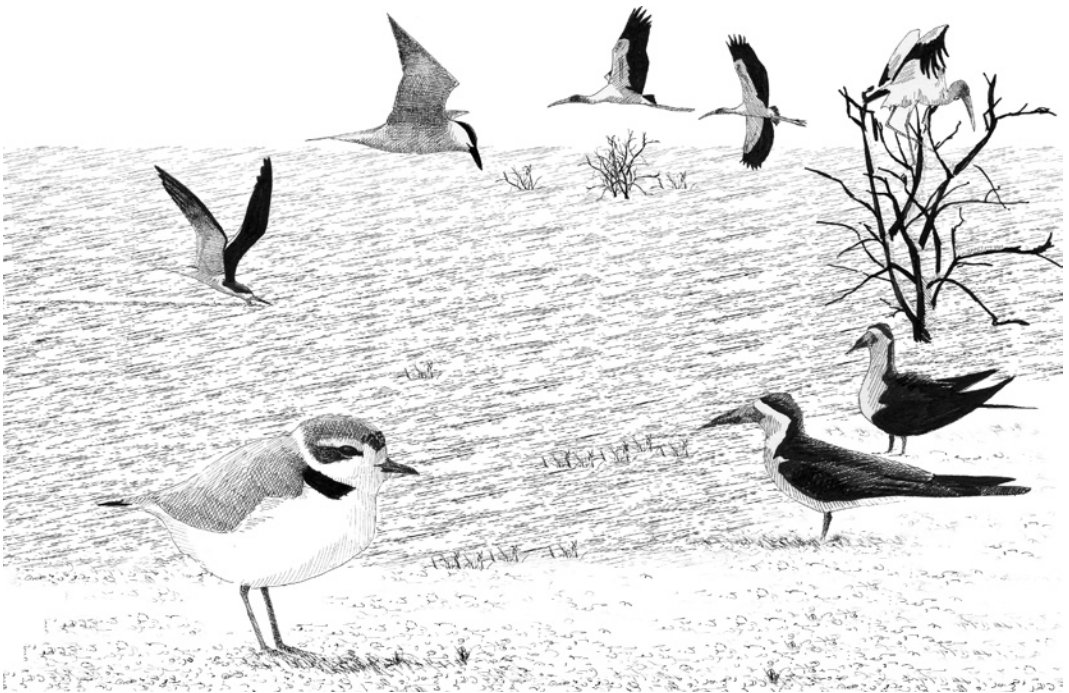


II

SPECIES ACCOUNTS



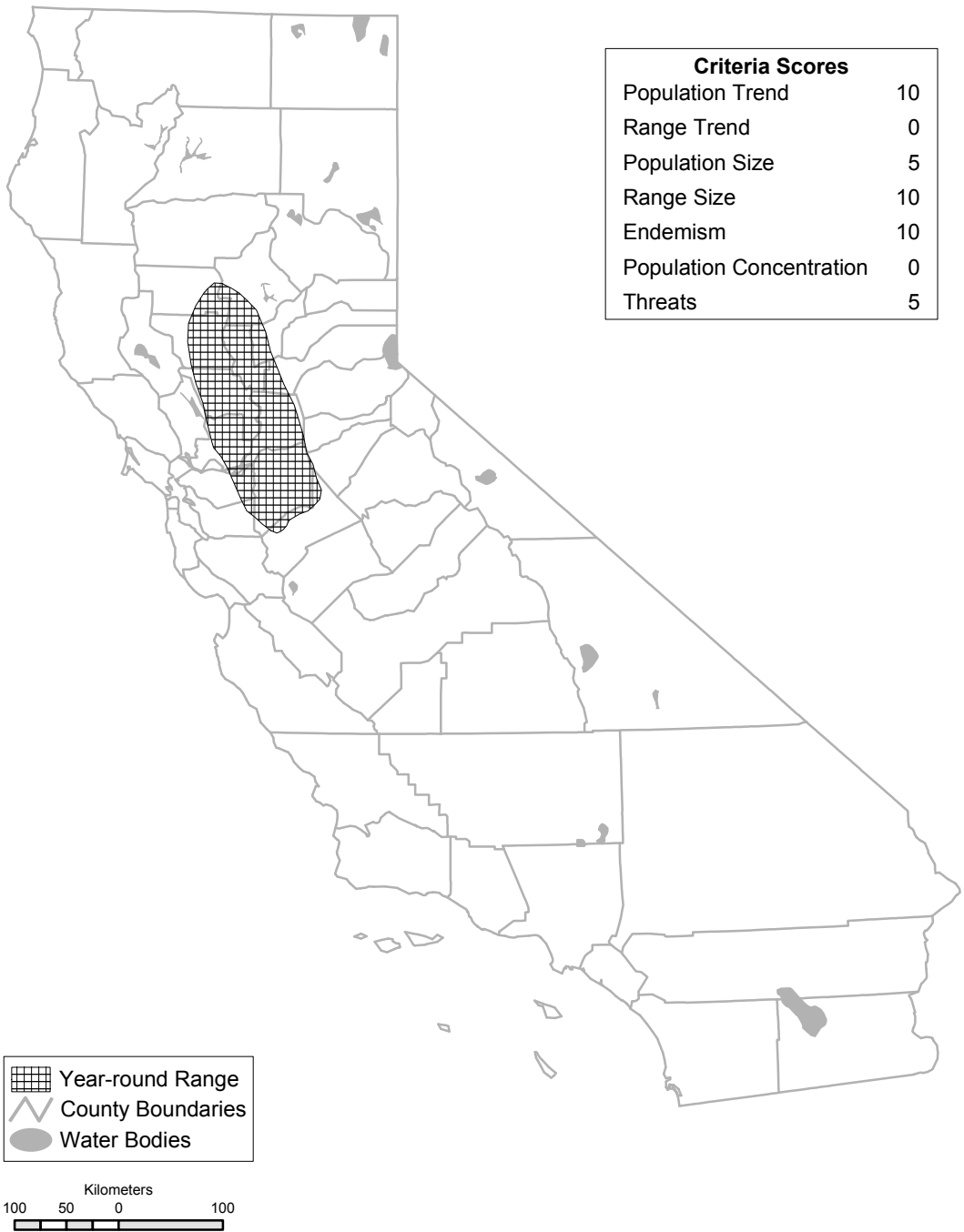
Andy Birch

PDF of Modesto Song Sparrow account from:

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SONG SPARROW (*Melospiza melodia*) (“Modesto” population)

THOMAS GARDALI



Year-round range of the Modesto Song Sparrow, which has declined in numbers at least moderately. Restricted to California, where it is locally numerous in the Sacramento Valley, Sacramento–San Joaquin River Delta, and northern San Joaquin Valley. Exact boundaries of range uncertain, but mapped distribution is conservative relative to prior attempts, which may have exaggerated the western and, particularly, eastern limits.

SPECIAL CONCERN PRIORITY

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

Song Sparrows (*Melospiza melodia*) range from southern Alaska across central and southern Canada south through the United States into northern (locally to central) Mexico and Baja California; sparrows occupy a large part of northern range in summer only, much of mid-central and southern portion in winter only (AOU 1998, Arcese et al. 2002). In California, the species is resident in much of the state except for the higher mountains and most of the southeastern deserts away from the Salton Sink and Colorado River valley (Grinnell and Miller 1944, Small 1994).

Of the 24 subspecies currently recognized, 9 occur in California (Patten 2001, Arcese et al. 2002). Until Patten's (2001) revision, the population of Song Sparrow described here was considered to be a valid subspecies (the Modesto Song Sparrow, *M. m. mailliardi*), and may again be, pending further research.

The Modesto Song Sparrow is endemic to California, where it resides only in the north-central portion of the Central Valley (Grinnell and Miller 1944, AOU 1957). Highest densities occur in the Butte Sink area of the Sacramento Valley and in the Sacramento–San Joaquin River Delta (PRBO unpubl. data).

SEASONAL STATUS IN CALIFORNIA

A year-round resident; breeds from mid-March to early August (PRBO unpubl. data).

HISTORIC RANGE AND ABUNDANCE IN CALIFORNIA

Grinnell and Miller (1944) described the Modesto Song Sparrow as a "common" resident occurring primarily below 200 ft (61 m) elevation in the Central Valley from Colusa County in the Sacramento Valley south through the Sacramento–San Joaquin River Delta (exclusive of Suisun Marsh) to the northern San Joaquin Valley of

Stanislaus County. Within its historic range, this sparrow was probably closely tied to the distribution of suitable freshwater wetlands and early successional riparian thickets.

Historic locations of confirmed breeding include Butte Creek in Butte, Colusa, and Sutter counties; Colusa, Colusa County; Sacramento, Sacramento County; Stockton, San Joaquin County; and the confluence of the San Joaquin and Tuolumne rivers, Stanislaus County (Grinnell and Miller 1944; WFFVZ, CAS, and MVZ egg set data). Grinnell and Miller (1944) may have exaggerated the eastern limit of the range, which they extended into the Sierra Nevada foothills, as they presented no records for that region and stated that birds above 200 ft (61 m) may not be the Modesto form. The former status of Song Sparrows west of the Sacramento River in Colusa County also is unclear, as few permanent wetlands may have occurred there historically (J. Silveira pers. comm.), and again Grinnell and Miller (1944) presented no records for that region. However, almost annual flooding of the Sacramento Valley's rivers created a shifting mosaic of habitats, including early successional stages of riparian forests, oxbow lakes, and seasonal to permanent wetlands, to which this Song Sparrow was probably well adapted.

RECENT RANGE AND ABUNDANCE IN CALIFORNIA

The general outline of the breeding range today remains largely unchanged (see map). Despite limited historical data, it seems likely the over 90% loss of wetlands and riparian forests in the Central Valley (Thompson 1961, Frayer et al. 1989) greatly reduced overall numbers and extirpated this sparrow locally within its range.

The Modesto Song Sparrow remains locally numerous in areas where, by today's standards, extensive wetlands remain. Hence, the Sacramento–San Joaquin River Delta and Butte Sink areas represent current centers of abundance for this sparrow (PRBO unpubl. data, T. Gardali pers. obs.). In the northern portion of its range, Song Sparrows occur in low densities at Delevan and Colusa NWRs and are absent as breeders from the Sacramento NWR (PRBO unpubl. data). Immediately adjacent to the Butte Sink, Song Sparrows breed in sparsely vegetated irrigation canals, yet are almost entirely absent from the main stem and tributaries of the Sacramento River above Sacramento. In addition to sites mentioned above, extensive summer surveys north

of Sacramento during 1998 to 2000 located Song Sparrows at Perkins and Eddy lakes, Butte County; the northernmost limit of Little Butte Creek, Butte County; along the Sacramento River, Colusa and Sutter counties; and west of Tisdale, Sutter County (PRBO unpubl. data). Singing Song Sparrows also occur in roadside irrigation ditches east of the Sacramento River above the Tisdale Bypass, Sutter County (T. Manolis in litt.), and within Sutter NWR (D. Gilmer in litt.).

Song Sparrows also are numerous in the delta, particularly in southwestern Sacramento County (T. Manolis in litt.) and northwestern San Joaquin County (PRBO unpubl. data). Unlike in the Butte Sink, Song Sparrows in the delta and northern San Joaquin Valley are locally numerous along riparian corridors, such as the Cosumnes and Stanislaus rivers (DiGaudio and Geupel 1998, PRBO unpubl. data), and sparse along vegetated irrigation canals and levees (T. Gardali pers. obs.). Song Sparrows are also sparse along the Mokelumne River where the habitat is primarily mature (J. Hammond in litt.).

ECOLOGICAL REQUIREMENTS

The ecological requirements of the Modesto Song Sparrow are largely undescribed. Grinnell and Miller (1994) noted this population's affinity for emergent freshwater marshes dominated by tules (*Scirpus* spp.) and cattails (*Typha* spp.) as well as riparian willow (*Salix* spp.) thickets. These Song Sparrows also nest in riparian forests of Valley Oak (*Quercus lobata*) with a sufficient understory of blackberry (*Rubus* spp.), along vegetated irrigation canals and levees, and in recently planted Valley Oak restoration sites (DiGaudio and Geupel 1998, PRBO unpubl. data).

Marshall (1948) described the primary habitat requirements of several subspecies of Song Sparrow in California as being moderately dense vegetation to supply cover for nest sites, a source of standing or running water, semiopen canopies to allow light, and exposed ground or leaf litter for foraging. Song Sparrows forage primarily on the ground, but foraging behavior is highly opportunistic (reviewed in Shuford 1993), perhaps reflecting changes in resource availability and distribution. The year-round diet of the Song Sparrow in California is roughly 79% vegetable and 21% animal matter, the latter taken mostly in May (Beal 1910). Nests usually are placed below 1 m in a wide variety of plant species. Pairs will raise two and perhaps three broods, and will renest following nest failure (DiGaudio and Geupel 1998, PRBO unpubl. data).

Studies of population limiting factors of the Modesto Song Sparrow are lacking. In general, however, lack of early successional habitats and wetlands may be limiting this sparrow. For example, nest success was extremely low in the mature forests along the Cosumnes River yet was relatively high in young restoration plots (Haff 2003). The Modesto Song Sparrow may be sensitive to factors identified in studies of other subspecies of Song Sparrows. In a wetland-breeding population in coastal British Columbia, for example, high levels of nest predation coupled with Brown-headed Cowbird (*Molothrus ater*) parasitism reduced the birth rate below that needed to offset adult mortality (a population "sink"; Rogers et al. 1997). Indeed, nest predation and, to a lesser extent, cowbird parasitism were the primary factors responsible for nest failure at Cosumnes (DiGaudio and Geupel 1998, Haff 2003). Additionally, the sparrows' inability or lack of opportunity to disperse may be limiting this population in some parts of its range. Habitats such as those along the Sacramento River have few breeding Song Sparrows, yet the sparrow is abundant at the Butte Sink roughly 10 km away (PRBO unpubl. data). Elsewhere, however, this sparrow rapidly colonized a wastewater treatment wetland in Sacramento County two years after its construction (Jones et al. 1998).

THREATS

Habitat loss, fragmentation, and degradation may be the primary threats to the Modesto Song Sparrow. Reproductive failure caused by inflated levels of nest predation is likely a threat to this population. Most nest failure (90%) at Cosumnes was caused by nest predation (Haff 2003). Habitat conversion may benefit both native and non-native nest predators. Potential predators at Cosumnes include feral domestic cats (*Felis catus*), Raccoons (*Procyon lotor*), Striped Skunks (*Mephitis mephitis*), Opossums (*Didelphis marsupialis*), Black Rats (*Rattus rattus*), Norway Rats (*R. norvegicus*), garter snakes (*Thamnophis* spp.), Gopher Snakes (*Pituophis melanoleucus*), Brown-headed Cowbirds, Western Scrub-Jays (*Aphelocoma californica*), and American Crows (*Corvus brachyrhynchos*; DiGaudio and Geupel 1998, PRBO unpubl. data). Cowbird parasitism, often cited as reducing reproductive success, may have only minimal effects. Song Sparrows can tolerate mild levels of parasitism because early broods can fledge before cowbirds begin reproduction and adults can rear cowbirds successfully with their own young (Nice 1937, PRBO unpubl. data).

MANAGEMENT AND RESEARCH RECOMMENDATIONS

- Protect and create suitable wetlands and early successional riparian areas.
- Focus management and restoration efforts primarily on identifying and maintaining source populations capable of producing young in excess of adult mortality.
- Conduct research to identify specific habitat requirements and ecological conditions that support self-sustaining populations; in particular, compare demographic rates in various habitat types, such as seasonal versus permanent wetlands.
- Gather data to see whether limited dispersal capabilities or opportunities explain the patchy distribution and low densities of this Song Sparrow away from the Butte Sink and whether establishing dispersal corridors would effectively increase its population.
- Initiate studies on the ecology of nest predators within various habitat types to make clear the most effective management options for increasing reproductive output.
- Conduct studies to determine whether the Modesto Song Sparrow is a valid subspecies; DNA analyses were not used in Patten's (2001) reclassification. Further, more work on the ecology, size, song, and so forth of living birds is warranted—especially birds in the Butte Sink area versus those in the delta.

MONITORING NEEDS

The Breeding Bird Survey is inadequate for monitoring changes in the population dynamics of this sparrow. Survey routes are along roadways, whereas most Modesto Song Sparrows occur in wetlands away from roads and in refuges and preserves. The Song Sparrow, however, is well sampled by various other methods, such as off-road point counts and constant-effort mist-netting (Ralph et al. 1993). The latter accurately estimates annual breeding productivity and adult survival for Song Sparrows in coastal California (Nur et al. 2000).

Annual monitoring should include estimation of an index of breeding population size via standardized point counts and of annual adult survival and breeding productivity via constant-effort mist-netting (e.g., the MAPS program; DeSante 1992, DeSante et al. 1993).

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LITERATURE CITED

- American Ornithologists' Union (AOU). 1957. Check-list of North American Birds, 5th ed. Am. Ornithol. Union, Baltimore.
- American Ornithologists' Union (AOU). 1998. Check-list of North American Birds, 7th ed. Am. Ornithol. Union, Washington, DC.
- Arcese, P., Sogge, M. K., Marr, A. B., and Patten, M. A. 2002. Song Sparrow (*Melospiza melodia*), in *The Birds of North America* (A. Poole and F. Gill, eds.), no. 704. Birds N. Am., Philadelphia.
- Beal, F. E. L. 1910. Birds of California in relation to the fruit industry, part 2. U.S. Dept. Agri. Biol. Surv. Bull. 34.
- California Department of Fish and Game (CDFG). 1992. Bird species of special concern. Unpublished list, July 1992, Calif. Dept. Fish & Game, 1416 Ninth St., Sacramento, CA 95814.
- DeSante, D. F. 1992. Monitoring Avian Productivity and Survivorship (MAPS): A sharp, rather than blunt, tool for monitoring and assessing landbird populations, in *Wildlife 2001: Populations* (D. R. McCullough and R. H. Barrett, eds.), pp. 511–521. Elsevier Applied Science, London.
- DeSante, D. F., Burton, K. M., and Williams, O. E. 1993. The Monitoring Avian Productivity and Survivorship (MAPS) program second (1992) annual report. *Bird Populations* 1:1–28.
- DiGaudio, R., and Geupel, G. R. 1998. Songbird monitoring on the Cosumnes River Preserve: Progress report of the 1998 field season. Available from PRBO Conserv. Science, 3820 Cypress Dr., #11, Petaluma, CA 94954.
- Frayser, W. E., Peters, D. D., and Pywell, H. R. 1989. Wetlands of the California Central Valley: Status and trends. U.S. Fish & Wildl. Serv., Portland, OR.
- Grinnell, J., and Miller, A. H. 1944. The distribution of the birds of California. *Pac. Coast Avifauna* 27.
- Haff, T. M. 2003. Riparian restoration and nest success: What can we learn from the Modesto Song Sparrow? In *California Riparian Systems: Processes and Floodplain Management, Ecology, and Restoration* (P. M. Faber, ed.). 2001 Riparian Habitat and Floodplains Conference Proceedings, Riparian Habitat Joint Venture, Sacramento, CA.
- Jones, R. D., Scott, S. A., and Albright, J. I. 1998. The avifauna of constructed wetlands used for treating wastewater at the Sacramento Regional Wastewater Treatment Plant. *Central Valley Bird Club Bull.* 1:19–25.

- Marshall, J. T., Jr. 1948. Ecologic races of Song Sparrows in the San Francisco Bay Region. Part I. Habitat and abundance. *Condor* 50:193–215.
- Nice, M. M. 1937. Studies in the life history of the Song Sparrow. *Trans. Linn. Soc. New York* 4:1–246.
- Nur, N., Geupel, G. R., and Ballard, G. 2000. The use of constant-effort mist-netting to monitor demographic processes in passerine birds: Annual variation in survival, productivity, and floaters, in *Strategies for bird conservation: The Partners in Flight planning process* (R. Bonney, D. N. Pashley, R. J. Cooper, and L. Niles, eds.), pp. 185–194. *Proceedings RMRS-P-16*, U.S. Forest Serv., Rocky Mountain Res. Station, Ogden, UT.
- Patten, M. A. 2001. The roles of habitat and signaling in speciation: Evidence from a contact zone of two Song Sparrow (*Melospiza melodia*) subspecies. Ph.D. dissertation, Univ. Calif., Riverside.
- Ralph, C. J., Geupel, G. R., Pyle, P., Martin, T. E., and DeSante, D. F. 1993. Handbook of field methods for monitoring landbirds. Gen. Tech. Rep. PSW-GTR 144, U.S. Forest Serv., Pac. Southwest Res. Station, Albany, CA.
- Remsen, J. V., Jr. 1978. Bird species of special concern in California: An annotated list of declining or vulnerable bird species. Nongame Wildl. Invest., Wildl. Mgmt. Branch Admin. Rep. 78-1, Calif. Dept. Fish & Game, 1416 Ninth St., Sacramento, CA 95814.
- Rogers, C. M., Taitt, M. J., Smith, J. N. M., and Jongejans, G. 1997. Nest predation and cowbird parasitism create a demographic sink in wetland-breeding Song Sparrows. *Condor* 99:622–633.
- Sauer, J. R., Hines, J. E., and Fallon, J. 2005. The North American Breeding Bird Survey, results and analysis 1966–2004, version 2005.2. USGS Patuxent Wildl. Res. Ctr., Laurel, MD. Available at www.mbr-pwrc.usgs.gov/bbs/bbs.html.
- Shuford, W. D. 1993. The Marin County Breeding Bird Atlas: A Distributional and Natural History of Coastal California Birds. California Avifauna Series 1. Bushtit Books, Bolinas, CA.
- Small, A. 1994. California Birds: Their Status and Distribution. Ibis Publ., Vista, CA.
- Thompson, K. 1961. Riparian forests of the Sacramento Valley, California. *Annals Assoc. Am. Geographers* 51:294–315.