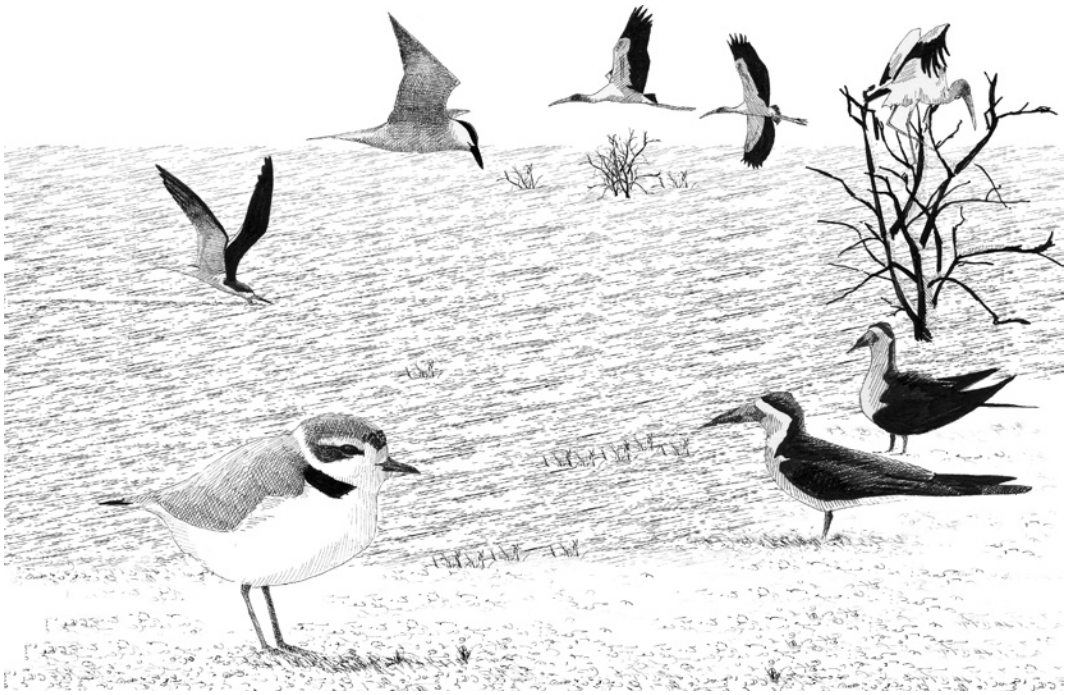
II

Species Accounts



Andy Birch

PDF of San Clemente Spotted Towhee account from:

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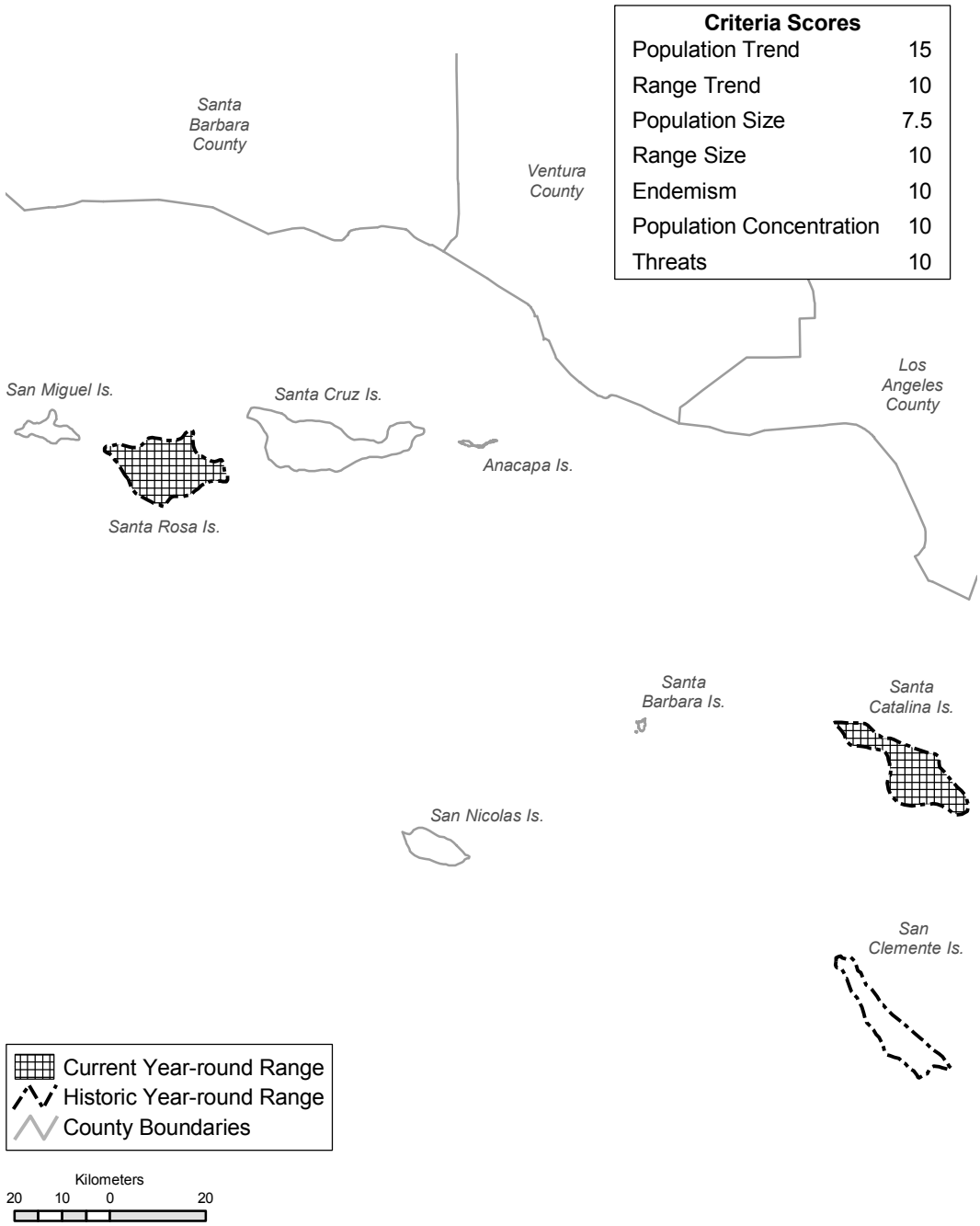
SAN CLEMENTE SPOTTED TOWHEE
(*Pipilo maculatus clementae*)

Paul W. Collins



Current and historic (ca. 1944) year-round range of the San Clemente Spotted Towhee, a California endemic. Resident on Santa Rosa, Santa Catalina, and (formerly) San Clemente islands; numbers appear to have declined greatly. Towhees of the mainland subspecies, *P. m. megalonyx*, also breed on Santa Cruz Island and occur as migrants and occasional winter visitors to the other Channel Islands.

Special Concern Priority

Currently considered a Bird Species of Special Concern (year round), priority 1. This subspecies was not included on prior special concern lists (Remsen 1978, CDFG 1992).

Breeding Bird Survey Statistics for California

Data inadequate for trend assessment (Sauer et al. 2005).

General Range and Abundance

Spotted Towhees (*Pipilo maculatus*) are widespread from southwestern Canada and the northern Great Plains south through the western United States into northwestern Baja California and the highlands of Mexico to southwestern Guatemala (Greenlaw 1996). In California, they are resident throughout the state except for higher elevations of the principal mountain ranges and lower elevations of the Mojave and Colorado deserts (Grinnell and Miller 1944). The San Clemente Spotted Towhee (*P. m. clementae*) is endemic to two (formerly three) of the California Channel Islands, as described below in detail (AOU 1957).

Of the nine subspecies of *P. maculatus* currently recognized, six breed in California, two of these on the Channel Islands (AOU 1957, Greenlaw 1996). *P. m. clementae* is weakly differentiated from the adjacent mainland race *P. m. megalonyx* (Swarth 1913, Johnson 1972). Although Spotted Towhees on Santa Rosa Island have been placed with *clementae* (Miller 1951, AOU 1957, Johnson 1972), they may be more closely allied with mainland *megalonyx*, which also is resident on Santa Cruz Island (Swarth 1913, Willett 1933, Grinnell and Miller 1944, Greenlaw 1996, P. Unitt pers. comm.).

Seasonal Status in California

Occurs year round; the breeding season generally extends from early April until late July (Collins and Jones in press), but perhaps occasionally to early September (*P. m. megalonyx* fledglings seen on Santa Cruz Island; Pitelka 1950). Individuals of the mainland subspecies *megalonyx* occur as fairly frequent spring and fall transients and occasional winter visitors to the Channel Islands (Collins and Jones in press).

Historic Range and Abundance in California

Historically, the San Clemente Spotted Towhee was resident only on Santa Rosa, Santa Catalina, and San Clemente islands (Grinnell and Miller 1944). The first ornithologists to visit the Channel Islands described the San Clemente Spotted Towhee as "common," "very common," "abundant," and "very abundant" (Linton 1908, Richardson 1908, Howell 1917, Grinnell and Miller 1944). These early descriptions of towhee abundance, however, were all made well after feral herbivores had begun altering the towhees' shrubby habitats. The historic status of each island population of *clementae* was as follows.

Santa Rosa Island. San Clemente Spotted Towhees have been reported as "common" (C. P. Streator 1892 unpubl. field notes, USNM; Willett 1912) or "quite common" (H. H. Sheldon 1927 unpubl field notes, UCLA) on Santa Rosa.

Santa Catalina Island. These towhees have been described as "abundant" to "very abundant" on Santa Catalina (C. P. Streator 1892 unpubl. field notes, USNM; Grinnell 1899; Richardson 1908; Grinnell and Miller 1944).

San Clemente Island. Most early reports list the subspecies as "common" or "very common" on San Clemente (Grinnell 1897; Linton 1908; Willett 1912, 1933; Howell 1917). By 1939, it was becoming rare. G. Willett (unpubl. field notes, LACM) could not find it on the island, perhaps because its numbers had been reduced by feral cats (*Felis catus*), which were plentiful then on the island.

Recent Range and Abundance in California

Habitat degradation on the Channel Islands from more than 150 years of overgrazing by feral herbivores and rooting by feral pigs (*Sus scrofa*) led to the extirpation of the breeding population of the San Clemente Spotted Towhee on its island namesake (see map; Stewart and Smail 1974, Collins and Jones in press). A lack of quantitative data on towhee numbers on Santa Rosa and Santa Catalina prior to the introduction of non-native grazing mammals makes it hard to know if their populations on these islands have declined or prospered.

Santa Rosa Island. A. H. Miller (unpubl. field notes, MVZ) considered Spotted Towhees to be "very abundant" on Santa Rosa in March 1950.

In 1968, J. M. Diamond (unpubl. field notes, UCLA) observed them in "virtually all" groves of big trees and scrub habitats. During the past thirty years, observers have described these towhees as "common" to "very common" on this island (Collins and Jones in press). Variable-circular-plot (VCP) surveys conducted by the National Park Service between 1994 and 1998 recorded an average of 0.6 (range = 0.5–1.0) towhees per station and detected them on an average of 45.0% (range = 26.7%–60.0%) of all stations; densities ranged from 0.9 to 2.7 birds per km^2 (Fancy 2000).

Santa Catalina Island. Since the 1970s, towhees have been described as "fairly common" to "very common" on Santa Catalina (Jones 1991). Today, San Clemente Towhees are widely distributed and relatively numerous on this island. Towhee numbers on Santa Catalina averaged 27.3 (range = 9–72, *n* = 7 yrs) individuals on a single Breeding Bird Survey route from 1988 to 1998 (Sauer et al. 2005) and 1.2 (range = 0.3–2.2) birds per party hour during 15 years (1988–2002) of Christmas Bird Counts (www.audubon.org/bird/cbc/). Monitoring surveys conducted during the breeding season between 1999 and 2003 recorded an average of 2.4 (range = 2.2–2.6) towhees per VCP station and detected *clementae* at an average of 72.5% (range = 69%–81%) of the 80 stations (A. Aarhus unpubl. data).

San Clemente Island. In May 1968, J. M. Diamond (unpubl. field notes, UCLA) reported finding only "small numbers" of Spotted Towhees in the bottoms of several canyons, and he estimated the island-wide population at <100 individuals. On the next survey of the island, in 1972, only two Spotted Towhees were observed (Leatherwood and Coulombe 1972). The last observations of birds thought to be *clementae* were of three birds in April 1973 and an immature bird on 10 July 1975 (Collins and Jones in press). A lack of Spotted Towhees on San Clemente during the breeding season since, despite intensive surveys for them, indicates *clementae* has been extirpated as a breeder on this island (Jorgensen and Ferguson 1984).

Ecological Requirements

The ecological requirements of the San Clemente Spotted Towhee, which are largely undescribed, are probably very similar to those reported for mainland Spotted Towhees. San Clemente Spotted Towhees are closely tied to the distribution of suitable dense chaparral and woodlands (oak woodland, island woodland, Bishop Pine forest) that contain well-developed leaf litter and humus sheltered by overhead branches and foliage (Grinnell and Miller 1944, P. W. Collins pers. obs.). Prominent shrubs and other thicket-forming plants in *clementae* habitat include scrub oaks (*Quercus* spp.), sumacs (*Rhus* spp.), Coyote Brush (*Baccharis pilularis*), Western Poison Oak (*Toxicodendron diversilobum*), manzanita (*Arctostaphylos* spp.), California-Lilac (*Ceanothus* spp.), Toyon (*Heteromeles arbutifolia*), Chamise (*Adenostoma fasciculatum*), Holly-leaved Cherry (*Prunus ilicifolia*), buckthorn (*Rhamnus* spp.), and Mountain-Mahogany (*Cercocarpus betuloides*). Spotted Towhees consume the larvae, pupa, and adults of a wide variety of insects and litter arthropods, as well as small seeds, fleshy fruits, berries, and grain (Shuford 1993, Greenlaw 1996). They obtain this food by scratching through leaf litter or by gleaning or plucking it from the leaves or branches of shrubs or trees (Greenlaw 1996). Their year-round diet is 24% invertebrates and 76% vegetable matter (Beal 1910) and varies seasonally from 49%–62% vegetable matter in spring and summer to 91%–92% in fall and winter (Martin et al. 1951). Spotted Towhee nests are usually built in depressions on the ground, or occasionally in vegetation 0.6–3.6 m off the ground, and are typically overhung with bushes, vines, or clumps of grass that provide shelter and protective screening (Davis 1960, Shuford 1993). Pairs will raise two and occasionally three broods in a single season and will renest following nest failure (Davis 1960).

Intensive grazing by a variety of domestic and feral herbivores—goats (*Capra hircus*), sheep (*Ovis aries*), and cattle (*Bos tarus*)—and rooting by feral pigs has degraded the scrub and woodland habitats used by *clementae.* Moderate to heavy grazing on the islands depleted the herbaceous layer and reduced foliar cover in these habitats (Van Vuren and Coblentz 1987, Klinger et al. 1994, Laughrin et al. 1994). *P. m. megalonyx* density on Santa Cruz Island was 23 birds per km^2 in a lightly grazed chaparral-grassland community versus no towhees in a similar habitat that was moderately grazed (Van Vuren and Coblentz 1987). Feral pig rooting in scrub and woodland habitats has also adversely affected Spotted Towhee habitats by destroying the litter layer and upper soil horizons, reducing rates of regeneration of herbaceous annuals and woody plants, and reducing the numbers and diversity of invertebrates and of litter and upper soil microorganisms (Baber 1982, Schuyler 1988).

Threats

Loss, fragmentation, and degradation of scrub and woodland habitats, including their understories, by feral herbivore grazing and feral pig rooting has increased the susceptibility of ground nesters, such as towhees, to predation from native (e.g., Common Raven [*Corvus corax*], Island Fox) and introduced (feral cat, feral pig, and Black Rat [*Rattus rattus*]) nest predators. As herbivores and pigs are eradicated from the Channel Islands, vegetation is expected to show increased vigor and growth (Coblentz 1977, Wehtje 1991, Klinger et al. 1994, Laughrin et al. 1994), which over the long term will lead to the development of dense stands of the scrub and woodland habitats favored by these towhees. Feral cats and Black Rats are expected to remain on at least two of the islands where *clementae* breeds (Santa Catalina) or has bred (San Clemente). Controlling or eliminating fire likewise will lead in the long term to the development of dense stands of scrub and woodland. As vegetative cover increases, fire frequency and intensity are also expected to increase, especially where levels of human visitation are high (Santa Catalina) or military activities are intense (e.g., onshore bombardment activities at San Clemente). Large, "hot" fires are expected to reduce suitable towhee habitat temporarily until vegetation recovers.

Management and Research Recommendations

- Complete feral animal eradication programs, including eradicating feral cats on San Clemente and Santa Catalina islands, and support the implementation of ecological restoration plans proposed by the Santa Catalina Island Conservancy for Santa Catalina Island, the National Park Service for Santa Rosa Island (NPS 1998, 1999), and the U.S. Navy for San Clemente Island (USDN 2001).
- Following vegetation recovery and the removal of feral cats, reestablish a viable breeding population of *P. m. clementae* on San Clemente Island.
- Conduct studies using mitochondrial and single-locus microsatellite DNA analyses to help elucidate the population genetic structure of *clementae*, identify which island population to use as the stock for reintroducing Spotted Towhees to San Clemente, and help clear up the uncertainty regarding the taxonomic status of Spotted Towhees on Santa Rosa Island.
- Investigate how fire (frequency and intensity of controlled burns) can be used in scrub and woodland habitats to help maintain and/or promote suitable breeding and foraging habitat for these towhees.
- Initiate field studies to fill gaps in nearly all aspects of the life history of this subspecies (e.g., phenology, breeding biology, ecology, food habits, population demography, behavior, and behavioral ecology) and identify specific habitat requirements and ecological conditions necessary for self-sustaining populations; in particular, determine demographic rates for Spotted Towhee populations on each of the islands.

Monitoring Needs

An existing Breeding Bird Survey route and Christmas Bird Count are providing some useful data for monitoring population fluctuations of Spotted Towhees on Santa Catalina. Comparable surveys are lacking on Santa Rosa Island, but, regardless, neither method permits monitoring population trends in relation to habitat changes. Annual monitoring of Spotted Towhees on the Channel Islands should use standardized off-trail counts based on variable circular plots and stratified by habitat type (Ralph et al. 1993). Currently, landbird monitoring programs at Channel Islands National Park (Super et al. 1991, McEachern 2000, L. Dye pers. comm.) and Santa Catalina Island (A. Aarhus pers. comm.) are being converted to VCP-based monitoring programs. These programs should provide an index of breeding population size and monitor overall population trends with respect to habitat changes. To estimate demographic variables for *P. m. clementae* (annual adult survival and breeding productivity), constant-effort mist-netting (MAPS; DeSante et al. 1993, Nur et al. 2000) is recommended.

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