RECENT TRENDS IN YELLOW-BILLED CUCKOO OCCURRENCES IN SOUTHERN CALIFORNIA, WITH OBSERVATIONS OF A FORAGING CUCKOO IN SAN DIEGO COUNTY

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ABSTRACT: We observed a Yellow-billed Cuckoo (*Coccyzus americanus*) remaining in southern San Diego County from 20 to 28 July 2012. The bird made extensive use of upland habitats as well as the adjacent riparian area. Away from the two known breeding populations, the 82 Yellow-billed Cuckoo observations in southern California since 2000 peak from 15 June to 3 July. Observations made later in summer likely consisted of migrants perhaps in poor condition, lingering individuals prospecting for breeding habitat, or possibly scattered breeding pairs. Eight locations have had multiple ocurrences since 2000, and these sites may support breeding birds. Though a relatively large number of cuckoos was detected in the region in 2011, no trend is apparent in numbers of detections since 2000. Annual variation in cuckoo numbers regressed on El Niño–Southern Oscillation climate data produced a strongly predictive model ($r^2 = 0.54$, $P = 0.004$). Given the Yellow-billed Cuckoo's urgent conservation needs in the western United States in general, and in California in particular, focused attention is needed, including systematic surveys to determine if there are additional breeding pairs in the region.

The Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) is listed as endangered by the California Department of Fish and Wildlife, and it has been proposed as a threatened species by the U.S. Fish and Wildlife Service (2013). The history of the cuckoo in southern California is one of a dramatic decline from a common breeder in riparian habitats in the late 1800s and early 1900s (Grinnell 1898, 1915, Jay 1911, Willett 1912, Hanna 1937, Grinnell and Miller 1944), to catastrophic crash and virtual elimination as a breeder from the 1930s to 1950s, to rare and irregular migrant and vagrant ever since. Jay (1911) found over 40 nests in coastal Los Angeles County in the early 1900s, as well as several pairs in about 40 acres of willows in Wilmington, but mentioned that "much of this has been cut away of late years." Hanna (1937) wrote of 24 nests found in the vicinity of Colton along the Santa Ana River in San Bernardino and Riverside counties, but declared that he had not seen any there since before 1932. Hamilton and Hamilton (1965) searched the Santa Ana River again from 1 to 11 June 1963 and could not find a cuckoo, although these dates are before the bulk of cuckoos arrive in southern California.

We report on an apparently territorial individual detected over an 8-day period in riparian habitat in southern California, and summarize and map the sightings of cuckoos in southern California since 2000.

METHODS

In order to compile a table and map of sightings of Yellow-billed Cuckoos in the region, we searched several compendiums of information, including

online sources such as www.eBird.org and regional list-serves. The majority of these list-serves were established in 1999 or 2000 (Table 1), so we used the summer of 2000 as a starting year to compare sightings across years. We also reviewed regional reports in *North American Birds* beginning in 2000 (vols. 54–66) and searched collected specimens by using the ORNIS search engine (www.ornisnet.org) and the San Diego Natural History Museum (SDNHM) collection. Reports by multiple observers of what was very likely the same bird at a given location and year were combined into one record to prevent double counting. Sightings that were reported as unsure or questionable were discarded. The region searched was southern California as defined in *North American Birds*.

We obtained data on El Niño–Southern Oscillation (ENSO) from the multivariate ENSO index (MEI) produced by the National Oceanic and Atmospheric Administration (Wolter 2013). We averaged monthly values from May to April to produce a 12-month average (Anders and Post 2006), then analyzed the results by linear regression in SYSTAT 12 (SYSTAT Software, Inc.).

RESULTS

2012 San Diego County Yellow-billed Cuckoo Observation

On 20 July 2012, Clark saw and heard a Yellow-billed Cuckoo in riparian woodland along the Otay River below Otay Lakes Dam. The bird was observed for approximately 45 minutes as it foraged in willows (*Salix* spp.) in the riverbed and laurel sumac (*Malosma laurina*) on adjacent slopes. It gave the "kowlp" call, which is associated with a mated pair (Hughes 1999), but a second bird was not detected. This single cuckoo was seen again on 22 July by Clark and Procsal, who observed it for approximately one hour, during which time it spent at least 30 minutes in a eucalyptus grove on a nearby ridge. It called repeatedly (the "kowlp" call) as it foraged throughout the area. On 28 July, after broadcasting the Yellow-billed Cuckoo's song, the three of us again found the bird but observed it for less than 5 minutes.

Table 1 Sources of Recent Observations of the Yellow-billed Cuckoo in Southern California

Database or publication searched	Date range included
Internet list-serves	
SDBirds (now San Diego Region Birding)	2000–2012
LA Co birds	2000–2012
Inland County Birds	2000–2012
Orange County Birds	2000–2012
Santa Barbara County Birds	2000–2012
Kern County Birds	June 2001–2012
San Luis Obispo County Birds	2000–2012
www.eBird.org	2000–2012
North American Birds	2000–2012; vols. 54–66
www.ornisnet.org	2000–2012
California Natural Diversity Database	All to 2012

Figure 1. Yellow-billed Cuckoo along the Otay River, San Diego County, 20–28 July 2012 (here 28 July).

Photo by Mark Dodero

After 15 minutes it gave a short, repetitive "kek" call, like the first part of a "kowlp" series. It was viewed briefly in a tall willow before it flew far downriver. On two subsequent visits, 31 July and 4 August, the bird was not detected again, despite our broadcasting the song.

The Yellow-billed Cuckoo is thought to have been extirpated from San Diego County as a breeding species for many decades (Unitt 1984, 2004). There have been several recent sightings of possibly territorial birds along San Felipe Creek near Scissors Crossing in Anza-Borrego Desert State Park in the eastern portion of the county, as well as along the San Luis Rey River at Bonsall in northern San Diego County (see further discussion below). The appearance of our apparently territorial bird was therefore significant, especially on the coastal slope, though it is unclear whether it was paired or ever attempted to breed.

It was interesting to watch this cuckoo forage for long periods in nonriparian habitats. Hatch (1896) reported two cuckoos in laurel sumacs in Escondido, San Diego County. Whether this large broad-leaved shrub provides some attraction other than being a convenient perch in otherwise low scrub habitat is unknown. McNeill et al. (2012) reported that along the Colorado River peak nesting and peak cicada (*Magicicada sp.*) abundance coincide. Cicadas are frequently found in laurel sumacs in summer (Clark pers. obs.), and this may explain the attraction of this shrub. Approximately 11 km to the northwest of this Otay River site, a female (SDNHM 31381) collected at Bonita along the Sweetwater River on 3 July 1915 by A. Casaben and prepared by Laurence Huey is labeled as having the stomach contents as a

"goldfinch, egg shells, and a large bug," presumably a cicada. Hamilton and Hamilton (1965: 426) mentioned small caterpillars taken from graythorn (*Condalia*) shrubs in upland habitats as a principal food item fed to nestlings. Cuckoos flew several hundred yards from the river bottom to forage in these shrubs. The Otay River cuckoo's extended use of a eucalyptus grove for calling and foraging was also a surprise. Beason (2012) reported cuckoos foraging away from riparian habitats in broad-leaved trees in residential areas. Corman and Wise-Gervais (2005) also mentioned the species found nesting in exotic shade trees in Arizona.

Trends in Yellow-billed Cuckoo Observations in Southern California

A search of available public databases and published resources revealed 82 cuckoo sightings since June 2000 outside of the known breeding areas along the South Fork of the Kern River and along the lower Colorado River (Figure 2). Graphing the sightings by date reveals a peak in sightings between about 15 June and 3 July (Figure 3). Some of the sightings after this

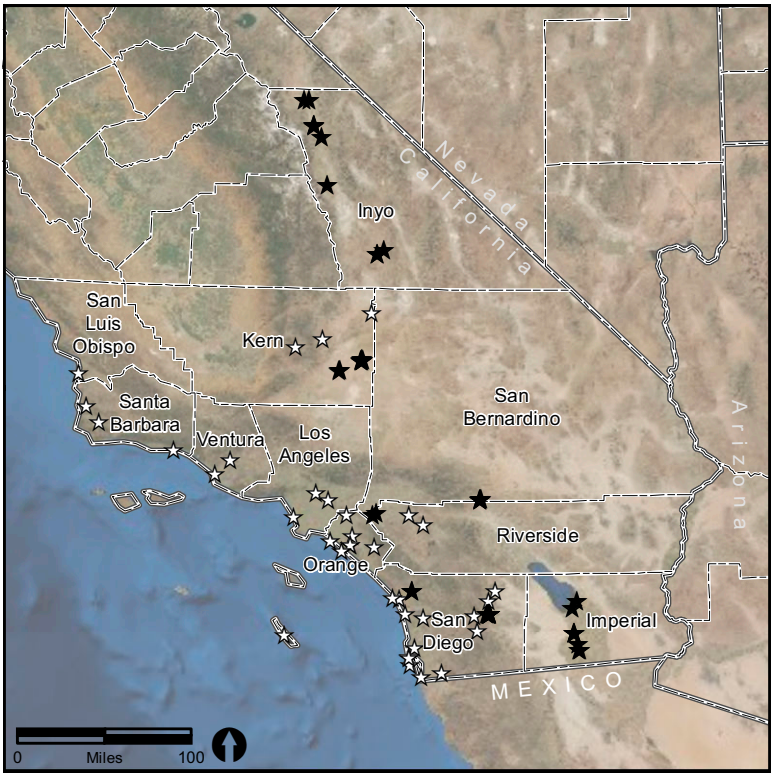

Figure 2. Yellow-billed Cuckoo observations in southern California, outside of known breeding areas, since 2000. Black stars represent sites or watercourses with multiple observations reported; white stars, single observations.

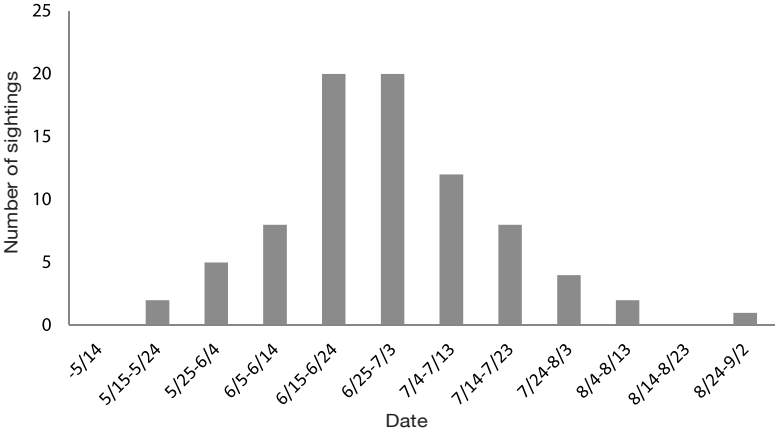

Figure 3. Number of Yellow-billed Cuckoo observations by date in southern California, outside of known breeding areas, since 2000. Sightings by date show a peak in late June and early July.

period may be of individuals in poor condition, as two of the four museum specimens collected were of emaciated individuals found in coastal suburban areas on 16 and 20 July (SDMNH 53583 and Los Angeles County Museum of Natural History 112121, respectively). However, many of these sightings are from localities with suitable breeding habitat. Suitable breeding habitat in the western U.S. typically includes riparian habitats with mature cottonwood (*Populus* spp.) and willow trees (Hamilton and Hamilton 1963, Hanna 1937).

Graphing the sightings by year reveals no sustained trend over the 13-year period (Figure 4). Higher numbers in 2000, 2001, 2006, and 2011 were counteracted by lower numbers during the intervening periods. Whether this variation reflects actual population fluctuations in California's breeding populations is unclear.

Anders and Post (2006) found a relationship between ENSO ocean patterns, the North Atlantic Oscillation, local temperature measurements, and Yellow-billed Cuckoo densities in the eastern U.S. Their results indicate that both the North Atlantic Oscillation and ENSO have affected the cuckoo's population densities across much of its breeding range, most strongly in regions in which these climate systems have the strongest effects on local temperatures. Their analyses also implied that the strength of the effect of local temperatures on cuckoo populations predicted long-term population decline, with populations more negatively affected by warm temperatures experiencing steeper declines.

We performed a linear regression of the multivariate ENSO index (MEI) against the number of southern California cuckoo sightings by year and found an inverse relationship between cuckoo numbers and MEI. Years with sea-surface temperatures cooler than average (i.e., La Niña conditions, such as years 2000 and 2011 in Figure 5) correspond with a higher number of

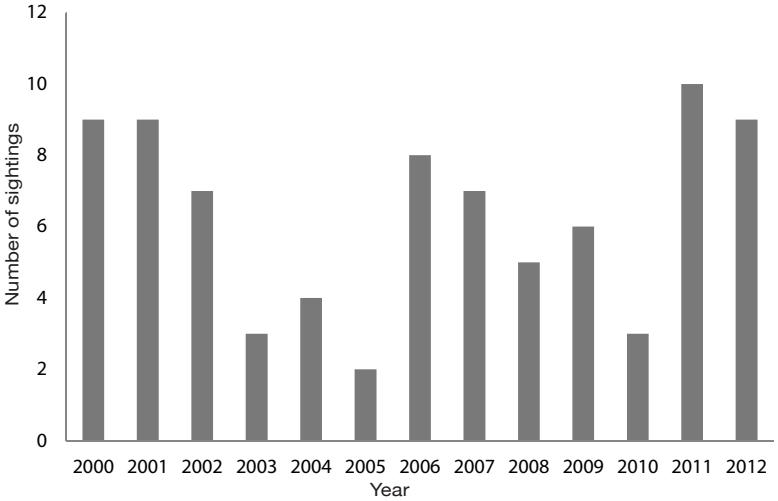

Figure 4. Yellow-billed Cuckoo sightings in southern California by year, 2000–2012. The number was greatest in 2011, but no clear trend is apparent.

cuckoo sightings, whereas El Niño years with warmer temperatures correspond with fewer sightings (e.g., 2003–2005, 2010). The resulting linear regression model was strongly predictive ($r^2 = 0.541$, $P = 0.004$; Figure 6). Fifty-four percent of the variation in cuckoo numbers is explained by MEI index data alone.

The mechanisms behind this relationship are not clear. Anders and Post (2006) found that fluctuations in caterpillar numbers at sites where the Yellow-billed Cuckoo breeds in the eastern U.S. covaried with local rainfall and temperature and were correlated with cuckoo productivity. They also speculated that the cuckoo's winter survivorship may be affected by ENSO

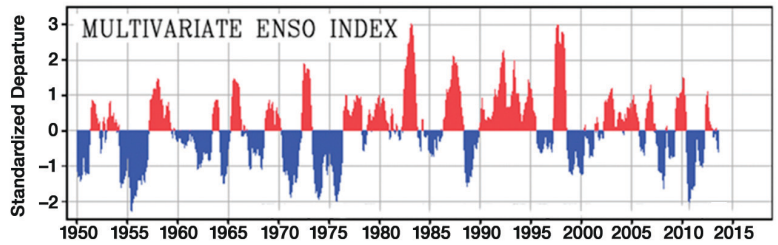

Figure 5. Variation in the multivariate ENSO index since 1950. Index values since 2000 tend to have an inverse relationship with Yellow-billed Cuckoo sightings in southern California. Years with sea-surface temperatures cooler than average (e.g., 2000, 2011) correspond with a higher number of cuckoo sightings, whereas years with warmer temperatures tend to correspond with a reduced number of sightings (e.g., 2003–2005, 2010).

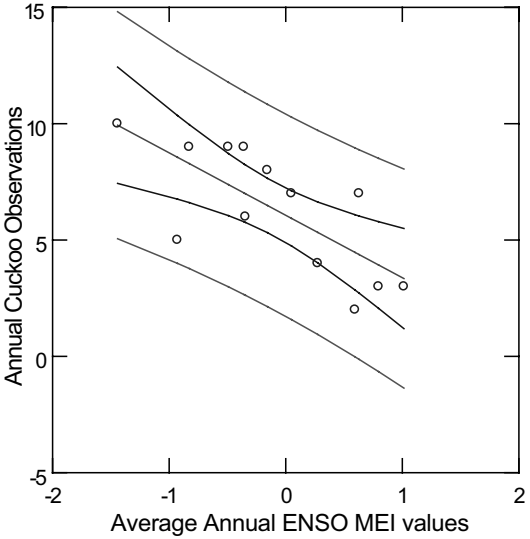

Figure 6. Linear regression of numbers of the Yellow-billed Cuckoo detected in southern California annually and average annual values of multivariate ENSO index. An inverse relationship is apparent, with cooler sea-surface temperatures corresponding with larger numbers of cuckoos seen in the region. Fifty-four percent of the variation in cuckoo numbers is explained by this index alone ($P = 0.004$).

patterns and could contribute to resulting population fluctuations detected on the breeding grounds. El Niño tends to induce drought in central South America, potentially limiting food supplies in the region that Yellow-billed Cuckoos may inhabit for more than five months of the year (Holmgren et al. 2001, Sechrist et al. 2012). A third possibility is that climate-driven variations in food availability during migration influence the number of cuckoos reaching southern California.

Locations with repeated sightings over multiple years away from known breeding areas are listed in Table 2. Several of these locations have also supported birds remaining for extended periods in the breeding season. These locations should be surveyed by current established protocols to ascertain whether the birds are breeding.

The exceptional number of cuckoo sightings along the New River in Imperial County is surprising. Since 2000, cuckoos have been noted at least seven times along the river between El Centro and the Salton Sea—and this despite very few observers in the area during June, July, and August, coupled with very limited access due in part to private property. The habitat along the river is mostly dense salt cedar; mesquite, willows, and cottonwoods are scattered. The cuckoo's status in this area is unclear, needing focused surveys, though one location in Brawley hosted a bird on both 15 July and 13 August 2011 (*N. Am. Birds* 65:688), implying residency. The cuckoo's rapid occupancy and nesting within planted riparian habitat along the Colorado River (2 or 3

Table 2 Sites of Multiple Occurrences of the Yellow-billed Cuckoo in Southern California since 2000

Site	Selected Reports
Upper Owens River from Bishop to Tinemaha Reservoir, Inyo County	Pair detected near Big Pine 17–28 June 2007. Multiple sightings in Baker Creek southwest of Big Pine in 2007–2009. Two birds 17 July 2003 at Tinemaha Reservoir. Sightings in both tributaries and along main Owens River. Additional bird 27 July 2012 at Hogback Creek north of Lone Pine.
Amargosa Canyon and China Ranch, Inyo County	Two records: 4 July 2008 and 24 June 2012. Single bird reported 20 June 2000 from nearby China Ranch. Good habitat.
Galileo Hill Park/Silver Saddle Country Club, Kern County	Two or three individuals reported 17 June 2000, with one remaining through 30 July. Other reports 23 June 2001 and 12 June 2002. Most recent record is 24 June 2012. Site is cottonwood-lined park and golf course.
Central Park Lake, California City, Kern County	Two records: 17 June 2000 and 18 July 2012. Site is cottonwood-lined park and golf course.
Big Morongo Canyon Preserve, San Bernardino County	Four records: 13 June 2000, 14 June 2003, 14 June 2004, and 3 July 2011. Latest report was of a calling bird. Good habitat.
Prado Basin, Riverside/San Bernardino County	Two birds reported in June 2000. A second-hand report of bird seen 23 June 2011. Good habitat.
San Luis Rey River, Bonsall, San Diego County	One bird seen and heard 7 July 2011. Two birds seen and heard 14 July 2011, with photos. One bird seen and heard 11 July 2012, with photos. Good habitat.
San Felipe Creek, San Diego County	At least eleven separate sightings since 2000. 2–3 birds heard calling 4 July 2006. One bird detected 6–12 July 2001. One bird reported 24 June–13 July 2009. Good habitat.
New River, Imperial County	Seven separate sightings since 2000. Bird seen at river in Brawley on 8 July 2007, and on 15 July and 13 August 2011.Two other sightings in El Centro and two at south end of Salton Sea.

years after planting; Bommarito 2012) shows that riparian restoration can pay very quick dividends in the desert Southwest.

In Inyo County, a series of sightings has been reported along the upper Owens River in the vicinity of Bishop and Big Pine. This includes a pair observed in Big Pine 17–28 June 2007 and two birds reported from Tinemaha Resevoir on 17 July 2003 (*N. Am. Birds* 61:642, and 57:545, respectively). Baker Creek, 3 km west of Big Pine, had reports of two birds breeding in 2007 and 2008 (California Natural Diversity Database). The upper Owens River from Bishop in the north to Tinemaha Reservoir south of Big Pine encompasses a distance of about 40 km and appears to warrant further surveys. Gaines and Laymon (1984) reported breeding cuckoos at

scattered locations throughout this region during the late 1970s. By 1986, only one pair was found at Tecopa (Laymon and Halterman 1987), and by 1999, no cuckoos were found in the Owens Valley, at Tecopa, or along the Amargosa River (Halterman et al. 2001).

The site in southern California with the most sightings away from the two known areas of breeding is San Felipe Creek near Scissors Crossing in eastern San Diego County. Sightings here have spanned the years 2001 to 2011, and include a pair detected on 3 and 4 July 2007 and two or three birds calling on 4 July 2006. Intensive survey and spot-mapping of riparian birds in 2002 and 2003 revealed only one bird 11–12 July 2002 (P. D. Jorgensen), so the cuckoo's status and possible breeding at this site are still unclear.

A few single records were notable because of the late date on which the bird was reported, generally after the cuckoo's main arrival in the region, which may imply a bird lingering in breeding habitat. On 12 August 2006 one was reported from San Timoteo Creek, Redlands, San Bernardino County. On 14 July 2009, one was heard calling on the River Ridge Golf Course, Santa Clara River, Oxnard, Ventura County. On 25 July 2011, one was seen along the San Dieguito River above Lake Hodges in San Diego County. On 3 August 2006, one was heard along the San Luis Rey River near the Oceanside Airport in San Diego County.

Collectively, all of these sightings imply a complex status in southern California, with several sites potentially supporting breeding cuckoos. Despite their rather large size and loud calls, Yellow-billed Cuckoos are notoriously difficult to detect, frequently remaining silent and inhabiting dense vegetation. In western Colorado, recent focused surveys using broadcast calls resulted in an increase in the number of sites known to be occupied by cuckoos, including sites at elevations far higher than previously known (Beason 2012). Given the Yellow-billed Cuckoo's urgent conservation needs in the western United States in general, and in California in particular, focused attention is needed on sites away from the areas of previously known breeding. This includes systematic surveys at the above-mentioned sites in southern California to determine if there are breeding pairs at these locations.

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