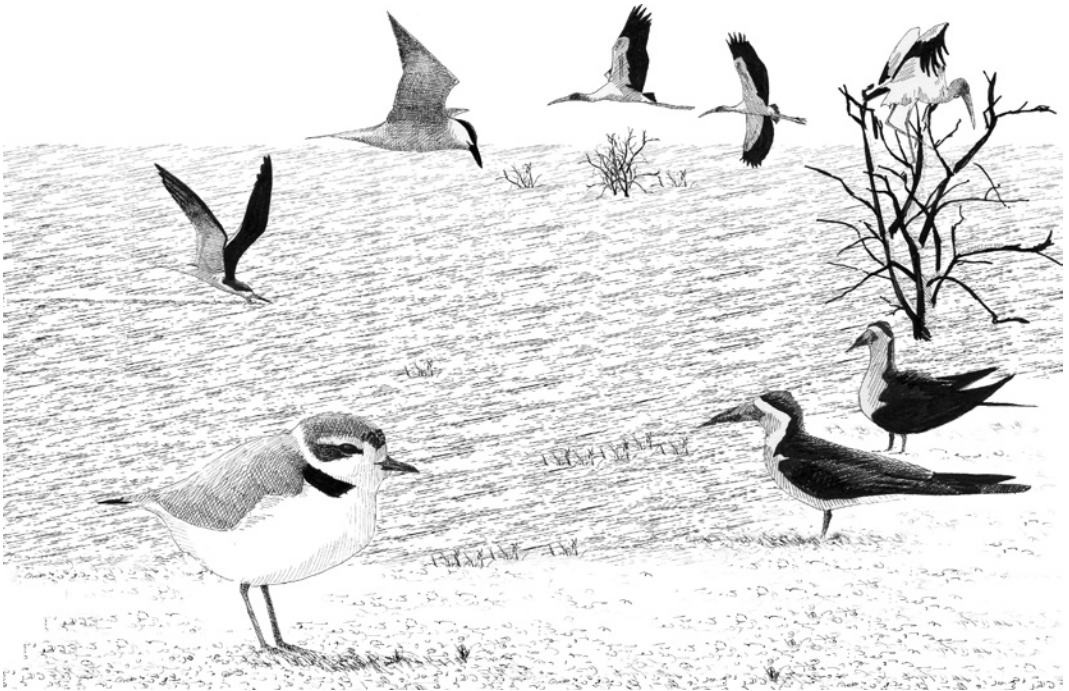


II

SPECIES ACCOUNTS



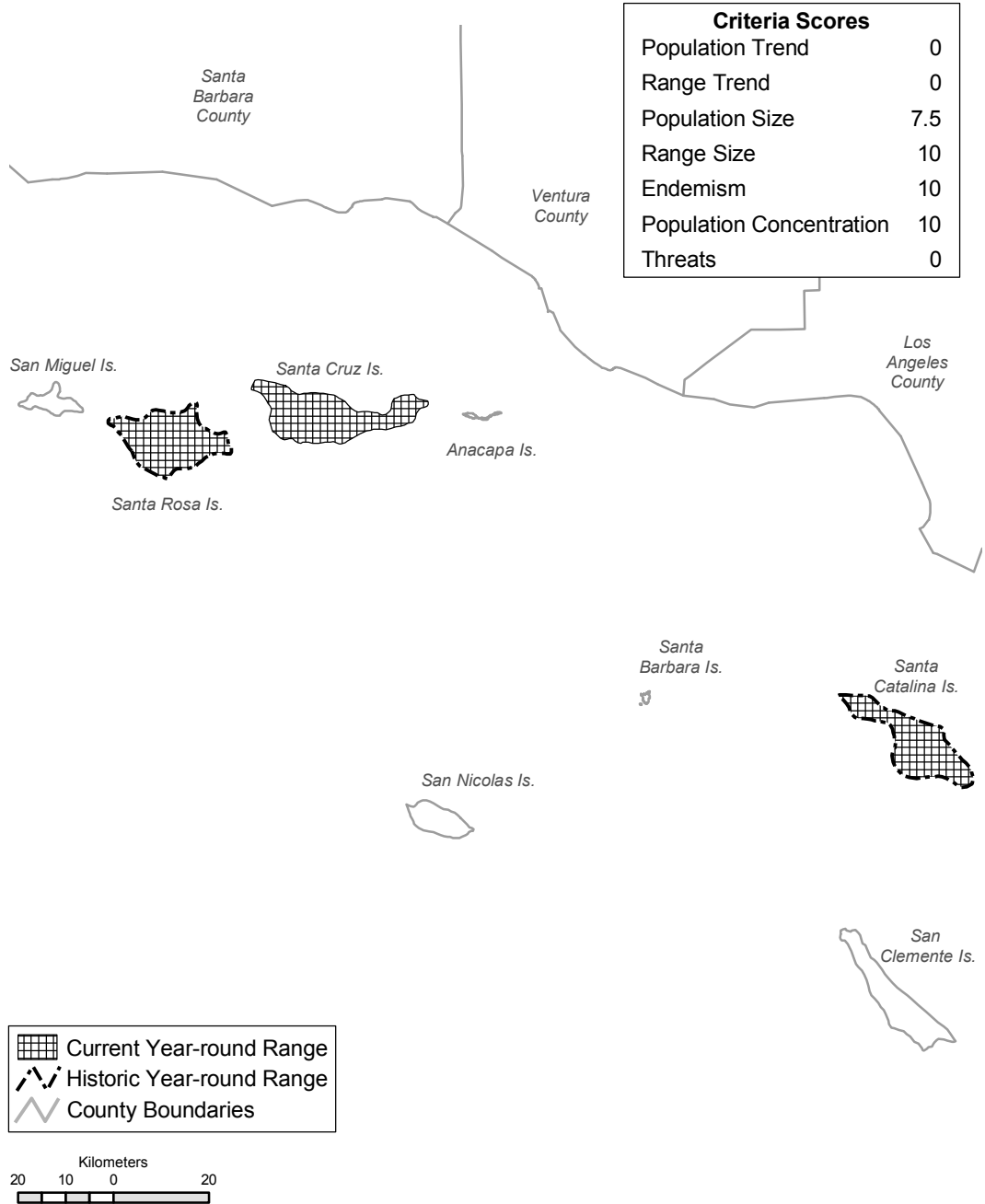
Andy Birch

PDF of Catalina California Quail account from:

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CATALINA CALIFORNIA QUAIL (*Callipepla californica catalinensis*)

PAUL W. COLLINS



Current and historic (ca. 1944) year-round range of the Catalina California Quail. Birds from Santa Catalina Island (perhaps brought by Native Americans) later introduced successfully to Santa Rosa (1935–1940) and Santa Cruz (late 1940s) islands, but unsuccessfully to San Nicolas Island (1962); quail from mainland populations of *C. c. californica* introduced unsuccessfully to Santa Cruz (prior to 1875) and San Clemente (late 19th century, 1913) islands.

SPECIAL CONCERN PRIORITY

Currently considered a Bird Species of Special Concern (year round), priority 3. 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

The California Quail (*Callipepla californica*) is native to western North America in southern Oregon, western Nevada, California, and Baja California; introduced populations are established in southern British Columbia, Washington, Oregon (outside the native range), Idaho, eastern Nevada, northeastern Utah, and (very locally) eastern Arizona (Calkins et al. 1999). Of seven subspecies generally recognized, two may not be valid (summarized in Calkins et al. 1999). In California, which hosts four valid subspecies (three mainland, one island form), the species occurs broadly and is absent mainly from the higher elevations of major mountain ranges and the Mojave (except the western fringes) and Colorado deserts (Grinnell and Miller 1944).

The Catalina California Quail (*C. c. catalinensis*) is endemic to the California Channel Islands (Grinnell and Miller 1944, AOU 1957); see sections below for a detailed treatment of its status on these islands. Whether quail on Santa Catalina Island are native or were introduced currently is unresolved. Specimens collected in the late 1880s and 1890s and Dickey and van Rossem's (1922) morphological evaluation of *C. c. catalinensis* both support Grinnell's (1906) statement that early island residents considered quail to be native. Johnson (1972), however, hypothesized that Native Americans introduced quail to the island around 12,000 years ago, which is consistent with the lack of genetic divergence of quail on Santa Catalina Island from those on the mainland (Zink et al. 1987).

SEASONAL STATUS IN CALIFORNIA

Occurs year round; breeds from mid-April until mid-July (Collins and Jones in press).

HISTORIC RANGE AND ABUNDANCE IN CALIFORNIA

Grinnell and Miller (1944) described the Catalina California Quail as a "common to abundant" resident of Santa Catalina Island and noted that an introduced population occurred on Santa Rosa Island.

Santa Rosa Island. Quail from Santa Catalina Island (*C. c. catalinensis*) were introduced to Santa Rosa Island sometime between 1935 and 1940 (Collins and Jones in press). The only mention of this quail on Santa Rosa prior to 1945 was in 1941, when it was "seen occasionally, in pairs or small groups" (A. H. Miller unpubl. field notes, MVZ); by 1944 it was established on the island (Grinnell and Miller 1944).

Santa Catalina Island. This quail appears to have been numerous on Santa Catalina since it was first reported there in the 1860s (Cooper 1870). C. P. Streater (unpubl. field notes, USNM) reported that quail were "abundant" in the canyons in April 1892, and Richardson (1908) found them "abundant" in April 1905 and 1906. Since then, the species has been listed as a "common" (Willett 1912, Grinnell et al. 1918), "abundant" (Willett 1933), and "common to abundant" resident (Grinnell and Miller 1944).

RECENT RANGE AND ABUNDANCE IN CALIFORNIA

The breeding range of the Catalina California Quail has expanded during the past century through introductions to Santa Rosa and Santa Cruz islands (see map). An unsuccessful attempt was made to introduce *C. c. catalinensis* to San Nicolas Island in 1962 (Townsend 1968).

Santa Rosa Island. A. H. Miller (unpubl. field notes, MVZ) reported seeing occasional pairs or small groups of quail in March 1950. In the mid-1970s, quail were "common" and widely distributed on the island (P. W. Collins and H. L. Jones pers. obs.), but they appear to have declined by the late 1980s (P. W. Collins pers. obs.).

Santa Cruz Island. From 1946 to 1948, 150–200 birds from Santa Catalina Island were released onto Santa Cruz Island (Collins and Jones in press). Since then, quail have been described as "common" (1960s; J. M. Diamond unpubl. field notes, UCLA), "abundant" (1960s; J. V. Lynch unpubl. field notes, MVZ), "thriving" (Yeaton 1974), "widespread and abundant" (Laughrin

1982), and “common to abundant” (2000s, L. Laughrin pers. obs.). Ten years of monitoring surveys based on variable circular plots (VCP), conducting during the breeding season between 1991 and 2000, recorded an average of 1.2 (0.7–1.8) quail per VCP station and detected *catalinensis* at an average of 49.9% (24.1%–65.0%) of all stations (L. Laughrin and R. Klinger unpubl. data).

Santa Catalina Island. Quail on this island have been described as “much commoner than on the mainland” (1968; J. M. Diamond unpubl. field notes, UCLA), “common and widely distributed” (Jones 1976), and a “very common resident” (1991, H. L. Jones unpubl. field notes). Further evidence that quail are numerous on Catalina are averages of 52 birds on a single Breeding Bird Survey route from 1988 to 1998 ($n = 7$ yrs, Sauer et al. 2005) and of 6.9 (range = 1.0–16.9) birds per party hour during 15 years (1988–2002) of Christmas Bird Counts (www.audubon.org/bird/cbc/). Recent data from VCP-based monitoring surveys also indicate that quail are widespread and abundant on Santa Catalina. Monitoring surveys conducted during the breeding season between 1999 and 2003 recorded an average of 4.7 (2.7–11.1) quail per VCP station and detected *catalinensis* at an average of 56.3% (36.3%–85.0%) of all stations (A. Aarhus unpubl. data).

ECOLOGICAL REQUIREMENTS

Although ecological requirements of the Catalina California Quail are largely undescribed, Grinnell et al. (1918) stated that its “general natural history is probably nearly identical with that of the Valley Quail [*C. c. californica*].” On Santa Catalina, quail occupy areas of open scrub (coastal sage scrub and chaparral) and oak woodlands along canyon bottoms and on shady north-facing slopes (Grinnell and Miller 1944, Jones 1976). On Santa Cruz and Santa Rosa islands, this species is found in coastal sage scrub, chaparral, woodlands, and pine forests (Laughrin 1982). Like their mainland counterparts, island quail frequent the edges or openings in scrub and woodland habitats having protective cover of low stature, open foraging areas, and water sources (P. W. Collins pers. obs.). Dominant shrubs in *catalinensis* habitat on the islands include California Sagebrush (*Artemisia californica*), California Sunflower (*Encelia californica*), California Broom (*Lotus scoparius*), Coyote Brush (*Baccharis pilularis*), Black Sage (*Salvia mellifera*), prickly-pear (*Opuntia* spp.), Giant Rye (*Leymus condensatus*), Manzanita (*Arctostaphylos*

spp.), California-Lilac (*Ceanothus* spp.), Toyon (*Heteromeles arbutifolia*), Mountain-Mahogany (*Cercocarpus betuloides*), and Chamise (*Adenostoma fasciculatum*).

The California Quail is generally a sedentary species that moves only seasonally within its home range. Dense cover is important to provide shade, shelter from inclement weather, and refuge from predators (Shuford 1993). Cover on a site inhabited by California Quail in Baja California averaged 47% shrubby, 27% bare or rocky, 23% herbaceous, and 3% arborescent (Koford 1987). California Quail feed primarily on seeds, green leafage, and flowers from forbs, grasses, shrubs, and trees (Shuford 1993, Calkins et al. 1999). During the spring and early summer, invertebrates (insects, millipedes, mites, spiders, snails, and sowbugs) make up 1% to 7% of the quail’s diet (Leopold 1977, Shuford 1993). On Santa Catalina Island, the fall diet of quail is made of 44.8% annual grasses (oats, barley, and brome), 42.5% herbs (filaree, clover, snake-root, lupine, and lotus), 8.5% shrubs, and 4.3% miscellaneous items (Leopold 1977:246). Quail foraging areas provide a “sparse to moderately dense growth of annual grasses and particularly forbs, with a duff or litter layer that harbors fallen seeds” (Shuford 1993). When foraging, chicks and juveniles typically stay close to escape cover, whereas adults usually keep within 15 m but occasionally range up to 90 m from escape cover when aerial predators are absent (Shuford 1993, Calkins et al. 1999). Nests are well concealed and generally placed on the ground in dense clumps of grass or weeds, often sheltered at the base of bushes or dead logs, beneath overhanging rocks, or in rock crannies (Ehrlich et al. 1988, Shuford 1993, Calkins et al. 1999). In productive years, pairs occasionally raise two broods.

Climatic variables and vegetative structure are probably two of the more important factors that limit Catalina California Quail populations. Botsford et al. (1994) determined that January-to-March rainfall totals accounted for 76% of the variance in reproductive success in the un hunted Catalina California Quail population on Santa Cruz Island. Rainfall prior to quail nesting apparently increases reproductive success by aiding growth of food plants, whereas rainfall during nesting decreases breeding success by increasing mortality of newly hatched chicks (Calkins et al. 1999). Nest and fledgling predation from native and introduced predators, coupled with degradation of preferred scrub and woodland breeding habitats by past feral herbivore grazing and feral

pig (*Sus scrofa*) rooting (Santa Catalina and Santa Cruz islands) are additional factors that may be limiting *C. c. catalinensis* populations. Moderate to heavy grazing by feral herbivores has altered scrub and woodland community structure on the islands by depleting the herbaceous layer, reducing foliar cover and species richness, eliminating survival of propagules, and increasing erosion (Van Vuren and Coblenz 1987, Klinger et al. 1994, Laughrin et al. 1994). Although these changes may have degraded habitats frequented by quail, they do not appear to have significantly reduced quail numbers.

THREATS

The principal factors that threaten island quail populations are changes in vegetative cover and structure following removal of feral herbivores, and long-term fire suppression that promotes growth of impenetrable brush and dense woodlands. As herbivores and feral pigs are eliminated from the Channel Islands, it is unknown what the long-term effects will be on quail populations. Scrub and woodland habitats are expected to show increased germination and seedling survivorship, increased vegetative vigor, and increased overall vegetative cover (Coblenz 1977, Wehtje 1991, Klinger et al. 1994, Laughrin et al. 1994). Over the long term, this will lead to the development of broad, dense stands of scrub and woodland unsuitable for breeding and foraging quail, which may reduce their numbers. Likewise, controlling or eliminating episodic factors such as fire or light to moderate grazing will lead to a similar degradation of quail habitat. As vegetative cover increases on the islands, fire intensity may also increase. On the mainland, regular small fires in chaparral tend to promote the growth of annuals, thereby benefiting quail populations (Calkins et al. 1999). Infrequent "hot" fires, however, tend to reduce California Quail populations in the long term through a reduction in usable habitat (Duncan 1968).

MANAGEMENT AND RESEARCH RECOMMENDATIONS

- Finish implementing the ecological restoration and feral animal eradication programs that have been proposed by the Santa Catalina Island Conservancy for Santa Catalina Island and by the National Park Service for Santa Cruz Island (NPS 2001).
- Develop and implement a program to control or, preferably, eradicate feral cats (*Felis*

catus) on Santa Catalina Island.

- Identify specific habitat requirements and ecological conditions that will support self-sustaining populations; in particular, determine demographic rates for each of the island populations.
- Determine the frequency and intensity of controlled burns in scrub and woodland habitats needed to promote habitat for Catalina California Quail.
- Initiate field studies to gather basic descriptive attributes (phenology, ecology, breeding biology, food habits, behavioral ecology) to fill existing data gaps in nearly all aspects of the life history of *C. c. catalinensis*.
- Implement a genetic study to elucidate the population genetic structure, phylogeny, and taxonomic relationships of the various island quail populations.

MONITORING NEEDS

An existing Breeding Bird Survey route and Christmas Bird Count are providing some useful data for monitoring population fluctuations of quail on Santa Catalina Island. Both types of surveys are lacking on Santa Cruz and Santa Rosa islands, though, and, regardless, neither permits monitoring of population trends in relation to habitat changes. VCP-based landbird monitoring programs on Santa Rosa (Super et al. 1991, McEachern 2000), Santa Cruz (L. Laughrin pers. comm.), and Santa Catalina (J. Floberg and A. Aarhus pers. comm.) currently provide good annual indices of breeding quail abundance. The data collected also serve to monitor quail population trends in relation to habitat changes following the removal of herbivores and rooters from the islands.

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