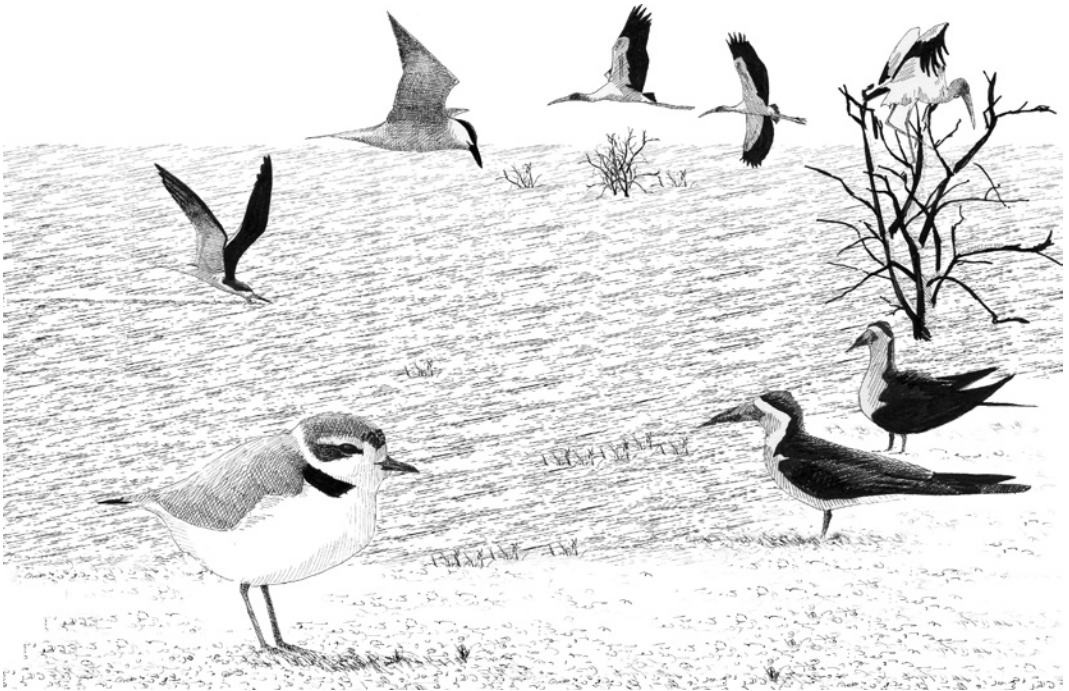


II

SPECIES ACCOUNTS



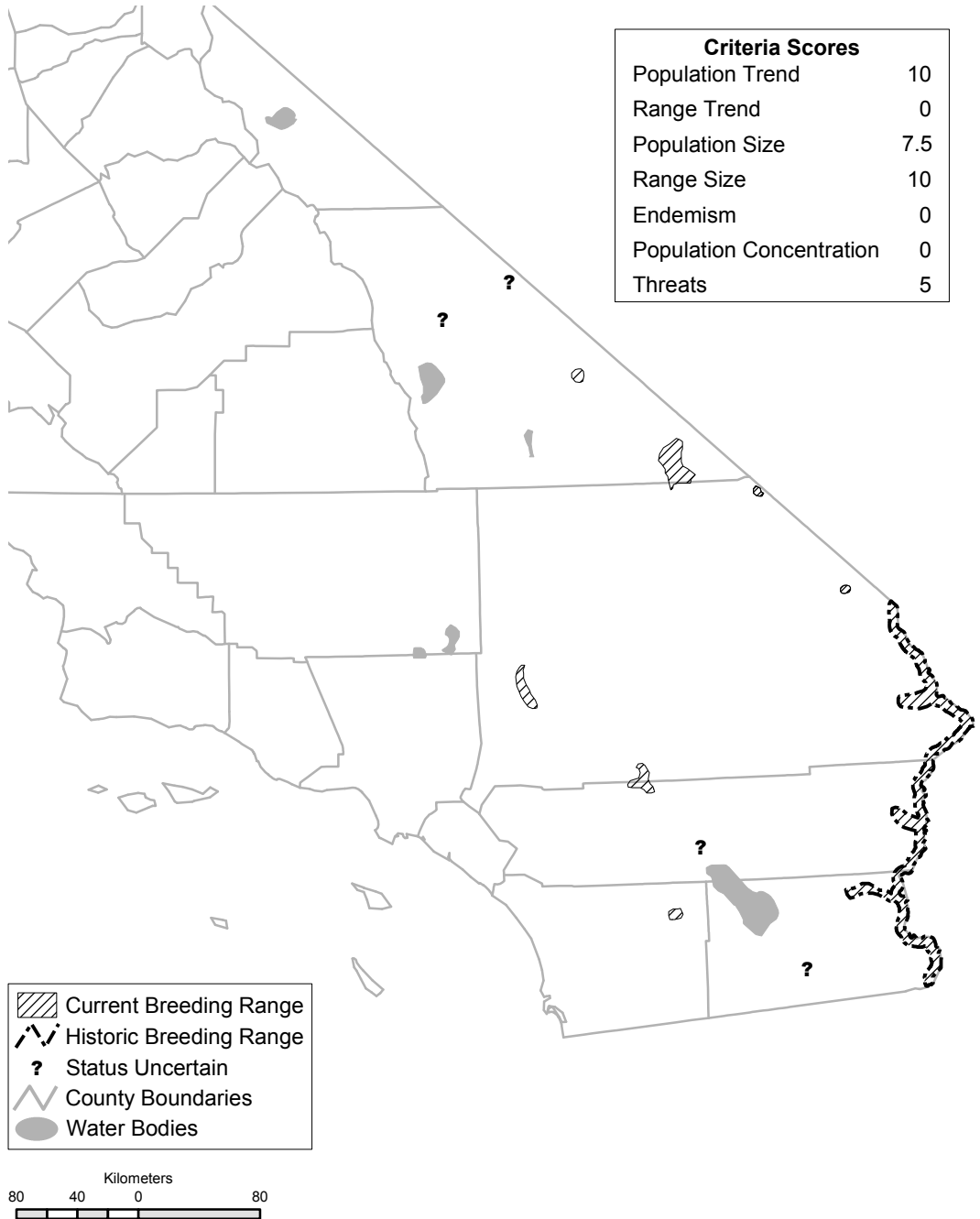
Andy Birch

PDF of Lucy's Warbler account from:

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

LUCY'S WARBLER (*Vermivora luciae*)

KIMBALL L. GARRETT



Current and historic (ca. 1944) breeding range of the Lucy's Warbler in California, where restricted to very limited areas in the Mojave and Colorado deserts. Numbers have declined moderately despite an expansion of the breeding range west and north of the lower Colorado River in the latter half of the 20th century. Historic and current status in the Imperial and Coachella valleys is uncertain.

SPECIAL CONCERN PRIORITY

Currently considered a Bird Species of Special Concern (breeding), 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

Monotypic. Breeds only in the southwestern United States (Arizona, southern New Mexico, southwestern Texas, extreme southern Nevada and Utah, and southeastern California) and adjacent northern Mexico (Dunn and Garrett 1997); within U.S. range most abundant in south-central Arizona (Price et al. 1995). Relatively recent (1907) arrival in New Mexico, where it has since spread through the southwestern part of the state and is now considered numerous (densities 1.7–3.3 pairs per ha; Stoleson et al. 2000). Conversely, declines noted in the Colorado River delta region of Sonora (Russell and Monson 1998) and along the Gila River in west-central Arizona (Rea 1983). Winters almost exclusively in Mexico, along the Pacific slope from extreme southern Sonora (“uncommon”; Russell and Monson 1998) to Guerrero and more rarely to the Isthmus of Tehuantepec (Howell and Webb 1995), though no Oaxaca records cited by Binford (1989).

SEASONAL STATUS IN CALIFORNIA

Occurs primarily as a breeding summer visitor and rare fall and winter vagrant. Arrival in California usually “mid-March” (Grinnell and Miller 1944), though some birds arrive early in the month (Garrett and Dunn 1981). Along the lower Colorado River valley, arrives “en masse” in the first half of March, coinciding with the leafing out of Honey Mesquite (*Prosopis glandulosa*; Rosenberg et al. 1991). Breeding occurs mainly from mid-April to early July (Rosenberg et al. 1991, Johnson et al. 1997, Unitt 2004). Most depart the California breeding grounds by mid-July, but some remain to September (Rosenberg et al. 1991). Rare fall migrant and winter visitor in California away from breeding habitats, mainly from August to February (Garrett and Dunn 1981).

HISTORIC RANGE AND ABUNDANCE IN CALIFORNIA

Grinnell and Miller (1944) recorded the breeding distribution of this species in California as the length of the Colorado River valley. They considered it “common,” and Swarth (1914) termed it “exceedingly abundant” on the Arizona side of the river. Grinnell and Miller (1944) indicated, however, that range and population reductions were already evident from destruction of mesquite thickets. Indeed, much earlier Grinnell (1914) attributed the loss of this species along the lower Colorado River between Picacho and Pilot Knob to cutting of Honey Mesquite for firewood. As of 1944, this species possibly, or formerly, bred in the Imperial Valley, Imperial County, and the Coachella Valley, Riverside County (Grinnell and Miller 1944). Dawson (1923) suggested that a Coachella Valley breeding population would have been only a remnant, given the loss of mesquite habitat there. In fact, he predicted the loss of this species altogether in California with continuing destruction of mesquite bosques.

The historic status in California west of the Colorado River, away from the Imperial and Coachella valleys, is unknown. However, the failure of Grinnell and Miller (1944) and earlier workers to find Lucy’s Warblers on the Mojave Desert of San Bernardino and Inyo counties suggests that it was rare or absent in those areas in the first half of the 20th century.

RECENT RANGE AND ABUNDANCE IN CALIFORNIA

The Lucy’s Warbler currently is numerous locally along the lower Colorado River, and small localized populations occur west to the Borrego Valley, San Diego County, and north through the Mojave Desert to Furnace Creek Ranch in Death Valley National Park, Inyo County, as detailed below (see map). This represents an expanded geographical area relative to that outlined by Grinnell and Miller (1944), but overall numbers in the state at present are certainly lower than in the first half of the 20th century given the major declines in the extent of suitable habitat along the lower Colorado River.

Lower Colorado River. Widespread habitat loss in, and prior to, the 1950s along the lower Colorado River caused declines, but there has been considerable recovery since (Rosenberg et al. 1991). Here Lucy’s Warblers occur both in floodplain riparian and in mesquite and other

woodland in washes that drain into the floodplain from the west. This species occupies some wooded washes up to 15 km west of the Colorado River valley proper (C. McCreedy unpubl. data), including Milpitas Wash, Imperial County; McCoy and Big Washes, Riverside County; and Vidal and Chemehuevi washes, San Bernardino County.

Anza-Borrego Desert. There was no indication of breeding in the desert portion of San Diego County as of the early 1980s, despite the occurrence of patches of mesquite in the Borrego Valley (Unitt 2004). Massey (1998), however, reported the occurrence of a population at Mesquite Bosque, south of Borrego Springs in Anza-Borrego Desert State Park, beginning in 1990, with breeding first documented in 1993. High counts of seven singing males have been obtained, and the breeding population has most recently been estimated as “no more than a few dozen pairs, and probably less” (Unitt 2004).

Imperial Valley. The species has been recorded breeding sporadically in this valley up to 1994–1995, when a pair bred northeast of Holtville; the only recent records are of migrants (Patten et al. 2003).

Coachella Valley. Small numbers of breeding birds were formerly established from the vicinity of Mecca at the north end of the Salton Sea north to Thousand Palms Oasis (Garrett and Dunn 1981). The small colony around Mecca persisted until 1985 (R. L. McKernan in Patten et al. 2003), but it is uncertain whether any breeding birds remain today in the Coachella Valley.

Mojave Desert. Small, localized breeding populations are present in San Bernardino County at Big Morongo Canyon, in the vicinity of Barstow (e.g., Afton Canyon), around Baker, on the Amargosa River, and around Klinefelter (Garrett and Dunn 1981). The population at Big Morongo Canyon was first discovered in 1969 (AFN 23:696), was estimated at 3–4 pairs in 1971 (AB 25:907), and still exists. At least 10 pairs were noted in about 50 ha of habitat in May and June 2002 at Mesquite Lake, extreme northeastern San Bernardino County; an extrapolated estimate was of 100+ pairs in the area (J. Sterling in litt.). This species was detected from 1979 to at least 1986 along Homer Wash in the Ward Valley (R. L. McKernan in litt.). The presence of multiple males in several visits to Fort Piute (C. McCreedy in litt.) suggests breeding at that locality. It is uncertain how many other populations in the county are still extant. The species is recorded in spring and probably nests at Camp Cady along the Mojave River, where excellent mesquite

habitat, increasingly invaded by tamarisk, exists (S. J. Myers pers. comm.). A survey in June 2001 along 30 km of the Mojave River between Mohave Narrows Regional Park and Helendale yielded three pairs, all just downstream from the Victorville sewage plant (S. J. Myers in litt.).

Death Valley Region. The northernmost extent of the species' range in California is in the Death Valley region, where it breeds at Furnace Creek Ranch and probably Scotty's Castle within Death Valley National Park (Garrett and Dunn 1981), in the vicinity of Tecopa (since at least 1972; AB 26:907), and on the Amargosa River (on the San Bernardino County line, Small 1994). Little information exists about numbers, but high counts of 67 birds at Furnace Creek Ranch and 20 birds at China Ranch and the Amargosa River near Tecopa, both made on 6 June 1998 (M. Rogers pers. obs.), indicated that populations are substantial (T. & J. Heindel in litt.). Records from the Saline Valley between 1995 and 2003 (T. & J. Heindel in litt.) suggest possible breeding at that locality.

ECOLOGICAL REQUIREMENTS

Grinnell and Miller (1944) indicated almost exclusive use of Honey Mesquite thickets in California, with warblers ranging secondarily into riparian woodland, Blue Palo Verde (*Cercidium floridum*), and Ironwood (*Olneya tesota*). Rosenberg et al. (1991) found wider habitat use along the lower Colorado River, where despite highest breeding densities in Honey Mesquite, moderate densities occurred in tamarisk (especially Athel Tamarisk [*Tamarix aphylla*]), Screw Bean Mesquite (*Prosopis pubescens*), and cottonwood-willow (but not the tallest stands). Anderson et al. (unpubl. analyses) found positive associations between Lucy's Warbler abundance and the number of Honey Mesquite or mature *Tamarix chinensis* trees on the lower Colorado River; mature tamarisk, however, accounts for <0.5% of the total riparian vegetation on the river. Rice et al. (1980) also documented use of Fremont Cottonwood (*Populus fremontii*)–Goodding Willow (*Salix gooddingii*) habitat there. Habitat use varies somewhat geographically. In New Mexico, this warbler nests mainly in mature willow-cottonwood riparian rather than in mesquite bosques (Stoleson et al. 2000), and in the foothills of central and southeastern Arizona it breeds in mixed woodlands of ash, walnut, sycamore, and live oak (Phillips et al. 1964).

The Lucy's Warbler is one of only two parulids that regularly nests in cavities, which may limit its populations if suitable cavities are in short supply.

Nests may be behind loose bark, in natural cavities, in woodpecker-excavated holes, or occasionally in crevices in banks (Johnson et al. 1997). This species will not use artificial nest boxes (Brush 1983). Along the lower Colorado River, these warblers frequently use natural knotholes or partial cavities excavated by Ladder-backed Woodpeckers (*Picoides scalaris*; Brush 1983). Their use for nest sites of matted clumps of dead leaves in tamarisks along the lower Colorado River (Rosenberg et al. 1991, Anderson et al. unpubl. data) suggests adaptation in nest-site selection. Regular parasitism of Lucy's Warblers' nests by Brown-headed Cowbirds (*Molothrus ater*) has been documented; the warblers' cavity/crevice nesting habit may provide some degree of immunity, however, and population-scale impacts have not been found (Johnson et al. 1997).

This species' diet is almost exclusively insects gleaned from foliage, twigs, and flowers at low to middle heights (Johnson et al. 1997). Studies in Arizona, summarized by Johnson et al. (1997), show that nearly half of the diet consists of leafhoppers, with Coleoptera (beetles), Hymenoptera (wasps, ants), and Araneae (spiders) also being important.

THREATS

The loss or severe alteration of mesquite and other desert riparian habitat is certainly the major threat to this species in California. Clearing of mesquite for firewood and for agricultural and urban development in the Imperial and Coachella valleys has essentially eliminated this species from those areas (Patten et al. 2003). The impacts of destruction of mesquite on this species were noted by authors as early as Grinnell (1914) and Dawson (1923). Even where mesquite and other desert riparian habitat persists, loss of habitat quality through invasive exotic plants, grazing, human recreational impacts, and lowering of water tables can affect the warblers (Johnson et al. 1997, Patten et al. 2003, Unitt 2004). Note, however, that mature tamarisk can be an important habitat component for Lucy's Warblers, at least along the lower Colorado River (Rosenberg et al. 1991).

Perhaps the greatest threat to mesquite habitat quality on the California deserts is the increasing diversion of water for urban and agricultural uses. Overdrawing of the water table with increasing development is considered the major threat to the Borrego Valley population of this warbler (Unitt 2004), and gradually decreasing water table levels in the lower Colorado River valley are degrading

mesquite habitats there (B. W. Anderson in litt.). Increasing urbanization of the Colorado and Mojave Desert regions of California will likely accelerate hydrological threats to habitats used by this species (e.g., BLM 2003).

The subset of the species' winter range that is occupied by California-breeding populations is not known; riparian and thorn scrub habitats (the main presumed wintering habitats; Johnson et al. 1997) have been negatively impacted in Sonora (Russell and Monson 1998), but the extent of habitat loss and degradation in the species' core wintering areas from Sinaloa to Guerrero is uncertain.

MANAGEMENT AND RESEARCH RECOMMENDATIONS

- Preserve, enhance, and restore the species' principal habitats of Honey Mesquite and mixed riparian woodlands. This would benefit the warbler directly and, by ensuring sufficient structurally mature and complex vegetation and benefiting Ladder-backed Woodpecker populations, would retain or increase nest cavity availability.
- Study and, to the extent possible, control or mitigate the impacts of human disturbance (from off-highway vehicle use, other recreational use, and grazing) to desert riparian habitats. Desert springs and wetlands that support riparian habitat should be afforded protection sufficient to maintain vegetative structure, allow recruitment of new riparian plants, and preserve natural hydrology.
- Study the ecology and demographics of Lucy's Warblers in California to identify the life history stages or ecological factors limiting the species.
- Conduct research to link California breeding populations with wintering sites in Mexico, perhaps through stable isotope or microsatellite techniques; identification of wintering grounds through such techniques could help identify potential threats and limitations to California populations during that season.

MONITORING NEEDS

Generally, the Breeding Bird Survey is inadequate for tracking trends of birds in desert riparian areas because the road routes used sample these habitats poorly. Various monitoring methods that could provide information on Lucy's Warbler population

trends in important habitats include point counts (although utility of such counts has been questioned; Anderson 1997), exhaustive area searches focused on riparian-obligate bird species, and constant-effort mist-netting. In addition to monitoring core habitats along the lower Colorado River, smaller desert riparian habitats and mesquite bosques on the Mojave Desert should be monitored annually, including assessment of some measure of productivity (and levels of parasitism by cowbirds).

ACKNOWLEDGMENTS

T. Beedy, T. and J. Heindel, G. McCaskie, C. McCreedy, R. L. McKernan, S. J. Myers, and J. Sterling provided some distributional information. Reviews and editorial comments from B. Anderson, J. L. Dunn, T. Gardali, and W. D. Shuford greatly improved this account.

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