ii; Kalansky et al. 2018, p. 10). SCI has a Mediterranean climatic regime with a significant maritime influence. Current models suggest that southern California will likely be adversely affected by global climate change through prolonged seasonal droughts and through rainfall coming at unusual periods and in different amounts (Pierce 2004, pp. 1–33, Cayan et al. 2005, pp. 3–7, CEPA 2006, p. 33; Jennings et al. 2018, p. iii; Kalansky et al. 2018, p. 10); however, the Channel Islands are not well addressed in these models.

Climate change models indicate an increase in average temperature by 2 to 3 degrees Celsius (°C) (4 to 6 degrees Fahrenheit (°F)) (Representative Concentration Pathway (RCP) 4.5) to 4 to 5 °C (7 to 9 °F) (RCP 8.5) for the San Diego Area of southern California by the end of the century (Jennings et al. 2018, p. 9), with inland changes higher than the coast (Cayan et al. 2012, p. 7). By 2070, a 10 to 37 percent decrease in annual precipitation is predicted (PRBO 2011, p. 40; Jennings et al. 2018, p. iii), although other models predict little to no change in annual precipitation (Field et al. 1999, pp. 8–9; Cayan et al. 2008, p. 26). SCI typically receives less rainfall than neighboring mainland areas (Tierra Data Inc. 2005, p. 4). However, predictions of short-term and long-term climatic conditions for the Channel Islands remain uncertain, and it is currently unknown if the same climate predictions for coastal California (a warmer trend with localized drying, higher precipitation events, and/or more frequent El Niño or La Niña events) equally apply to the Channel Islands (Pierce 2004, p. 31).

Low-level temperature inversions are common along the California coast and Channel Islands, and these inversions form low cloud cover (fog), otherwise known as the marine layer, which has a strong influence on coastal ecosystems and SCI (Navy 2013a, pp. 3.13, 3.26). Although the island has a short rainy season, the presence of fog during the summer months helps to reduce drought stress for many plant species through shading and fog drip, and many species are restricted to this fog belt (Halvorson et al. 1988, p. 111; Fischer et al. 2009, p. 783). Thus, fog could help buffer species from effects of climatic change. However, coastal fog has been decreasing in southern California in recent decades, possibly due to urbanization (which would not affect SCI) or climate change (Williams et al. 2015, p. 1527; Johnstone and Dawson 2010, p. 4537; LaDochy and Witiw 2012, p. 1157). Coastal cloud cover and fog are poorly addressed in climate change models (Qu et al. 2014, pp. 2603–2605).

Warming projections in California, particularly the possibility that the interior will experience greater warming than the coast (Cayan et al. 2012, p. 7), suggest that the fate of coastal fog is uncertain (Field et al. 1999, pp. 21–22; Lebassi-Habtezion et al. 2011, pp. 8–11). One study found an increasing trend in the strength of low-level temperature inversions, which suggests that the marine layer is likely to persist and may even increase (Iacobellis et al. 2010, p. 129). Recent work examining projected changes in solar radiation and cloud albedo (portion of solar radiation reflected back to space by clouds) show projected increases in cloud albedo during the dry season (July–September) and decreases during the wet season (November and December, and March and April) (Clemesha 2020, entire). Such a scenario could moderate the effects of climate change on the Channel Islands and would be expected to reduce its potential threat to island plants, especially on the western shore's lower terraces, where the marine layer is common. Dry season low clouds and fog are particularly important to plant growth, survival, and population dynamics in arid systems through both a reduction in evapotranspiration demand and potentially water deposition (Corbin et al. 2005, p. 511; Johnstone and Dawson 2010, p. 4533; Oladi et al. 2017, p. 94).

Current trends based on meteorological information suggest climate change is already affecting southern California through sea level rise, warming, and extreme events like large storms associated with El Niño events (Sievanen et al. 2018, p. 7). Climate projections suggest more severe droughts or extended dry periods on coastal California via lessened low stratus cloud regime and hydrologic effects of reduced fog delivery (Fischer et al. 2009, pp. 783–799; Sievanen et al. 2018, p. 7). While long-term effects of climate change are typically projected to have major effects in the latter half of this century (Cayan et al. 2012, p. 24; Clemesha 2020, entire; Kalansky et al. 2018, pp. 19–21), there is increasing uncertainty with longer timeframes. Although climate change is affecting coastal and inland habitat in the United States (Karl et al. 2009, pp. 13–152), the site-specific effects of climate change on SCI are uncertain. We, therefore, focused on a 20- to 30-year window to evaluate changes in climate (precipitation and temperature) in the species status assessments for these five taxa.

During this time period, we do not expect major effects of climate change. Models indicate an increase in average temperature by 1 to 2 degrees Celsius (°C) (2 to 3 degrees Fahrenheit (°F)) (RCP 4.5) to 2 to 3 °C (3 to 4 °F) (RCP 8.5) by 2040 for the San Diego Area of southern California (Jennings et al. 2018, p. 15), with inland changes higher than the coast (Cayan et al. 2012, p. 7). However, in the 20- to 30-year window, climate change may result in more frequent or severe fires, heavy periods of rainfall that could lead to major erosion events, or periods of drought (Kalansky et al. 2018, p. 10). As discussed in the species status assessments, predicting impacts due to climate change are further complicated by uncertainty regarding the timing of increased or decreased rainfall; wetter conditions in the winter and early spring can lead to more growth early in the season, which can provide more fuel for fire later. However, wetter summers and falls can prevent the fuel from drying out enough to burn (Lawson 2019, pers. comm.). Therefore, making predictions about future fire patterns as affected by climate change is difficult.

Less rainfall and warmer air temperatures could limit the range of plant species and affect habitat and prey or forage for SC Bell's sparrow, although there is no direct research on the effects of climate change on any of the species. While SC Bell's sparrow's reproductive success is influenced by rainfall and could be affected by longer term changes in climate, the relationship between reproductive output and rainfall and the impacts of droughts of varying duration and severity on the population are unclear, and the mechanisms driving these relationships are unknown (USFWS 2022a, pp. 58–63). Changes in temperature or rainfall patterns have the potential to affect biotic interactions, such as decoupling the timing of plant phenology versus insect activity. The likely persistence of the marine layer would be expected to help moderate the effects of climate change on the Channel Islands and would be expected to reduce its potential effects to island plants, including nesting and cover substrates for SC Bell's sparrows.

While we recognize that climate change is an important issue with potential effects to listed species and their habitats, information is not available to make accurate predictions regarding its long-term effects to the SCI species addressed in this final rule. However, given the current information available in climate change studies, climate change is unlikely to have major impacts on the SCI species in the next 20 to 30 years, the period for which we are able to make reliable predictions based on the available climate change data and the period under consideration in this determination.

Reduced Genetic Diversity

Genetic analysis suggests that SCI bush-mallow has very low genetic variation at both the species and population levels (Helenurm 1997, p. 50; Helenurm 1999, p. 39) and has been observed to have low seed production (Helenurm 1997, p. 50; Junak and Wilken 1998, p. 291; Helenurm 1999, p. 39). Low seed production, in combination with low genetic diversity, can contribute to observed low recruitment in populations (Huenneke 1991, pp. 37–40; Junak and Wilken 1998, p. 291; Helenurm 1999, pp. 39–40). A reduction in occurrence size through years of grazing may have substantially lowered genetic variation (Helenurm 2005, p. 1221), which could decrease genetic fitness and compromise the species' ability to adjust to novel or fluctuating environments, survive disease or other pathogens, survive stochastic events, or maintain high levels of reproductive performance (Huenneke 1991, p. 40). However, data on the genetic variation that existed historically are lacking.

In recent years, the detected numbers of SCI bush-mallow have increased in abundance, although it is unknown how much of this growth can be attributed to clonal growth versus sexual reproduction and new genets. Successful seed collection in 2013 (SERG 2013, pp. 61–64) and the observation of cotyledons in the field provide anecdotal evidence that the species may be reproducing more often by sexual recombination. As the number of individuals (stems) increases, we would expect by probability alone more genetically distinct individuals over time because as the numbers of stems increase, the probability of cross-pollination is increased (Rebman 2019, pers. comm.). However, we do not know whether and how often new genets are produced in the population.

Patches of SCI bush-mallow on SCI contain many clones of individuals but also contain distinct genetic individuals, and there is at least some increase in distribution through seedling recruitment (Munson 2022, pers. comm.). However, it is still likely that many patches, especially the small or more isolated ones, comprise only closely related individuals that share alleles, impeding the likelihood of successful sexual reproduction (Helenurm 1999, pp. 39–40). The apparent historical loss of genetic diversity resulting in current low genetic variation is a potential threat for which there is no immediate solution or amelioration. However, currently, low genetic diversity does not seem to preclude the ability of the species to sustain populations over time on the island; historical diversity is unknown, and it may have always been low for this species. This species has increased in numbers and distribution from that known at the time of listing (42 FR 40682, August 11, 1977) and has sustained populations through current levels of habitat disturbance, and we expect that genetic variants within and among patches are increasing, however slowly.

Conservation Actions and Regulatory Mechanisms

Pursuant to the Sikes Act (16 U.S.C. 670 et seq.), as amended, the Navy manages land and water resources on the island under the SCI INRMP (Navy 2013a). The goal of the INRMP is to maintain long-term ecosystem health and minimize impacts to natural resources consistent with the operational requirements of the Navy's training and testing mission (Navy 2013a, p. 1-9). Specifically, the INRMP identifies key components that: (1) Facilitate sustainable military readiness and foreclose no options for future requirements of the Pacific Fleet; (2) protect, maintain, and restore priority native species to reach self-sustaining levels through improved conditions of terrestrial, coastal, and nearshore ecosystems; (3) promote ecosystem sustainability against testing and training impacts; and (4) maintain the full suite of native species, emphasizing endemic species.

The SCI INRMP outlines appropriate management actions necessary to conserve and enhance land and water resources, including invasive species control island-wide and, therefore, near listed and sensitive species; biosecurity protocols; public outreach to promote compliance; restoration of sites that support sensitive plants; and habitat enhancement for sensitive and listed species. In addition, the Fire Management Plan (Navy 2009) outlines a strategy to reduce the impacts from fires, including fuel break installation to minimize fire spread and fire suppression inside and outside of SHOBA to protect endangered, threatened, and other priority species (Navy 2013a, p. 3.45; Vanderplank et al. 2019, pp. 15, 18–19; Munson 2022, pers. comm.). The INRMP outlines management strategies for plant communities and sensitive species, including recommended avoidance and minimization measures that the Navy may consider during the site approval and project review process (Navy 2013a, pp. 4-23, 4-28).

The SCI INRMP also provides the mechanism for compliance with other Federal laws and regulations such as the Federal Noxious Weed Act of Act of 1974 (7 U.S.C. 2801), the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601), the Resources Conservation and Recovery Act (42 U.S.C. 6901), and the Soil Conservation Act (16 U.S.C. 3B). Based on the ongoing obligation the Navy has to implement the INRMP, the Navy's commitment to modify the INRMP to address changing land and water resource management needs, including future training activities, and the Navy's commitment to develop and implement a conservation agreement specific to these five species, we expect the INRMP and other conservation measures to remain in effect and afford protection to these five species regardless of their listing status. Measures specific to species or threats that are the subject of this final rule are discussed below.

Migratory birds—The INRMP outlines steps to ensure compliance with Executive Order (E.O.) 13186 ("Responsibilities of Federal Agencies to Protect Migratory Birds"; see 66 FR 3853, January 17, 2001) and the 2014 memorandum of understanding (MOU) between the Department of Defense (DoD) and the Service to promote the conservation of migratory birds, which stipulates responsibilities for DoD. The MOU outlines a collaborative approach to promote the conservation of bird populations, and the INRMP is required to address migratory bird conservation regardless of status under the Act. As part of the program outlined under the INRMP, the Navy supports the SC Bell's sparrow population monitoring program. Population monitoring provides a robust population estimate and facilitates planning to avoid and minimize impacts of Navy training and infrastructure projects.

Erosion—The Navy monitors and evaluates soil erosion on SCI and uses multiyear data to assess priorities for remediation (SERG 2006, entire; SERG 2015a, entire). The INRMP includes a management objective to "Conserve soil resources, especially erodible soils near the heads of canyons, knickpoints of gullies, and areas threatening the uninterrupted continuation of the military mission or special status species, to provide drainage stability, native vegetation cover, and soil water holding capacity and protect site productivity, native plant cover, receiving waters, and access for the military mission" (Navy 2013a, p. 3-35). Efforts are made to restore areas where erosion occurs, through revegetation efforts and the installation of erosion control materials (SERG 2016, p. 2). The Navy incorporates erosion control measures into all site feasibility studies and project design to minimize the potential to exacerbate existing erosion and avoid impacts to listed species. The INRMP requires that all projects include erosion control work (Navy 2013a, p. 3-33). These conservation actions include best management practices, choosing sites that are capable of sustaining disturbance with minimum soil erosion, and stabilizing disturbed sites (Navy 2013a, pp. 3.33–3.37).

Nonnative species—The Navy has monitored and controlled the expansion of highly invasive, nonnative plant species on an ongoing basis since the 1990s (O'Connor 2022, pers. comm.), and primary target species have included *Brassica tournefortii* (Saharan mustard), *B. nigra* (black mustard), *Foeniculum vulgare* (fennel), *Asphodelus* *fistulosus* (aspohodel), *Stipa miliacea* (smilo grass), *Ehrharta calycina* (African veldt grass), *Plantago coronopus* (buckhorn plantain), *Tragopogon porrifolius* (salsify), and *Carpobrotus edulis* (iceplant); additional priority species may also be controlled as they are located (e.g., SERG 2016, pp. 45–46). In general, the Navy treats more than 100,000 individuals of these various species annually. Control of these invasive plants benefits the ecosystem on SCI by reducing their distribution and minimizing the potential that they will invade habitat occupied by listed and at-risk taxa. Because invasive species introductions are more likely to occur along roadsides and because roads function as corridors for the spread of invasive species propagules, much of the invasive species treatment on the island focuses on roadsides; however, other areas highly susceptible to invasive species introductions (such as graded areas, soil stockpiles, and mowed areas) also are focal areas for control. High-priority invasive plants are treated at locations across the island. This control strategy has minimized the need to treat invasive plant species within areas occupied by federally listed plants.

While many conservation measures to limit the introduction and spread of nonnative plants are included in the INRMP (Navy 2013a, pp. 3.289–3.290), the Biosecurity Plan (Navy 2016, entire) will help more effectively control the arrival of potentially invasive propagules. The plan works to prevent and respond to new introductions of nonnative species and bio-invasion vectors. The Navy is currently working on an instruction that will contain feasible, enforceable measures from the plan. Through implementation of this plan and the ongoing island-wide nonnative plant control program, potential impacts from nonnative plants are expected to be minimized (O'Connor 2022, pers. comm.; Munson 2022, pers. comm.)

Nonnative predators—The current nonnative wildlife program focuses on island-wide nonnative predator management, which was initiated by the Navy in 1992 (USFWS 2008b, p. 172). Complete eradication of feral cats, black rats, and house mice on SCI is currently infeasible. Nonnative wildlife management is part of the San Clemente loggerhead shrike recovery program and focuses on control of feral cats throughout the island and rodent control near San Clemente loggerhead shrike nest sites (Meiman et al. 2015, p. 2). This program affords some protection to the SC Bell's sparrow, primarily through cat removal, and will likely continue as part of the ongoing San Clemente loggerhead shrike recovery program regardless of the listing status of the SC Bell's sparrow. The Navy has removed numerous cats, on average 211 annually (2001–2016; Burlingame et al. 2018, p. 29).

Fire—The Navy implements the SCI Wildland Fire Management Plan (Navy 2009, entire), which is focused on fire prevention, fuels management, and fire suppression. Implementation of the fire management plan provides planning guidelines to reduce the potential for ignitions during the drier times of the year, ensures that adequate fire suppression resources are present to protect resources, and provides flexibility for the timing of military training and to ensure that adequate fire suppression resources are present with an increased level of training activities (Navy 2009, entire). These measures minimize the frequency and spread of fires that could result in impacts to habitat and to individuals of the five species. The Navy will continue to modify this plan to address future training impacts and has committed to make these modifications in accordance with the associated conservation needs of the five SCI species.

SC Bell's sparrow—Current and ongoing conservation measures described above minimize impacts of threats to SC Bell's sparrow. Additionally, the SCI INRMP is currently being updated to include prioritization of conservation and management within four core SC Bell's sparrow habitat areas (approximately 2,604 ha; Booker 2022, pers. comm.). These areas were selected to ensure representation (e.g., multiple plant communities) and redundancy (e.g., multiple areas). They include high-density SC Bell's sparrow habitat, assumed source populations, refugia spread geographically, and areas of elevation and topographic importance to SC Bell’s sparrow. The intent of priority conservation areas is to facilitate future planning in a manner that avoids impacts to important SC Bell’s sparrow habitat, and to protect the population against stochastic and catastrophic events (USFWS 2022a, p. 66).

Final delineation of areas and management strategies will be identified in the SC Bell’s sparrow management plan, which is currently in development. With the identification of core habitat areas in the INRMP, and management of these areas consistent with the management plan, the Navy will: (1) Preclude significant development within these areas, to the extent feasible; (2) prioritize these four areas for protection under fire management plans; and (3) prioritize these four areas for invasive species control, as needed (USFWS 2022a, p. 66) to help manage for the SC Bell’s sparrow. While we expect that incorporation of SC Bell’s sparrow core habitat areas into the INRMP will improve coordination of conservation measures for the SC Bell’s sparrow, the Navy’s current and ongoing management described above minimizes the impacts of threats to SC Bell’s sparrow and its habitat under current training regimes. Because of the legal obligation to implement the INRMP under the Sikes Act, the Navy will modify the INRMP and will develop and implement additional conservation measures as needed to address future impacts to SC Bell’s sparrow due to erosion and fire. The SC Bell’s sparrow management plan will highlight important management areas to conserve and monitor to ensure the continued conservation of this taxon in the future.

Summary of conservation actions and regulatory mechanisms—The Sikes Act requires DoD installations to prepare and implement INRMPs that provide for the conservation and rehabilitation of natural resources, including non-listed species. Consequently, due to this requirement, the conservation actions outlined in the INRMP are expected to continue, regardless of the listing status of the five species. While changes to military training and training footprints are projected in the future, the Navy will implement conservation measures to address resulting impacts in order to meet the goals of the INRMP. Additionally, changes to training have and will be subject to environmental review under applicable laws and regulations, including the National Environmental Policy Act and the Navy's site approval and review process, which includes identifying avoidance and minimization measures for plant communities and sensitive species, including measures recommended in the SCI INRMP (Navy 2013a, pp. 4-23, 4-28). If these five species are delisted, they would continue to be considered sensitive species and any impacts would be evaluated through these processes (O'Connor 2022, pers. comm.). Furthermore, the Navy is "committed to continuing that partnership as our agencies implement the post-delisting monitoring plan and work to complete the SCI INRMP revision and the anticipated conservation agreement" (Golumbfskie-Jones 2022, *in litt*, p. 2).

Summary of Factors Influencing Viability

At the time of listing (42 FR 40682, August 11, 1977), the biggest threat to the SCI species was habitat destruction and modification due to feral grazers. Since the removal of the last feral herbivores, vegetation is recovering, and habitat conditions have improved substantially. Currently, all five species are now more widely distributed on the island with greater estimated numbers of individuals than were previously known.

SC Bell's Sparrow—We assessed remaining threats to SC Bell's sparrow individuals and habitat, including predation, drought, climate change, military training, and fire. Ongoing predator control programs are implemented to control nonnative predator species on the island, and the population of SC Bell's sparrow has grown despite ongoing impacts. Drought could potentially affect SC Bell's sparrow, as reduced nesting success has been reported in drier years, especially if droughts become more frequent or severe. While the effects of drought on productivity of the island-wide population are not fully understood, and additional data are needed to clarify this relationship, the population has rebounded quickly from past droughts and is expected to retain its ability to do so in the future. Likewise, climate change may influence or affect vegetation and thus nesting and foraging habitat (USFWS 2022a, p. 63). The magnitude of this rangewide threat and how it may affect the SC Bell's sparrow are unknown at this time, but significant impacts from climate change are unlikely to occur in the next 20 to 30 years (USFWS 2022a, pp. 63–64).

Training within the current footprint that could have high-intensity impacts occurs on less than 20 percent of the island, and those areas that are intensively used are currently either unoccupied or already support low densities of SC Bell's sparrows. The largest potential known threat to the SC Bell's sparrow is fire. The Navy actively implements fire prevention and containment measures as part of the fire management plan. Thus, although fire currently impacts SC Bell's sparrows and their habitat, current fire patterns do not appear to pose a threat to SC Bell's sparrow population viability.

Plants—For the plant species, we assessed threats to individuals and habitat including land use, erosion, the spread of nonnatives, fire and fire management, and climate change. While full impacts of invasive species on the four plant species are unknown, the effects are likely minimal or localized, given the expansion of the species on the island despite the presence of invasive species. Climate change may influence the plant species by affecting germination or viability of adult plants if drought or increasing temperatures result in significant changes in vegetation communities on SCI. The magnitude of this rangewide threat and how it may affect the plant taxa is unknown at this time, but significant impacts from climate change are unlikely to occur in the next 20 to 30 years (USFWS 2022b, p. 57; USFWS 2022c, pp. 66–67; USFWS 2022d, p. 51; USFWS 2022e, p. 53).

For all four plant species, we considered major threats to be impacts of military training and fire. For SCI paintbrush, SCI lotus, and SCI larkspur, we also considered erosion resulting from training or proximity to roads to be a major threat. Less than 1 percent of the current population of SCI lotus occurs within training areas where there is an increased potential for erosion caused by military activities. Approximately 13 percent of the current population of SCI bush-mallow lies within training areas, but none of these plants are in AVMAs that are the training areas with the greatest potential for erosion. Less than 1 percent of the current population of SCI lotus occurs within training areas where there is an increased potential for erosion caused by military activities. Finally, of the SCI paintbrush current distribution, 144 individuals in 6 watersheds are located within 30 m (100 ft) of a road or the AVMC.

To determine the status of the plant species in current training footprints, we ranked the levels of these threats in each watershed to evaluate the extent to which the species are exposed to and potentially affected by these threats (USFWS 2022b, pp. 59–60; USFWS 2022c, pp. 69–70; USFWS 2022d, pp. 54–55; USFWS 2022e, pp. 56–57). Level of threats were categorized as none, low, or moderate. A low level of threats is defined as threats that could potentially affect less than 50 percent of the locations, individuals, or area within the watershed. A moderate level of threat is defined as threats that could potentially affect 50 percent or more of the locations, individuals, or area within the watershed. Table 6, below, indicates the percentages and numbers of watersheds, and the estimated individuals in those watersheds that were categorized as having no identified or low threats, or moderate threats. Most watersheds where plant taxa occur are in areas with no or low exposure to threats affecting less than half of the locations, individuals, or area occupied.

TABLE 6—PERCENTAGES AND NUMBERS OF WATERSHEDS AND INDIVIDUAL PLANTS ASSESSED TO HAVE VARYING LEVELS OF THREATS ON SAN CLEMENTE ISLAND (SCI)

[USFWS 2022B, PP. 59–60; USFWS 2022C, PP. 69–70; USFWS 2022D, PP. 54–55; USFWS 2022E, PP. 56–57]

Species	No or low threats in watersheds [% (n)]	No or low threats to individuals [% (n)]	Moderate threats in watersheds [% (n)]	Moderate threats to individuals [% (n)]
SCI lotus	78% (45)	90% (18,640)	22% (13)	10% (2,013)

SCI paintbrush	75% (65)	85% (35,702)	25% (22)	15% (6,402)
SCI larkspur	100% (22)	100% (18,956)	0% (0)	0% (0)
SCI bush-mallow	73% (11)	60% (3,345)	27% (4)	40% (2,266)

Species Condition

Here, we discuss the current condition of each species, taking into account the risks that are currently occurring to those populations, as well as management actions that are currently occurring to address those risks.

SC Bell's sparrow—The population as of 2018 was estimated at 2,676 territories (5,284 individuals) island-wide. Overall, the population of SC Bell's sparrows on SCI has increased since listing and between 2013 and 2018 has withstood current stochastic effects. Given these trends and the relatively large population size, we consider this population currently to be highly resilient to stochastic factors. While we consider SC Bell's sparrow to consist of a single population, its distribution across the island and ability to use a range of elevations and habitats indicate the species' adaptability and that it is unlikely that the entire population of the species would be affected by a single catastrophic event.

Plants—In our evaluation of current conditions, for each plant species and watershed, we developed and assigned condition categories. To assess the resiliency of plant species, we assessed the overall condition of the population by evaluating occupancy, locations, and individuals within each watershed. We categorized our assessed resiliency scores by watershed based on number of individuals: "very high" means populations with 500 or more individuals; "high" means populations with 100–499 individuals; "moderate" means populations with 10–99 individuals; and "low" means populations with fewer than 10 individuals. We also examined population trends, which indicate the ability of the species to withstand and recover from stochastic events.

Resiliency was considered higher within watersheds supporting a greater number of individuals over time; however, if all of the individuals within a watershed were in just one location, we assumed that they are less resilient than a watershed with the same number of individuals that are spread out across multiple locations, as plants will be more likely to sustain populations through stochastic events if one localized event is unable to affect all the plants in the entire watershed.

Because few comprehensive surveys have been conducted for plant species on SCI, data from 2011 and 2012, which represent the most recent comprehensive surveys, were supplemented with prior and subsequent data, following a rule set to exclude and buffer data that might result in double counting, and to exclude occurrence data more than 15 years old. Because of a lack of pre- and post-fire surveys, numbers of individuals of SCI lotus and SCI paintbrush (the two species most likely to be negatively affected by severe fires) in watersheds that burned were adjusted to assume some mortality from two severe fires in the last 15 years (USFWS 2022d, pp. 56–57; USFWS 2022e, pp. 58–60). Adjusted numbers of locations and individuals were then used to categorize resiliency in each watershed as low, moderate, high, or very high (table 7).

TABLE 7—SAN CLEMENTE ISLAND (SCI) WATERSHEDS WITH PLANT SPECIES HAVING HIGH OR VERY HIGH RESILIENCE

Species	Number of watersheds with "very high" and "high" resilience (occupied watersheds)	Percent of individuals that occur in watersheds rated with "very high" and "high" resilience
SCI paintbrush	48 (87)	96%
SCI lotus	22 (57)	92%
SCI larkspur	14 (22)	93%
SCI bush-mallow	9 (15)	96%

Most individuals of each of the plant species occur in watersheds with high or very high resilience, which suggests that most watersheds are likely to be able to withstand stochastic events. While all four plant species are considered to consist of one population, their distributions across multiple watersheds with a variety of habitat types, elevations, and slopes also make it unlikely that the entire population of any of the species would be affected by a catastrophic event. Genetic variation in SCI bush-mallow is low for an island endemic, which, coupled with its clonal nature, could potentially make the species less able to adapt to changing environmental conditions. However, low genetic diversity does not seem to be precluding the species from sustaining itself on the island.

Future Conditions

To assess current threats and future conditions, we evaluated the proportion of each population exposed to anthropogenic stressors under baseline conditions and considered different future scenarios for impacts of military training and fire: status quo (baseline impacts), and moderate or high increases in fire severity and training within the existing frequent fire and training footprint. We also considered these scenarios assuming moderate and low recruitment for the plant species, and high and low densities for SC Bell's sparrow. While specific effects of climate change are uncertain and were not modeled, increases in fire severity, which could result from either increased training or from effects of climate change, and low recruitment/density serve as proxies for potential effects. We used a 20- to 30-year timeframe for modeling future conditions because, beyond this timeframe, the impacts of climate change on SCI, specifically the persistence of the fog belt and the timing and patterns of fog and rainfall, are uncertain, making predictions unreliable.

SC Bell's sparrow—We modeled the future condition of SC Bell's sparrow over a 20- to 30-year timeframe given two different scenarios of future impacts from military training and fire, the two most significant current and future threats. Using both a low- and high-density estimate (calculated by manipulating the lowest and highest density estimates for each habitat stratum measured between 2013 and 2018 by one standard error), we calculated the estimated number of territories for each stratum under two potential future scenarios: (1) a "status quo" scenario in which conditions remain similar to those observed between 2013 and 2018 (i.e., no changes in training intensity, or fire pattern or frequency), and (2) an "increased impacts" scenario in which increased impacts from training and fire significantly reduce the suitability of habitat within existing training areas and frequent fire footprints. For the second scenario, we consider that the area within the training and frequent fire footprints would no longer be suitable as habitat, and we report the number of SC Bell's sparrows that we estimated would be supported outside the training and frequent fire areas. This calculation provided an estimate of the minimum number of territories that could be supported outside of projected fires and training area impacts within each stratum. We summed the territories in each stratum for an island-wide estimate, giving a range from low to high densities (table 8).

TABLE 8—NUMBERS OF TERRITORIES AND ADULTS OF SC BELL'S SPARROW UNDER RECENT AND FUTURE SCENARIOS ON SAN CLEMENTE ISLAND

SC Bell's sparrow	Data from 2013–2018	Future Projections (20 to 30 Years)	
		"Status Quo": No further impacts to the current amount of habitat	Increased impacts that will result in minimal habitat
Territories	1,494–3,859	1,449–4,650	1,042–3,226
Adult birds	2,988–7,718	2,899–9,300	1,932–6,154

Training within the current footprint that could have high-intensity impacts occurs on less than 20 percent of the island, and those areas that are intensively used are currently either unoccupied or already support low densities of SC Bell's sparrows. Our analysis demonstrates that, with current and future training, an estimated 966 to 3,077 (USFWS 2022a) SC Bell's sparrow territories would likely persist outside the highly used training areas on SCI. The largest potential known threat to the SC Bell's sparrow is fire. The Navy actively implements fire prevention and containment measures as part of the fire management plan. Thus, although fire currently impacts SC Bell's sparrows and their habitat, based on current fire patterns and the fire conservation measures the Navy will continue to implement in the future as part of their fire management plan, we have determined that future fire does not appear to pose a threat to SC Bell's sparrow population viability.

Plants—As recovery of plant communities on SCI continues, the number of individuals within watersheds and number of occupied watersheds are expected to continue to increase. While existing data indicate that numbers and distribution of the plant species are greater than in the past, the rates at which groups of plants expand over time are unknown. Therefore, we modeled recruitment at moderate and low levels for SCI paintbrush and SCI lotus. Because SCI bush-mallow currently appears to be reproducing primarily clonally rather than through sexual reproduction and exhibits low seed production, we modeled low and no recruitment to account for this condition. Because of SCI larkspur's long dormancy periods, we do not know how many individuals are present at any point in time and did not include recruitment in the modeling to avoid overestimating growth (i.e., apparent changes in abundance or distribution could be accounted for by individuals breaking dormancy rather than through recruitment of new individuals). As noted above under *Species Condition*, for purposes of modeling current and future conditions, the current baseline numbers of individuals of SCI lotus and SCI paintbrush (the two species most likely to be negatively affected by severe fires) were adjusted to assume some mortality from two severe fires in the last 15 years (USFWS 2022d, pp. 56–57; USFWS 2022e, pp. 58–60), so numbers presented here differ slightly from estimated current distribution and abundance.

To model fire severity, which could result from increased training or effects of climate change, we used the frequent fire footprint (burned two or more times) from the past 20 years to project where future fires are likely to occur. To model increases in fire severity, we assumed greater numbers of individuals would be affected by fire and removed from the population. Because SCI larkspur does not appear to be significantly affected by fire, likely due to its dormant period coinciding with periods when fires are more likely, we only included increased training in our modeling of future conditions for that plant.

To model effects of land use and training, we used the current and expected future footprints of training areas. Using the percent of individuals that occur either within a training area or near a road, we calculated the total number of individuals that could be affected by increased training in that watershed. We assumed an increasing number of locations and individuals would be affected by increased training intensity. The results are presented below in table 9.

TABLE 9—WATERSHEDS ON SAN CLEMENTE ISLAND (SCI) OF PLANT SPECIES WITH HIGH AND VERY HIGH RESILIENCE UNDER CURRENT AND FUTURE SCENARIOS

	Number of watersheds with high or very high resilience	Estimated number of occupied watersheds (with low and moderate recruitment)	Estimated population size (ranges represent low and moderate recruitment)
SCI paintbrush			
Current data	48	87	42,104
Future scenario: Status quo	48	87 (92–97)	43,489–51,773
Future scenario: Increased fire/training	42	85 (90–95)	40,433–48,119
Future scenario: Extreme fire/training	41	81 (86–91)	38,087–45,326
SCI lotus			
Current data	22	57	20,743
Future scenario: Status quo	23	57 (62–67)	21,595–25,708
Future scenario: Increased fire/training	21	57 (62–67)	20,628–24,128
Future scenario: Extreme fire/training	19	57 (62–67)	18,987–22,603
SCI larkspur			
Current data	14	22	18,956
Future scenario: Status quo	14	22	18,956
Future scenario: Increased fire/training	14	22	18,900
Future scenario: Extreme fire/training	14	22	18,844
SCI bush-mallow			
Current data	9	15	5,611
Future scenario: Status quo	9	15	5,611–5,892
Future scenario: Increased fire/training	9	15	5,200–5,461
Future scenario: Extreme fire/training	9	15	4,131–4,337

For our analysis of the impacts that recently proposed training areas will have on SCI plant species, we anticipated that erosion due to training would likely occur up to 500 feet from each training area, and plants that occur within this area could be impacted.

Recently proposed training areas will not affect watersheds where SCI lotus and SCI bush-mallow are currently present, and thus we do not anticipate additional impacts to these species associated with recently proposed training areas. For SCI larkspur, we found that 42 individuals in 1 watershed would be affected. Finally, for SCI paintbrush, 50 individuals in 5 watersheds could be potentially impacted by future training within recently proposed training areas. This analysis estimated impacts under both increased and extreme training scenarios. Under the increased training scenario, the estimated population size of SCI paintbrush would be 40,433–48,119 individuals. Under the extreme training scenario, the estimated population size would be 38,087–45,326 individuals.

Limitations and Uncertainties

Our models project an estimated number of occupied watersheds and individuals for plants and estimated numbers of territories and adults for SC Bell's sparrow under a range of possible future conditions. However, there are several limitations and uncertainties associated with our projections (USFWS 2022a, pp. 77–78; USFWS 2022b, pp. 68–69; USFWS 2022c, pp. 77–78; USFWS 2022d, pp. 69–70; USFWS 2022e, pp. 72–73). These include differences in survey methodologies over time and lack of information regarding demographic and life-history characteristics of the species, which required us to make several assumptions in our estimates and projections. We presumed that the four plant taxa are extant, even if not surveyed in the past 20 years, where the associated flora remain and quality habitat is still present. We also assumed that military training and fire would generally affect the same areas they have historically, amended to address recently proposed training areas, and we made several assumptions about the extent of future impacts within these geographic footprints. Because of the Navy's implementation of the INRMP, other resource management plans described previously, and the conservation agreement for the five SCI species that is currently in development, we also concluded that the Navy will continue to manage and protect habitat where these five taxa occur on SCI. While there are several uncertainties and assumptions, because our projections represent the best available scientific and commercial information, our analysis provides an adequate basis for assessing the current and future viability of the species.

Summary of Future Conditions

While all five species might experience reductions in numbers of individuals or occupied watersheds or habitat within the existing fire and training footprint under the most extreme scenarios considered, all species are expected to remain resilient. Each species would continue to occupy a broad distribution on the island across a variety of habitats under status quo and increased threat scenarios, so representation and redundancy are not expected to decrease significantly.

We note that, by using the SSA framework to guide our analyses of the scientific information documented in the SSA reports, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporated the cumulative effects into our SSA analyses when we characterized the current and future condition of the species. To assess the current and future conditions of the species, we undertook an iterative analysis that encompassed and incorporated the threats individually and then accumulated and evaluated the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our SSA assessment integrated the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

We lack specific information on how various threats may interact, but potential cumulative effects include interactions of military training, fire, invasive species, and climate change. For example, effects of climate change could increase the frequency or severity of fire. Although we lack specific information on effects of climate change, we assumed in our modeling of future conditions that increased fire could result from either increased training or from climate change, or a combination. We also modeled a range of increased impacts of training and/or fire, as well as low and moderate recruitment or densities, and used conservative approaches to estimate resulting populations to account for the possibility of cumulative effects. We found in our evaluation of current and future conditions that all five species are likely to continue to maintain close to current levels of resiliency, redundancy, and representation, despite the potential for cumulative effects.

Determinations of Species Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an “endangered species" or a “threatened species.” The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of an “endangered species” or a “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we found that the primary threats to SC Bell’s sparrow, SCI paintbrush, SCI lotus, SCI larkspur, and SCI bush-mallow identified at the time of and since listing have been eliminated or reduced. At the time of listing (42 FR

40682, August 11, 1977), we considered habitat destruction and modification caused by nonnative herbivores (Factor A) to be the primary cause of decline for all five species. Since removal of all nonnative herbivores was completed in 1992, plant communities on the island are recovering, and habitat conditions are improving for all species. The current sizes and distributions of each of the species are greater than were previously known.

Currently and in the future, individuals and habitat of each of the five species may be affected by military training activities (Factors A and E), erosion (Factor A), invasive species (Factors A and E), and fire and fire management (Factors A and E). These remaining threats to the species, including fire, erosion, and invasive species, are managed by the Navy through implementation of the SCI INRMP, Fire Management Plan, Erosion Control Plan for SCI, and other associated management plans. Implementation of avoidance and minimization measures and programs outlined in these plans is expected to continue regardless of the listing status of the five species. In addition, the Navy will continue to consider these five species and incorporate avoidance and minimization measures for land use activities, including infrastructure projects and military training proposals as part of the site approval and project review process. Thus, existing conservation programs and regulatory mechanisms, such as the INRMP, are expected to continue to provide protections to these species, regardless of listing status. Because the Channel Islands are not well addressed in current climate models and there is uncertainty regarding how climate change may affect habitats and species on SCI, we were not able to assess its long-term effects, but because of moderating effects of maritime influence on SCI, we do not expect major impacts over the next 20 to 30 years. Our evaluation of current and future conditions indicates all five species are likely to continue to maintain close to current levels of resiliency, redundancy, and representation.

In addition to threats in common to all five SCI species, small population size (Factor E) was formerly considered a threat to SC Bell's sparrow, with a low of 38 individuals reported in 1984. However, the species is now more widely distributed on the island, and population estimates have been consistently over 4,000 adults since 2013. Predation by black rats and feral cats (Factor C) was also considered a threat to SC Bell's sparrow at the time of listing. While predation on SC Bell's sparrow still occurs, the Navy implements predator control on SCI, and predation on SC Bell's sparrow does not appear to be limiting the population. The species is currently considered to be resilient and is expected to maintain close to current levels of resiliency, redundancy, and representation under a range of projected future conditions. Thus, after assessing the best available information, we determine that San Clemente Bell's sparrow is not in danger of extinction now or likely to become so in the foreseeable future throughout all of its range.

No additional threats beyond those common to all five SCI species have been identified for SCI paintbrush. With removal of nonnative herbivores, and conservation efforts implemented by the Navy, numbers and distribution of SCI paintbrush have increased. The SCI paintbrush population numbered approximately 1,000 individuals in 1984. The current island-wide population is estimated at 42,104 individuals across 87 watersheds. Most of these individuals currently occur in watersheds with high or very high resiliency. Additionally, the species is expected to maintain close to current levels of resiliency, redundancy, and representation under a range of projected future conditions. Thus, after assessing the best available information, we determine that San Clemente Island paintbrush is not in danger of extinction now or likely to become so in the foreseeable future throughout all its range.

No additional threats beyond those common to all five SCI species have been identified for SCI lotus. With removal of nonnative herbivores, and conservation efforts implemented by the Navy, numbers and distribution of SCI lotus have increased. While the historical range and distribution of SCI lotus is not known, its distribution has increased from the six locations noted in 1984 (USFWS 1984, pp. 17, 35). The current island-wide population is estimated at 20,743 individuals across 57 watersheds. The majority of these individuals currently occur in watersheds with high or very high resiliency. Additionally, the species is expected to maintain close to current levels of resiliency, redundancy, and representation under a range of projected future conditions. Thus, after assessing the best available information, we determine that San Clemente Island lotus is not in danger of extinction now or likely to become so in the foreseeable future throughout all of its range.

No additional threats beyond those common to all five SCI species have been identified for SCI larkspur. While the historical range and distribution of SCI larkspur is not known, its distribution has increased from the six to seven locations noted in 1984 (USFWS 1984, pp. 17, 35). The current island-wide population is estimated at 18,956 individuals within 22 watersheds. Most of these individuals currently occur in watersheds with high or very high resiliency. Additionally, the species is expected to maintain close to current levels of resiliency, redundancy, and representation under a range of projected future conditions. Fire (Factors A and E) is thought to currently not significantly affect SCI larkspur, but changes in timing, frequency, or severity of fire could potentially negatively affect the species. However, the Navy's implementation of fire management is expected to continue to minimize the risk of fire to SCI larkspur. Thus, after assessing the best available information, we determine that San Clemente Island larkspur is not in danger of extinction now or likely to become so in the foreseeable future throughout all of its range.

In addition to threats common to all five SCI species, reduced genetic diversity (Factor E) has been identified as a potential threat for SCI bush-mallow. However, currently, low genetic diversity does not seem to be precluding the species' ability to sustain itself on the island. With removal of nonnative herbivores, and conservation efforts implemented by the Navy, numbers and distribution of SCI bush-mallow have increased. At the time of listing, SCI bush-mallow was known from only three locations (42 FR 40682, August 11, 1977). The current island-wide population is estimated at 5,611 individuals across 15 watersheds. Most of these individuals currently occur in watersheds with high or very high resiliency. Additionally, the species is expected to maintain close to current levels of resiliency, redundancy, and representation under a range of projected future conditions. Thus, after assessing the best available information, we determine that San Clemente Island bush-mallow is not in danger of extinction now or likely to become so in the foreseeable future throughout all its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. Having determined that the SC Bell's sparrow, SCI paintbrush, SCI lotus, SCI larkspur, and SCI bush-mallow are not in danger of extinction or likely to become so in the foreseeable future throughout all of their ranges, we now consider whether any of these species may be in danger of extinction or likely to become so in the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species' range for which it is true that both (1) the portion is significant, and (2) the species is in danger of extinction now or likely to become so in the foreseeable future in that portion. Depending on the case, it might be more efficient for us to address the "significance" question or the "status" question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

In undertaking this analysis for SC Bell's sparrow, SCI paintbrush, SCI lotus, SCI larkspur, and SCI bush-mallow, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered or threatened.

The SC Bell's sparrow, SCI paintbrush, SCI lotus, SCI larkspur, and SCI bush-mallow are found solely on San Clemente Island, an area of approximately 56 square mi (145 square km, 36,073 acres (ac), or 14,598 hectares (ha)). Each of these species is a narrow endemic that functions as a single, contiguous population. While we divided each of the species' ranges into analysis units in order to quantify threats and analyze resiliency, these units are not meant to represent "populations" in a biological sense; rather, these units were designed to facilitate assessing and reporting current and future resilience. Given the species' small ranges, and the Navy's management to eliminate or reduce threats through implementation of the SCI INRMP and other associated management plans, there is no biologically meaningful way to break the limited ranges of these species into portions, and the threats that the species face affect the species throughout their entire ranges. This means that no portions of the species' ranges have a different status from their rangewide status. Therefore, no portion of the species' ranges can provide a basis for determining that the species are in danger of extinction now or likely to become so in the foreseeable future in a significant portion of their ranges, and we find that San Clemente Bell's sparrow, San Clemente Island paintbrush, San Clemente Island lotus, San Clemente Island larkspur, and San Clemente Island bush-mallow are not in danger of extinction now or likely to become so in the foreseeable future in any significant portion of their ranges. This finding does not conflict with the courts' holdings in *Desert Survivors* v. *Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity* v.

Jewell, 248 F. Sup. 3d, 946, 959 (D. Ariz. 2017), because, in reaching these conclusions, we did not need to consider whether any portions are significant and therefore did not apply the definition of "significant" in the Final Policy on Interpretation of the Phrase "Significant Portion of its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (79 FR 37578, July 1, 2014) that those court decisions held was invalid.

Determination of Status

Our review of the best available scientific and commercial information indicates that the San Clemente Bell's sparrow, San Clemente Island paintbrush, San Clemente Island lotus, San Clemente Island larkspur, and San Clemente Island bush-mallow do not meet the definition of an endangered species or a threatened species in accordance with sections 3(6), 3(20), and 4(a)(1) of the Act. Therefore, we are delisting (removing) the San Clemente Bell's sparrow, San Clemente Island paintbrush, San Clemente Island lotus, San Clemente Island larkspur, and San Clemente Island bush-mallow from the Lists of Endangered and Threatened Wildlife and Plants.

Effects of this Final Rule

This final rule will revise 50 CFR 17.11(h) to remove San Clemente Bell's sparrow (*Artemisiospiza belli clementeae*), which is listed as San Clemente sage sparrow (*Amphispiza belli clementeae*), from the Federal List of Endangered and Threatened Wildlife, and will revise 50 CFR 17.12(h) to remove San Clemente Island bush-mallow (*Malacothamnus clementinus*), San Clemente Island paintbrush (*Castilleja grisea*), San Clemente Island lotus, (*Acmispon dendroideus* var. *traskiae*), and San Clemente Island larkspur (*Delphinium variegatum* ssp. *kinkiense*) from the Federal List of Endangered and Threatened Plants. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, will no longer apply to these species. Federal agencies will no longer be required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect these species. There is no critical habitat designated for any of these species.

Post-Delisting Monitoring

Section 4(g)(1) of the Act requires us to monitor for not less than 5 years the status of all species that are delisted due to recovery. Post-delisting monitoring refers to activities undertaken to verify that a species delisted due to recovery remains secure from the risk of extinction after the protections of the Act no longer apply. The primary goal of post-delisting monitoring is to monitor the species to ensure that its status does not deteriorate, and if a decline is detected, to take measures to halt the decline so that proposing it as an endangered or threatened species is not again needed. If at any time during the monitoring period data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing. At the conclusion of the monitoring period, we will review all available information to determine if relisting, the continuation of monitoring, or the termination of monitoring is appropriate.

Section 4(g) of the Act explicitly requires that we cooperate with the States in development and implementation of post-delisting monitoring programs. However, we remain ultimately responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of monitoring. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation after delisting, in this case, the Navy, an integral partner and the sole owner and manager of San Clemente Island.

We will continue to coordinate with the Navy to implement effective post-delisting monitoring (PDM) for the SC Bell's sparrow, SCI lotus, SCI paintbrush, SCI larkspur, and SCI bush-mallow. The PDM plan builds upon current monitoring techniques and research, as well as emerging technology and techniques. Monitoring will assess the species' numbers, distribution, and threats status, as well as ongoing management and conservation efforts that have improved the status of the species since listing. The PDM plan identifies, to the extent practicable and in accordance with our current understanding of the species' life history, measurable thresholds and responses for detecting and reacting to significant changes in the species' populations, distribution, and viability. If declines are detected equaling or exceeding these thresholds, the Service, in combination with the Navy, will investigate causes of these declines, including considerations of habitat changes, anthropogenic impacts, stochastic events, or any other significant evidence. The result of the investigation will be to determine if any of the species warrant expanded monitoring, additional research, additional habitat protection, or resumption of Federal protection under the Act.

Given the Navy's past and current stewardship efforts, management for the species has been effective to date, and it is reasonable to expect that management will continue to be effective for the species and their habitats beyond a post-delisting monitoring period, and well into the future. In addition to post-delisting monitoring activities that will occur, the Navy anticipates continued management of the species in accordance with the SCI INRMP and other management plans. Additional monitoring or research (beyond post-delisting monitoring requirements) may occur in the future for these and other rare endemics on SCI based on available resource levels. We will work closely with the Navy to ensure post-delisting monitoring is conducted and to ensure future management strategies are implemented (as warranted) to benefit these species.

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that we do not need to prepare an environmental assessment or environmental impact statement, as defined in the National Environmental Policy Act (42 U.S.C. 4321 et seq.), in connection with determining a species' listing status under the Endangered Species Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. There are no Tribal lands associated with this final rule.

References Cited

A complete list of references cited in this rulemaking is available on the internet at *https://www.regulations.gov* and upon request from the Carlsbad Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Carlsbad Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we hereby amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

§ 17.11—[Amended]

2. Amend § 17.11 in paragraph (h) by removing the entry for “Sparrow, San Clemente sage” under BIRDS from the List of Endangered and Threatened Wildlife.

§ 17.12—[Amended]

3. Amend § 17.12 in paragraph (h) by removing the entries for “*Acmispon dendroideus* var. *traskiae*”, “*Castilleja grisea*”, “*Delphinium variegatum* ssp. *kinkiense*”, and “*Malacothamnus clementinus*” under FLOWERING PLANTS from the List of Endangered and Threatened Plants.

Martha Williams,
Director,
U.S. Fish and Wildlife Service.

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