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SPECIES ACCOUNTS



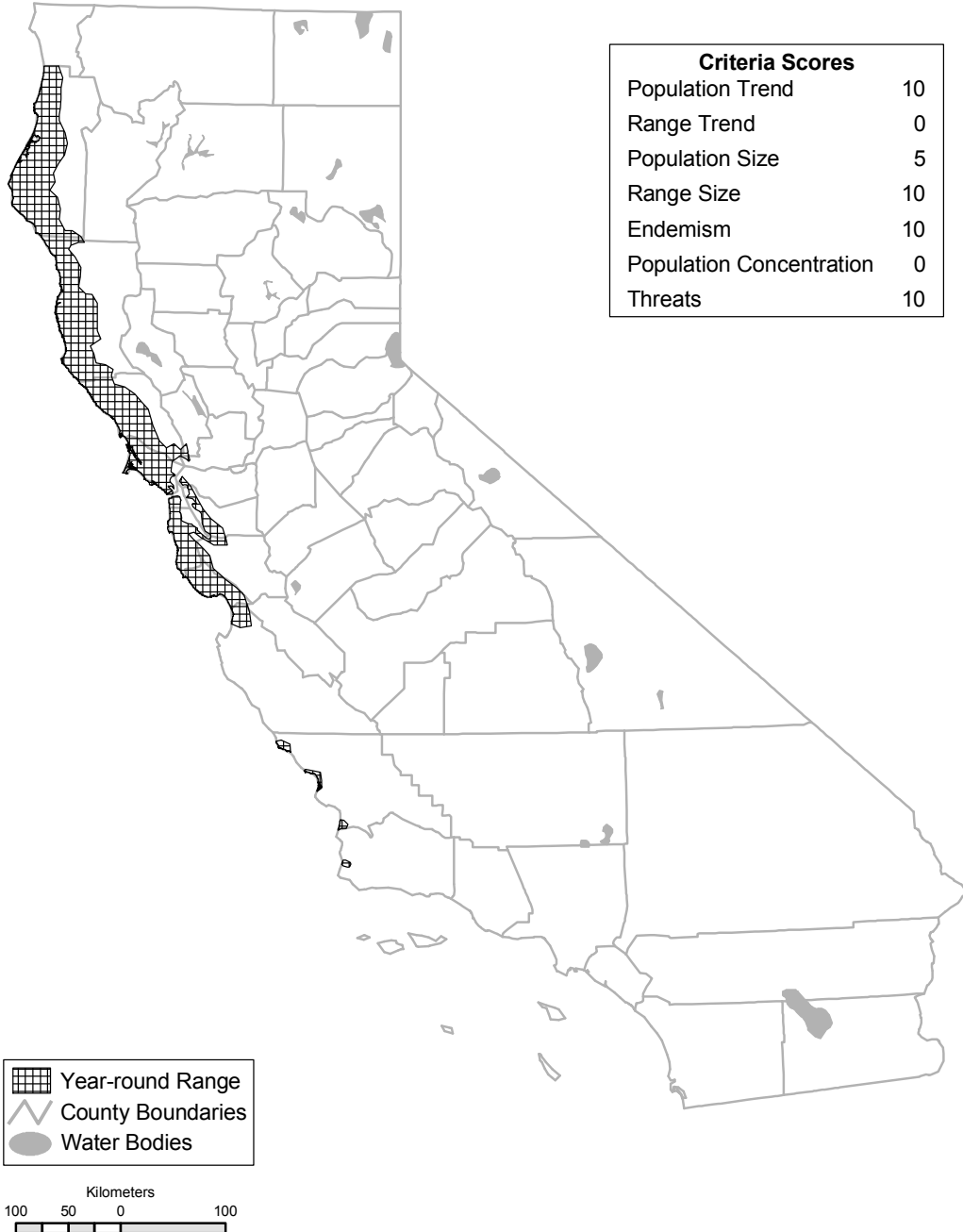
Andy Birch

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BRYANT'S SAVANNAH SPARROW (*Passerculus sandwichensis alaudinus*)

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Year-round range of the Bryant's Savannah Sparrow, a California endemic. Authorities differ on whether the subspecies' range extends north of Humboldt Bay, Humboldt County, and south of Morro Bay, San Luis Obispo County; the range mapped here includes all areas considered by some to pertain to *P. s. alaudinus*. Regardless, the overall outline of the range is stable, but numbers of this sparrow have declined at least moderately; formerly bred in the Point Lobos area, Monterey County (not mapped).

SPECIAL CONCERN PRIORITY

Currently considered a Bird Species of Special Concern (year round), priority 3. Not included on previous 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 Savannah Sparrow (*Passerculus sandwichensis*) breeds widely across northern and central North America and winters primarily in the southern United States, Baja California, and mainland Mexico south to Guatemala and northern Honduras; resident populations occur mainly on the Pacific coast from central California to Baja California and on the northwestern coast and in the central highlands of mainland Mexico (Wheelwright and Rising 1993, AOU 1998).

Of 17 subspecies of the Savannah Sparrow generally recognized, 4 breed in California (AOU 1957, Wheelwright and Rising 1993). The Bryant's Savannah Sparrow (*P. s. alaudinus*), formerly referred to as *P. s. bryanti* (Grinnell and Miller 1944), is a California endemic restricted to a narrow coastal strip from Humboldt Bay south to the Morro Bay area (AOU 1957); its center of abundance appears to be the San Francisco Bay area. There is uncertainty regarding the ranges and differentiation of coastal Savannah Sparrows in California. P. Unitt (pers. comm.) ascribes all Savannah Sparrows breeding in Humboldt County to *P. s. alaudinus* and those immediately north in coastal Del Norte County to *P. s. brooksi*. To the south, he extends the range of *alaudinus* slightly south to Point Conception to include breeding birds at the mouths of the Santa Maria and Santa Ynez rivers, Santa Barbara County. This determination is based on data (M. Holmgren unpubl.) that suggest, with statistical significance, a split at Point Conception: *P. s. alaudinus* to the north, *P. s. beldingi* to the south (M. Holmgren and P. Unitt pers. comm.). Beadle and Rising (2003) differ somewhat in recommending that birds from Morro Bay south are *P. s. beldingi* and all north to Humboldt Bay are *P. s. alaudinus*. Regardless of the taxonomic treatment, these birds occupy a very narrow geographic and ecological range in coastal California.

SEASONAL STATUS IN CALIFORNIA

Year-round resident; breeds mainly from early April to early July (Gill 1977), very rarely to mid-August (Hunter et al. 2005). Some local movement is suggested by withdrawal from higher elevation grasslands in Humboldt County during inclement winter weather.

HISTORIC RANGE AND ABUNDANCE IN CALIFORNIA

Grinnell and Miller (1944) described the Bryant's Savannah Sparrow as a "common" resident, locally "abundant," of tidal marshes and grasslands in the coastal fog belt. Representative areas occupied included Humboldt Bay and Kneeland Prairie (up to 2800 ft [853 m]), Humboldt County; various sites in the San Francisco Bay area (Sonoma, Marin, Solano, Contra Costa, Alameda, San Francisco, San Mateo, Santa Clara counties); Santa Cruz and Watsonville, Santa Cruz County; Point Lobos, Monterey County; and Cambria and Morro Bay, San Luis Obispo County.

RECENT RANGE AND ABUNDANCE IN CALIFORNIA

The general outline of the breeding range today remains largely unchanged (see map). Still, the loss or degradation of coastal marshes and grasslands within this sparrow's range has no doubt reduced available habitat, causing local extirpations. This sparrow's habitat likely suffered disproportionately during salt marsh conversion in the San Francisco Bay system because of its tendency to use the higher portions of marshes, the areas easiest for humans to develop (Shuford 1993).

Recent breeding bird atlas projects give some idea of the relative distribution in some counties within the subspecies' range. Despite variation in observer coverage and the amount of appropriate habitat among the counties surveyed, a simple index, percent of atlas blocks with evidence of Savannah Sparrows breeding, is illustrative of the generally restricted distribution of this species. Starting from the north: Humboldt County, 11% of atlas blocks (Hunter et al. 2005); Sonoma County, 11% (Burrige 1995); Marin County, 52% (Shuford 1993); Napa County, 11% (Berner et al. 2003); San Francisco County, 20% (unpubl. data); Alameda County, 11% (unpubl. data); San Mateo County, 59% (Sequoia Audubon Society 2001); Contra Costa County, 11% (unpubl. data); Santa Clara County, 14% (unpubl. data); and

Monterey County, 11% (Roberson and Tenney 1993).

Within its narrow coastal range (see map), the distance inland this sparrow is found from the coastline or bay shore generally ranges from 13 km to 16 km, but it has been located in Humboldt County as far as 40 km inland, near Willow Creek, and has been confirmed breeding at about 24 km inland (Hunter et al. 2005). During fieldwork for other atlas projects, observers have reported possible and even probable breeding even farther than 40 km inland, such as near Lake Berryessa, Napa County (Berner et al. 2003). Without definitive evidence of breeding, atlas compilers can have difficulty interpreting such records, given lingering wintering birds or migrants can occur inland in coastal counties through late May (Roberson and Tenney 1993), well into the breeding season of *alaudinus* on the immediate coast.

Likely reflecting increased observer coverage, more breeding locales above or inland from the fog belt have been documented in recent times. Among these are the Bald Hills in Humboldt County (Hunter et al. 2005) and east of Salinas in Monterey County (Roberson and Tenney 1993), where individuals apparently use habitats somewhat drier than those originally described by Grinnell and Miller (1944). At the southern extreme, breeding Savannah Sparrows are now known from the lower reaches of the Santa Maria and Santa Ynez rivers (M. Holmgren pers. comm.).

Conversely, Bryant's Savannah Sparrows no longer occupy some historic sites and likely have declined greatly in the core of their range because of habitat loss. The San Francisco Bay area has experienced salt marsh habitat loss possibly in excess of 90% (Larson 2001). This area likely had the most breeding Savannah Sparrows and perhaps as many as all coastal areas combined. Here, habitat was converted to urban, industrial, or flooded areas (Larson 2001), with little suitable habitat remaining and little additional created. This sparrow no longer appears to breed in the salt marshes of Humboldt Bay, possibly as a result of a widespread conversion of salt marsh vegetation from Pickleweed (*Salicornia virginica*) to cord grass (*Spartina* spp.) dominance (Hunter et al. 2005). This appears to have been compensated for to an unknown degree by the sparrows' use of dairy pastures adjacent to Humboldt Bay for breeding. Although sparrows were formerly documented at Point Lobos, Monterey County (Grinnell and Miller 1944), none were found there during breeding bird atlas surveys from 1988 to 1992 (Roberson and Tenney 1993).

Little is known about the abundance of this sparrow. It generally tends to occur at higher densities in coastal marshes than in other habitats (Gill 1972, Wheelwright and Rising 1993), though, for Marin County, Shuford (1993) reported that it was distributed in coastal and bay marshes at apparently lower densities than in fog-belt grasslands. In Monterey County, Roberson and Tenney (1993) estimated 80–100 pairs, and in Napa County, Berner et al. (2003) reported categorical estimates of abundance in three southern blocks (representing the center of abundance for the county) of 10–100 individuals in two blocks and 100–1000 in one. Gill (1972) estimated 800–1000 breeding pairs of Savannah Sparrows in the southern San Francisco Bay. It is difficult to estimate overall abundance given these few local estimates, but the total number of breeding pairs probably exceeds 10,000 within the entire coastal breeding range.

ECOLOGICAL REQUIREMENTS

This sparrow occupies low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands. Bay-shore habitats are composed primarily of broad expanses of higher parts of Pickleweed marsh, 1.5 to 3 m above mean sea level, above cord grass stands, and where the Pickleweed community merges into grassland (Gill 1972, Shuford 1993, Wheelwright and Rising 1993). Plants typical of this habitat are Pickleweed and Saltgrass (*Distichlis spicata*). Adjacent to salt marshes this sparrow also occupies weedy spoil areas, canal banks, and bottomland pastures (Gill 1972, S. Harris pers. comm.). In south San Francisco Bay, it nests mainly on levee tops grown to grasses and in areas of high Pickleweed on levee banks (Gill 1977). Around Humboldt Bay, it breeds in extensive dairy pastures, especially in the taller grasses and rushes along roads and fences, and water conveyance canals. In moist upland grasslands, it occurs where herbaceous vegetation is relatively short, with no or little woody plant cover. A moist swale or drainage is often present but not necessary. This sparrow generally avoids drier upland grasslands, especially in the interior Coast Ranges (Roberson and Tenney 1993, Shuford 1993). Bare ground, whether provided by tidal mudflats or upland interstitial areas between clumps of vegetation, appears to be an important component of occupied habitat (Shuford 1993).

Data are limited concerning the minimum and maximum height of vegetation breeding Savannah

Sparrows will use. In the northern part of the range of *alaudinus*, however, this sparrow is known to avoid historically occupied areas when the grasses are unusually tall (A. Desch pers. comm., S. Fitton pers. obs.). Kwasny (2000) documented higher territory density and reproductive success on ungrazed than on grazed sites at Humboldt Bay, and territory density and reproductive success were positively correlated with average height of vegetation.

Sparrows place their open-cup nests in dense cover on the ground in grass clumps or under matted grasses or weeds, or raise them up to 10 cm on supporting grass or Pickleweed (Johnston 1968). Birds sing near ground level or preferentially on an elevated and more exposed perch (Wheelwright and Rising 1993). Such perches may be elevated clumps of grass or herbaceous vegetation, scattered low shrubs and trees, or a large variety of human-made structures, such as fences, posts, pipes, and machinery.

Savannah Sparrows eat primarily animal matter during the breeding season and vegetable matter during winter, the annual diet averaging close to 50% of each (Wheelwright and Rising 1993). Typical prey in the breeding season are insect eggs, larval and adult insects, small spiders, small mollusks, millipedes, amphipods, isopods, decapods, mites, seeds, and fruit. In winter, sparrows eat primarily seeds and fruit but take insects as available.

The influx of several other subspecies of the Savannah Sparrow into the range of *alaudinus* during the nonbreeding season (Grinnell and Miller 1944), and the difficulty of separating them in the field, greatly complicates the study of its winter ecology and habitat use. Savannah Sparrows in the high-elevation prairies of Humboldt County continue to concentrate at moist areas outside the breeding season but leave temporarily during periods of extended snow cover, and return shortly after most of it melts (A. Desch pers. comm.). It is unknown to which subspecies these overwintering birds belong.

Population regulating factors of this subspecies are unknown, and information from migratory populations may not apply.

THREATS

The primary threats to *alaudinus* are loss or alteration of habitat, increased fragmentation and isolation of occupied areas, and contamination of habitat. Historically, coastal habitats have been disproportionately developed for human use

relative to their interior counterparts. Fortunately, several laws now exist that seek to protect coastal environments. Still, these measures have not halted habitat conversion to urban, agricultural, or industrial uses. In estuaries, sparrows and their habitat could be affected by oils spills washed in by high tides. In some grassland areas, large ranches are being subdivided into smaller ranchettes, which often changes land uses to the detriment of grassland birds. Although grassland habitats have suffered less habitat destruction than marshlands in coastal California (Shuford 1993), many remaining grasslands have been degraded. Grasslands often revert to dominance by woody species when parks are created and livestock are removed, and fire is often suppressed or difficult and expensive to use as a vegetation management tool. Further, the natural course of succession on these lands may render habitat inappropriate. Because of the long history of frequent soil disturbance and presence of non-native invasive plants, the result is often the establishment of thick weedy fields that are too dense and tall for this sparrow. Besides reducing available habitat and the linkages between suitable patches, habitat loss also reduces the size of the affected population and makes it more susceptible to stochastic events, such as drought, flooding, disease, and contaminant spills (Soulé 1987). These sparrows are presently considered sedentary, and hence the likelihood of individuals successfully dispersing presumably decreases with increasing distance from occupied areas. This potentially increases the detrimental effects of habitat loss and fragmentation, though it is unknown how frequently these sparrows move between occupied areas within the fragmented matrix of habitats of urbanized San Francisco Bay or between distant marshes such as those in Morro and Monterey bays.

MANAGEMENT AND RESEARCH RECOMMENDATIONS

- Restore, enhance, and protect suitable salt-marsh habitat. Where feasible, set back dikes so upper marsh habitat can be restored in transition to native uplands.
- Protect upland grassland habitat, whether composed primarily of native or non-native plant species.
- Determine the extent of seasonal movements and dispersal of this sparrow, including the probabilities of immigration between occupied areas.

- Determine subspecific validity and distribution using genetic and morphological techniques.
- Compare abundance, reproductive success, and site fidelity of this sparrow in wetland, native grassland, non-native grassland, and restored wetland habitats, and determine vegetation structure for each habitat.
- Determine the effects of using various intensities and timing of fire and livestock grazing to improve upland grassland habitat. Kwasny (2000) indicated that delaying grazing until after 1 June at Humboldt Bay would increase sparrows' density and reproductive success.
- Study the winter ecology of this species, including determining distribution and habitat use relative to site fidelity and annual survival.

MONITORING NEEDS

Because of the nonrandom distribution and small size of suitable habitat patches, current Breeding Bird Survey routes monitor populations of this subspecies poorly. Additionally, because of the difficulty in identifying wintering Savannah Sparrows to subspecies, Christmas Bird Counts cannot monitor Bryant's Savannah Sparrows.

Breeding habitat should be mapped and monitored for changes in areal extent. A subset of breeding populations should be monitored statewide, stratified by habitat type. Point counts or line transects in appropriate habitat, after singing migrant subspecies have departed, should provide an adequate index of abundance and hence serve to monitor population trends for this subspecies (Ralph et al. 1993, Burnham et al. 1980, Bibby et al. 1992). This index of abundance should be augmented by conducting nest searches to determine reproductive success in various habitats and locations throughout the subspecies' range in California.

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