

WESTERN BIRDS



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Western Specialty:

Belding's Yellowthroat



Photo by © Roberto Carmona Piña of La Paz, Baja California Sur, Mexico:

Belding's Yellowthroat (*Geothlypis beldingi*),

San Ignacio, Baja California Sur, Mexico, 30 May 2016.

Endemic to Baja California Sur, Belding's Yellowthroat is confined to the few freshwater wetlands dotting the peninsula. The oasis of San Ignacio is the northernmost and one of the most important sites for the species. Conservation of Belding's Yellowthroat, recognized as endangered by the Mexican government, depends on maintenance of these wetlands. In this issue of *Western Birds*, Roberto Carmona, Gerardo Marrón, Sergio Águila, Abigail Rivas, Sergio Flores Ramírez, and Héctor Reyes report the results of their surveys for Belding's Yellowthroat at San Ignacio and their estimates of the population according to three independent techniques.

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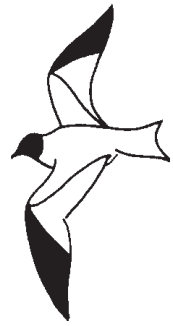
Front cover photo by © Thomas A. Benson of San Bernardino, California: Nazca Boobies (*Sula granti*), San Diego Bay, San Diego County, California, 16 December 2017. Though the Nazca Booby was first confirmed in California only in 2013, by fall 2019 the number recorded in that state exceeded 50, and the species had been recorded as far north as south-central Alaska.

Back cover "Featured Photo" by © John Sterling of Woodland, California: Buff-breasted Sandpiper (*Calidris subruficollis*), Morro Strand State Beach, San Luis Obispo County, California, 6 September 2018. The number of Buff-breasted Sandpipers recorded during fall migration each year from British Columbia south through the Pacific states varies widely but is typically under 20. In occasional flight years, such as 2007 and 2018, however, the numbers are much larger: at least 80 in 2007 and 70 in 2018.

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. Particularly desired are reports of studies done in or bearing on North America west of the 100th meridian, including Alaska and Hawaii, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Daniel D. Gibson, P. O. Box 155, Ester, AK 99725; avesalaska@gmail.com. For matters of style consult the Suggestions to Contributors to *Western Birds* (at westernfieldornithologists.org/docs/journal_guidelines.doc).

WESTERN BIRDS



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THE 43RD ANNUAL REPORT OF THE CALIFORNIA BIRD RECORDS COMMITTEE: 2017 RECORDS

DANIEL S. SINGER, 536 D Street, San Rafael, California 94901; dsg2@sonic.net

THOMAS A. BENSON, California State University San Bernardino, 5500 University Parkway, San Bernardino, California 92407; secretary@californiabirds.org

GUY McCASKIE, 954 Grove Ave., Imperial Beach, California 91932; guymcc@pacbell.net

JUSTYN STAHL, 4177 Utah Street, San Diego, California 92104; justyn.stahl@gmail.com

ABSTRACT: From its last report through 2017 the California Bird Records Committee reached decisions on 178 records involving 176 individuals of 71 species and two species groups, endorsing 154 records of 153 individuals. The first accepted state records of Band-rumped Storm-Petrel (*Hydrobates castro*), Kermadec Petrel (*Pterodroma neglecta*), Eurasian Wryneck (*Jynx torquilla*), and Citrine Wagtail (*Motacilla citreola*) are outlined in this report. These additions plus additions in 2018 bring California's total list of accepted species to 673, of which 11 represent established introductions. Other notable records detailed in this report include the state's second Ross's Gull (*Rhodostethia rosea*) and third Swallow-tailed Gull (*Creagrus furcatus*).

This 43rd report of the California Bird Records Committee (CBRC), a committee of Western Field Ornithologists, summarizes evaluations of 178 records involving 176 individuals of 71 species and two species groups. The committee accepted 154 of the 178 records, involving 153 individuals of 61 species and two species groups, for an acceptance rate of 86.5%. A record is considered accepted if it receives no more than one "not accept" vote from the nine voting members if the identification is considered questionable, or no more than two "not accept" votes if natural occurrence is considered questionable. We consider four records of three individuals to represent returning or continuing birds that were accepted previously. Twenty-one records, involving 21 individuals of 15 species, were not accepted because the identification was not fully established; three records involving three individuals were not accepted because their natural occurrence was questionable. For review, reports of multiple individuals together are given the same record number; we report the total number of accepted individuals, which may differ from

the number of accepted records. Although most of the records in this report are of birds documented in 2017, a few are earlier.

Highlights of this report include the first accepted records of the Band-rumped Storm-Petrel (*Hydrobates castro*), Kermadec Petrel (*Pterodroma neglecta*), Eurasian Wryneck (*Jynx torquilla*), and Citrine Wagtail (*Motacilla citreola*). Other notable records detailed in this report include California's second Ross's Gull (*Rhodostethia rosea*), third Swallow-tailed Gull (*Creagrurus furcatus*), and the first photograph of the White-winged Crossbill (*Loxia leucoptera*) for the state. The White-collared Swift (*Streptoprocne zonaris*) is now the only species on the California list solely on the basis of a sight record.

Since the period covered by this report, in 2018, the committee has accepted first California records of the Eastern Meadowlark (*Sturnella magna*) and Tropical Parula (*Setophaga pitiayumi*), the details of which will be published in the next (44th) report (see also Kahle 2019). These additions bring the California list to 673 species. Potential additions to the state list currently being considered are the Stejneger's Scoter (*Melanitta stejnegeri*) and the European Golden-Plover (*Pluvialis apricaria*). Recent changes to the review list were the removal of the Dusky-capped Flycatcher (*Myiarchus tuberculifer*) at the January 2018 annual meeting of the committee and addition of the Kentucky Warbler (*Geothlypis formosa*) at the January 2019 meeting.

Species-account headings are organized with English and scientific names first, followed in parentheses by the total number of individuals accepted for California (as of this report) and the number of new individuals accepted in this report. Following the heading are accounts for records accepted (as applicable), followed by records not accepted because the identification was not established, the date or location was uncertain, or the natural occurrence was questionable (as applicable). A double asterisk (**) following the number of accepted records indicates that the species has been reviewed only during a restricted period, so the number of accepted records does not represent the total number of records for the state. When the observer(s) who originally discovered the bird provided documentation, their initials are listed first, in italics, followed by the initials of subsequent observers supplying documentation. A dagger (†) following an observer's initials indicates submission of a photograph, (\$) indicates submission of a sketch, (S) indicates submission of audio recordings, (V) indicates submission of a video, and (#) precedes a specimen number. The absence of a symbol following the observer's initials indicates the submission of a written report without other documentation. After the observers' initials is the identifying number assigned by the CBRC's secretary as each record is received.

As decided at the 2019 meeting, as of this report the terminology for birds' ages in the CBRC's reports follows that of Humphrey and Parkes (1959) as modified by Howell et al. (2003) and Howell and Pyle (2015). Ages are designated first in terms of the molt cycle ("adult" representing the definitive plumage), then in terms of the specific plumage or active molt if determinable (preformative molt and formative plumage being within the first molt cycle). A document specifying terms for molts and ages is available at the CBRC's website, www.californiabirds.org/Age%20and%20plumage%20terminology.pdf. Definitions of abbreviations and additional details regarding minutiae of formatting may be found in the CBRC's

previous reports, all available at www.californiabirds.org, and in CBRC (2007; www.wfopublications.org/Rare_Birds/FM/Explanation-Additional_Info.html). A map of, and abbreviations for, counties in California are at www.wfopublications.org/Rare_Birds/MAPS/Map1.html. Also available at the website are the California bird list, the review list, an online form for submitting documentation for review species, committee news, recent photos of rare birds, the CBRC's bylaws, a form for querying the CBRC's database, and all published annual reports. Observers are encouraged to submit documentation for all species on the CBRC's review list to the CBRC's secretary (e-mail: secretary@californiabirds.org) or via the web form at www.californiabirds.org/report_sighting.html. Documentation of all records is archived at the Western Foundation of Vertebrate Zoology (www.wfz.org) and is available for public review by appointment.

BLACK-BELLIED WHISTLING-DUCK *Dendrocygna autumnalis* (35, 2). Two adults were at fish ponds in Blythe, RIV, 12 Sep 2017 (BS†; 2017-080). Thirty had been documented in the Salton Sink between 1950 and the end of 2000 (CBRC 2007), but these two are the first in southeastern California since 2000.

EMPEROR GOOSE *Anser canagicus* (96, 1). An adult was at Sharp Park Golf Course in Pacifica, SM, 23 Jan–6 Mar 2017 (PKD, JLD, KAH, CH†, RH, DK-B†, MJM†, JM†, MJR†; 2017-009).

RUDDY SHELDUCK *Tadorna ferruginea* (0, 0). **NATURAL OCCURRENCE QUESTIONABLE:** One was in Santa Maria, SBA, 2 Aug 2004 (2004-612). This species is usually not considered a naturally occurring vagrant to North America and is relatively common in captivity, though a record of six birds in arctic Canada might have represented a natural occurrence (Howell et al. 2014).

GARGANEY *Spatula querquedula* (24, 1). A first-cycle male was associating with other dabbling ducks at Waller Park in Santa Maria, SBA, 25 Nov 2017–11 Mar 2018 (TAB†, JMC†, JLD, RFI†, MEH†, LBH, SH†, DK-B†, GMcC, MMe†, DWN†, EdS†, BKS†, MSen†, JCS†, MMT†, GTe†, SBT†, ANW†; 2017-139; Figure 1). There was some disagreement among committee members regarding the age of this bird based on plumage and molt, and whether its molt and plumage would be expected on a wild bird, but the majority concluded that this was not sufficient reason to question its natural occurrence. Numbers of this teal reaching Alaska from Asia have declined in recent years, and this is the first in California since a hunter shot one at the Mendota Wildlife Area, FRE, in late October 2002 (Cole and McCaskie 2004).

KING EIDER *Somateria spectabilis* (45, 0). **IDENTIFICATION NOT ESTABLISHED:** A distant bird reported off the Klamath River mouth, DN, 14–16 Dec 2017 (2017-165) was considered insufficiently documented by a majority of members.

GROOVE-BILLED ANI *Crotophaga sulcirostris* (13, 1). An adult at Encinitas Community Park, SD, 19 Nov–1 Dec 2017 (TAB†, JBru†, GMcC, MMe†, RSch† JTS†; 2017-135; Figure 2) represents the first record for San Diego County.

RUBY-THROATED HUMMINGBIRD *Archilochus colubris* (19, 1). An adult male at Lake Tamarisk in Desert Center, RIV, 10–13 Nov 2017 (CAM†, TAB†, GMcC, AEM, JTS†; 2017-129) provides the latest fall date for a Ruby-throated Hummingbird in California by two weeks.

BROAD-BILLED HUMMINGBIRD *Cynanthus latirostris* (102, 8). Males were in Goleta, SBA, 7–28 Jan 2017 (JHa†, DMC, BrH†, PGa†; 2017-007), in Blair Valley in Anza-Borrego Desert State Park, SD, 30 Mar 2017 (KSol†; 2017-025), in Santa Cruz, SCZ, 19 Oct–5 Nov 2017 (ShH, WGB†, RC†, RFI, JM†, DR†, SBT†, EVD†; 2017-118),



FIGURE 1. Garganey, Waller Park, Santa Barbara County, 13 Nov 2017 (2017-139).

Photo by Monte M. Taylor

at Mission Trails Regional Park, SD, 31 Oct–4 Nov 2017 (*JSp*, *JBru*†, *GMcC*: 2017-122), at Lake Tamarisk in Desert Center, RIV, 10 Oct 2017 (*DAG*†; 2017-104), in the neighborhood of Bay Park in San Diego, SD, 15 Dec 2017 (*MMa*†; 2017-166), and in Goleta, SBA, 16 Dec 2017–6 Mar 2018 (*LAP*†, *GAZ*†, *TAB*†, *JLD*, *NJO*†, *RO*†, *GRI*; 2017-172). A female was in Vista, SD, 11 Nov–8 Dec 2017 (*JRy*†; 2017-131). Most of the males were in their first plumage cycle.

BAR-TAILED GODWIT *Limosa lapponica* (50, 5). An adult was found dead at Doran Beach, SON, 6 May 2017. One wing was photographed, but the specimen was not preserved (*LGo*†, *PP*; 2017-060). An adult (perhaps second-cycle) female at the



FIGURE 2. Groove-billed Ani, Encinitas Community Park, San Diego County, 19 Nov 2017 (2017-135).

Photo by Eric G. Kallen

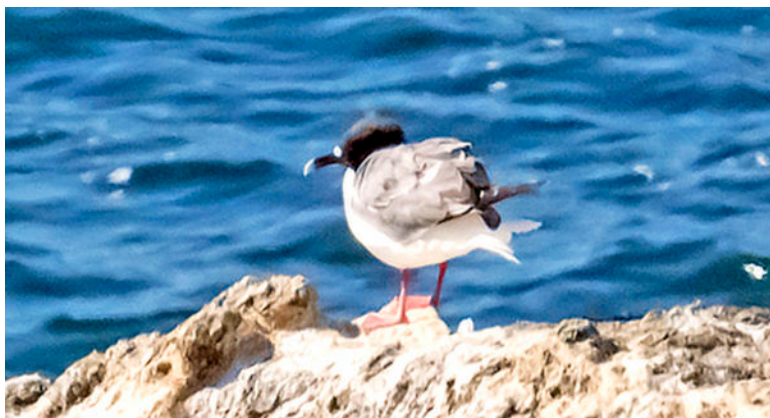


FIGURE 3. Swallow-tailed Gull, Bodega Head, Sonoma County, 5 Oct 2017 (2017-133).

Photo by Clay Johnson

Arcata Marsh, HUM, 9 Jul 2017 (*MBro*; 2017-061) is considered the same as the bird on Humboldt Bay, HUM, 23–25 Jul 2017 (*RFot*; 2017-064). Single individuals were at Pond A17, 3 km north of Alviso, Don Edwards San Francisco Bay National Wildlife Refuge (NWR), SCL, 22 Jul 2017 (*WBr*; 2017-063), at the Ballona Creek mouth, LA, 24 Sep 2017 (*KL*; 2017-092), and at Point Mugu Naval Air Station, VEN, 27 Oct 2017 (*MRu*, *DPer*; 2017-126).



FIGURE 4. Ross's Gull, Half Moon Bay, San Mateo County, 13 Jan 2017 (2017-004).

Photo by David W. Nelson



FIGURE 5. First-cycle Black-tailed Gull, Point Pinos, Monterey County, 12 Jan 2017 (2017-005).

Photo by Andrew Howe



FIGURE 6. Band-rumped Storm-Petrel, Southeast Farallon Island, San Francisco County, 11 Nov 2017 (2017-130).

Photo by Kurt Ongman



FIGURE 7. Kermadec Petrel, Southeast Farallon Island, San Francisco County, 8 Sep 2017 (2017-078).

Photo by Adam J. Searcy

RED-NECKED STINT *Calidris ruficollis* (25, 3). An adult was at Arroyo Laguna, SLO, 3 Jul 2017 (TME†; 2017-058). Another adult at “Frank’s Dump” along the Hayward Regional Shoreline in Hayward, ALA, 29–30 Jul 2017 (NAr†, DPen, CMe†; 2017-065) was considered the same as the bird found at Elsie Roemer Bird Sanctuary, ALA, 3–13 Aug 2017 (NAr†, WGB†, JM†; 2017-069). A third adult was at Crescent City Harbor, DN, 10 Aug 2017 (ADB†; 2017-070).



FIGURE 8. Nazca Booby, San Diego Bay, San Diego County, 12 Dec 2017 (2017-155).

Photo by Thomas A. Blackman



FIGURE 9. Eurasian Wryneck, San Clemente Island, Los Angeles County, 25 Sep 2017 (2017-095).

Photo by Brian C. Flick



FIGURE 10. Eurasian Kestrel exhibiting suspicious behavior, Field Landing, Humboldt County, 6 Jan 2017 (2017-001).

Photo by Max Brodie



FIGURE 11. Eastern Wood-Pewee, Laguna Grande Park, Monterey County, 5 Nov 2017 (2017-128).

Photo by Brian L. Sullivan

LITTLE STINT *Calidris minuta* (31, 3). An adult was at the New Chicago Marsh, Don Edwards San Francisco Bay NWR, SCL, 30 Jul–2 Aug 2017 (WB†, WGB†, GL†, RWR†; 2017-066). Another adult was at Moss Landing, MTY, 28 Apr 2017 (BTM, BLS†; 2017-032); yet another adult there 16–19 Sep 2017 (BTM†, RS†; 2017-090) was not considered the same bird.

SWALLOW-TAILED GULL *Creagrus furcatus* (3, 1). An adult was at Bodega

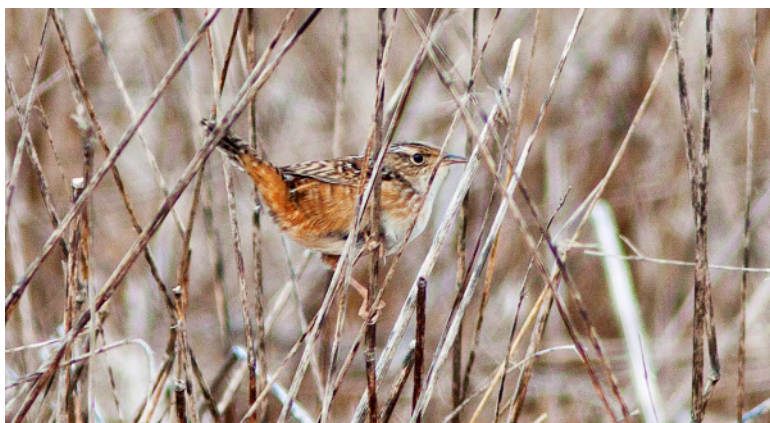


FIGURE 12. Sedge Wren, Santa Barbara Island, Santa Barbara County, 2 Nov 2017 (2017-124).

Photo by Adam J. Searcy

Head, SON, 5 Oct 2017 (Cf†; 2017-133; Figure 3). This gull's occurrence less than a month after an adult frequented the coast of Puget Sound around Seattle and Everett, Washington, 31 Aug–10 Sep 2017 (<http://wos.org/records/votingsummary/fall-2017-committee-meeting/>), prompted some to suggest the bird at Bodega Head may have been the same individual moving south.

BLACK-HEADED GULL *Chroicocephalus ridibundus* (29, 1). An adult flew south past Point Pinos, MTY, 27 Nov 2017 (BLS†; 2017-142). An adult on the Salton Sea at North Shore, RIV, 5–9 Dec 2017 (DTR†; 2017-143) was considered the same as another Black-headed Gull nearby at Mecca, 8–14 Jan 2014 (2014-003; Singer et al. 2016) and at Oasis, 30 Dec 2016–3 Mar 2017 (2016-136; McCaskie et al. 2018). An adult at the Modesto Wastewater Treatment Plant, STA, 9 Dec 2017 (DGil†, SSa†; 2017-154) was considered the same as the bird at this same location 13 Dec 2015–4 Jan 2016 (2015-149; Searcy et al. 2018).

ROSS'S GULL *Rhodostethia rosea* (2, 1). An adult at Half Moon Bay, SM, 12–14 Jan 2017 (DPen†, TAB†, DK-B†, RLeB†, JLD, MJM†, DWN†, DPom†, MJR†, RWR†, RAR; 2017-004; Figure 4) was killed by a Peregrine Falcon on the latter date (Sole 2017). California's previous Ross's Gull was inland at the Salton Sea, IMP, 17–19 Nov 2006 (McCaskie 2007).

BLACK-TAILED GULL *Larus crassirostris* (5, 2). One in second alternate plumage was at Ocean Beach, SE, 23 May 2017 (DMo†; 2017-038). One in formative plumage moved between Point Pinos and the Carmel River mouth, MTY, 12–22 Jan 2017, and was subsequently photographed at the Gazos Creek mouth, SM, 25 Feb 2017 (STu, MDeF†, EAE†, AHo†, DR†, TEW†; 2017-005; Figure 5).

SLATY-BACKED GULL *Larus schistisagus* (62, 4). Individuals in their second cycle were at Point Pinos, MTY, 9–12 Jan 2017 (BTM†, MJM†, DR†; 2017-003); at Half Moon Bay, SM, 25 Feb 2017 (NA†; 2017-018); and moving between percolation basins on the San Gabriel River in Pico Rivera and Junipero Beach in Long Beach, LA, 31 Jan–19 Feb 2017 (JFG†, BA†, DAB†, MAS†; 2017-016). An adult was at Half Moon Bay, SM, 25 Feb–4 Mar 2017 (KAH, JM†; 2017-017). IDENTIFICATION NOT ESTABLISHED: Reports of first-cycle individuals at Lower Otay Reservoir, SD, 16–21 Jan 2017 (2017-006) and at the landfill in Marina, MTY, 10–24 Mar 2017 (2017-027), as well as of a first- or second-cycle bird in Half Moon Bay, SM, 16 Mar 2017 (2017-022) garnered some support, but most members continue to take a conservative approach to identifying first-cycle Slaty-backed Gulls in California.

ARCTIC LOON *Gavia arctica* (14, 1). One flew past Point Pinos, MTY, 16 Dec 2017 (BES†; 2017-175).

YELLOW-BILLED LOON *Gavia adamsii* (103, 1). A bird undergoing its second prebasic molt was at Southeast Farallon I., SE, 17 Aug–10 Sep 2017 (JRT†; 2017-073). IDENTIFICATION NOT ESTABLISHED: One reported at Van Damme Beach, MEN, 7 May 2017 (2017-046) was considered a Common Loon (*G. immer*) by all members.

SHORT-TAILED ALBATROSS *Phoebastria albatrus* (41, 1). One undergoing its second prebasic molt of the outer primaries was on the water behind a whale-watching boat 5.5 km southeast of Southeast Farallon I., SE, 11 May 2017 (DWim†; 2017-033).

BAND-RUMPED STORM-PETREL *Hydrobates castro* (1, 1). A first record for California was of an adult captured before midnight in a mist net, photographed, and released after midnight at Southeast Farallon I., SE, 10–11 Nov 2017 (BC, JRT, GPD, ChS, JToI, KOng†; 2017-130; Figure 6). The Band-rumped Storm-Petrel may consist of multiple species. In the Pacific up to four distinct breeding populations are known from the Galapagos and Hawaiian islands, and Japan (Smith and Friesen 2007, Smith et al. 2007). A blood sample was taken from the California bird, catalogued at the



FIGURE 13. Dusky Warbler, Madrona Marsh Preserve, Torrance, Los Angeles County, 1 Oct 2017 (2017-100).

Photo by Curtis A. Marantz



FIGURE 14. Arctic/Kamchatka Leaf Warbler, Santa Rosa Creek, Cambria, San Luis Obispo County, 19 Sep 2017 (2017-086).

Photo by Curtis A. Marantz



FIGURE 15. Male Citrine Wagtail, Yolo Bypass Wildlife Area, Yolo County, 16 Dec 2017 (2017-160).

Photo by Steve C. Hampton

Moore Laboratory of Zoology, Occidental College, Los Angeles, as tissue B-822. So material for a genetic analysis that may elucidate its origin is available.

WEDGE-RUMPED STORM-PETREL *Hydrobates tethys* (13, 0) IDENTIFICATION NOT ESTABLISHED: A white-rumped storm-petrel photographed during an organized pelagic trip near the Thirty Mile Bank, SD, 20 Aug 2017 (2017-074), was not accepted as a Wedge-rumped because of the difficulty in eliminating the similar Townsend's Storm-Petrel (*H. socorroensis*).



FIGURE 16. This photograph showing a female White-winged Crossbill near the Klamath River mouth, Del Norte County 23 Dec 2017 (2017-170) is the only one yet taken of this species in California.

Photo by Andy Stepniewski

KERMADEC PETREL *Pterodroma neglecta* (1, 1). A first for California, one was photographed as it passed the lighthouse in the fog at Southeast Farallon I., SF, 8 Sep 2017 (AJSt; 2017-078; Figure 7). The two most similar species regularly occurring in the north Pacific are the Murphy's (*P. ultima*) and Providence (*P. solandri*) Petrels, both of which can be eliminated by the bright white shafts of the outer primaries as seen from above and the extensive white at the bases of the primaries and primary coverts as seen from below, with white on the primary bases broadening distally rather than becoming more limited as on a Providence Petrel (Howell 2012). The latter species has not been documented in California waters. The Gray-faced Petrel (*P. gouldi*), of which there are five accepted state records, has a larger bill and smaller, less bold white patches at the bases of the undersides of the primaries and primary coverts than in the Kermadec Petrel at Southeast Farallon I. The Herald Petrel (*P. heraldica*), which has not been documented in California, lacks white primary shafts and bold white patches on the underwing. The Kermadec breeds on islands in the subtropical south Pacific, ranges regularly north to ~40° N in the central Pacific, and is uncommon off Central America (Howell 2012).

WEDGE-TAILED SHEARWATER *Ardenna pacifica* (10, 1). One was off Half Moon Bay, SM, 15 Jul 2017 (AJ, GTet, AWL†, DM†; 2017-059). IDENTIFICATION NOT ESTABLISHED: One reported from the north jetty of Humboldt Bay, HUM, 15 Aug 2017 (2017-144).

GREAT SHEARWATER *Ardenna gravis* (17, 1). One was over Pioneer Canyon, 55 km south-southwest of Southeast Farallon I., SF on 8 Apr 2017 (PEL, SBT, STot; 2017-026).

MASKED BOOBY *Sula dactylatra* (26, 2) One in its second cycle was ~5 km west of Seal Rocks, SF, 6 Aug 2017 (CHa†, DLS; JFG†; 2017-068). An adult was seen from Point La Jolla, SD, 22 Sep 2017 (DGa, BMi, SWa; 2017-112).

NAZCA BOOBY *Sula granti* (15, 7). Adults were ~30.5 km south-southeast of Santa Cruz I., SBA, 10 Jun 2017 (MF†; 2017-053) and moving between Richardson Bay, MRN, and the Golden Gate Channel, SF, 19 Aug 2017 (JRT†; PSa; 2017-072). Individuals in their second or third cycle were over the Thirty Mile Bank, 49.5 km west of La Jolla, SD, on 24 Sep 2017 (GN†, TAB†, JTS†, NC†, MSA†, GMcC; 2017-093), and in Newport Harbor and Dana Point, ORA, 18–27 Nov 2017 (JMar†, TAB†, MG†; 2017-134). The mostly widely seen Nazca Boobies in North America were undoubtedly the three adults that remained in south San Diego Bay, SD, 11 Dec 2017–6 Apr 2018 (PEL, TAB†, TAB†, BLC, EC, NC†, JLD, JFr, TJ, EGK†, GMcC, MMe†, DWN†, GN†, LPI†, DPot, R Sch†, MSen†, JTS†, JCS†, MMT†; 2017-155; Figure 8); see also record 2017-155A under Masked/Nazca Booby below. The seven individuals accepted in this report nearly double the previous number of accepted records for California, though the first was only in 2013 (Rottenborn et al. 2016). IDENTIFICATION NOT ESTABLISHED: One in its second cycle at Point Pinos, MTY, 18–21 Jul 2017 (2017-062) was subsequently evaluated as a Masked/Nazca Booby (2017-062A; see below).

MASKED/NAZCA BOOBY *Sula dactylatra/granti* (25, 3). One on Platform Ellen, 13.8 km southwest of Huntington Beach, ORA, 10 Jun 2017 (TAB†; 2017-052) was considered too young for the diagnostic bill coloration to be discerned. Neither was the bill color clear in the photos of a booby in its second or third cycle at Point Pinos, MTY, 18–21 Jul 2017 (MKu†, DR; 2017-062A). The details for one of four boobies (the three others clearly adult Nazca Boobies, see 2017-155 above) in south San Diego Bay, SD, 12 Nov 2017 (TJ; 2017-155A) were scant, and the CBRC accepted it as a Masked/Nazca only. We solicited outside expertise on identification of more challenging young birds, and the best current information suggests that each species' characteristic bill color (orange at the base in the Nazca and yellowish to yellow-green throughout in the Masked) starts to develop at an age of 4–8 months (Pyle 2008), and should be apparent

by 12 months of age (R. L. Pitman pers. comm.). These colors can be variable and subtle on young birds, and CBRC members differed in how they detected or interpreted the bill color of some birds, even when looking at the same photos at the same time. In addition, colors are portrayed differently on different computer monitors. Adding to the complication of bill color is hybridization between the two species; for example, a few mixed pairs and birds with bills intermediate in color have been observed on Clipperton I., 1080 km southwest of Punta San Telmo, Michoacán, Mexico (Pitman and Jehl 1998). Nazca Boobies appear to be increasing in the northern portion of the breeding range off west Mexico, which may increase the incidence of hybrids (R. L. Pitman pers. comm.).

RED-FOOTED BOOBY *Sula sula* (33, 4). A white-morph adult seen from Point La Jolla, SD, 16–17 Apr 2017 (DDi†, GN; CAM†; 2017-028) was treated as the same individual seen from a fishing boat ~7 km northwest of Imperial Beach, SD, 29 Apr 2017 (JPea†; 2017-037). Another white-morph adult was off Border Field State Park, SD, 8–10 Sep 2017 (BTo, MSa†; 2017-087). A Red-footed Booby in its first or second cycle seen 700 m west of Tomales Point, MRN, 25 Oct 2017 (PKa†; 2017-141) was considered to be the same individual that roosted in Pillar Point Harbor, SM, 29 Oct–13 Dec 2017 (RST†, JLD, DK-B†, MMe†, JM†, DWN†, DR†, MJR†, MMR†, KSCh†, BLS†, ANW†; 2017-132). A juvenile female picked up at San Pedro Bay, LA, 27 Sep 2017, ultimately died at a rehabilitation clinic (KLG†; 2017-140, LACM #120888). Many boobies taken into rehabilitation are found to have swallowed fishhooks (P. Unitt pers. comm.).

TRICOLORED HERON *Egretta tricolor* (69**, 5) Single birds in their first cycle were at Point Mugu Naval Air Station, VEN, 5–6 Oct 2017 (JPsirt†; 2017-102), the San Diego River mouth and Famosa Slough, SD, 13 Oct 2017–17 Apr 2018 (LRu†, DWA†, TAB†, NC†, EOH†, CJa†, EGK†, DK-B†, GMcC, NJO†, RO†, DPov, MSen†, JTS†, JCS†; 2017-111), and San Diego Bay, SD, 1 Oct 2017–16 May 2018 (BCF†, JBru†, PEL, DPov; 2017-136), while two such birds were together at Bolsa Chica Ecological Reserve, ORA, 25 Sep 2017–28 Jul 2018, with only one seen after 11 Oct 2017 (CLY†, SBaa†, TAB†, BBor†, JLD, JEl†, DFi†, DK-B†, JAK†, MMacL, MMe†, LPi†, EdS†, ChSc†, ESto†, DTelf†, LTh†; 2017-094). The CBRC treated a first-cycle bird reported at the Santa Ana River mouth, ORA, 25–26 Sep 2017 (TGut†, ABL†, EdS†; 2017-096) as one of the two at Bolsa Chica Ecological Reserve (2017-094).

GLOSSY IBIS *Plegadis falcinellus* (38, 3). An adult was near Calipatria, IMP, 30 Jun 2017 (CAM†, GMcC; 2017-057), and two adults were in the Prado Basin, RIV, 14–18 Jul 2016, with one staying until 19 July (JEP†; 2016-148A, 2016-148B).

ROSEATE SPOONBILL *Platalea ajaja* (145, 1). One in formative plumage, initially found at Fig Lagoon, later moved to the Salton Sea NWR, IMP, 28 Sep–5 Nov 2017 (BTwt†, GMcC; EGK†, KZK†, RUz†, MV†, JWet†; 2017-097). Formerly more regular in the Salton Sink, along with the Wood Stork (*Mycteria americana*), this species has become much scarcer in recent years, with just two records since 2008.

BLACK VULTURE *Coragyps atratus* (10, 0) The single adults reported at Inverness and Walker Creek, MRN, 4–15 Jun 2017 (SWot†, TMi; 2017-048) and at Point Reyes National Seashore (NS), MRN 14–22 Oct 2017 (LNi†, MStep; 2017-113) were considered the same as the Black Vulture (2014-027; Singer et al. 2016) that has been wandering around the area for several years.

ANDEAN CONDOR *Vultur gryphus* (0, 0). IDENTIFICATION NOT ESTABLISHED: While the report of one near Lake of the Pines, NEV, 6 Aug 2017 (2017-071) suggested a bird twice the size of a Turkey Vulture (*Cathartes aura*), and noted a white collar, the brief description was insufficient for identification. This South American species is unlikely to occur naturally in California.



FIGURE 17. Cassin's Sparrow, Arcata Marsh, Humboldt County, 9 Oct 2017 (2017-103).

Photo by Fanter Lane

MISSISSIPPI KITE *Ictinia mississippiensis* (51, 1). An adult was over the Santa Clara River near Hedrick Ranch Nature Area, VEN, 20 May 2017 (KEK†, DCR; 2017-036).

ELF OWL *Micrathene whitneyi* (11, 3). A breeding pair with at least one young was at an undisclosed location in the Colorado Desert, RIV, 29 Mar–30 Jun 2017 (DAG, JDa†, TFr§; 2017-056).

EURASIAN WRYNECK *Jynx torquilla* (1, 1). A completely unexpected addition to the California avifauna was this Old World woodpecker at Lemon Tank, San Clemente



FIGURE 18. Field Sparrow, Gomes Park, Alameda County, 12 Oct 2017 (2017-107).

Photo by Bill Chen



FIGURE 19. Worm-eating Warbler, Butterbrecht Spring, Kern County, 27 May 2017 (2017-042).

Photo by Ryan P. O'Donnell



FIGURE 20. Louisiana Waterthrush, Gilman Park, Fullerton, Orange County, 16 Sep 2017 (2017-083).

Photo by Roger Schoedl

I., LA, 25 Sep 2017 (BCF†\$, 2017-095; Figure 9). Working a rocky dirt hillside, it was likely foraging on ants, which this species is known to eat, before disappearing. Only three other instances of vagrancy of the Eurasian Wryneck to North America are known, of one found dead at Cape Prince of Wales, Alaska, 8 Sep 1945 (Bailey 1945) and ones seen at Gambell, St. Lawrence I., Alaska, 2–5 Sep 2003 (Lehman 2005) and 9–16 Sep 2019 (P. E. Lehman pers. comm.). One found dead on a military base in Indiana was presumed to have arrived dead in a shipping container (Dunning et al. 2002, Howell et al. 2014).

EURASIAN KESTREL *Falco tinnunculus* (1, 0). NATURAL OCCURRENCE QUESTIONABLE: One in formative plumage was at Fields Landing, HUM, 6 Jan 2017 (2017-001; Figure 10). While the identification was correct, six committee members believed the bird's tame behavior (perching on a scope and attempting to roost in a garage) and oddly replaced tail feather (related to feather damage known to occur in raptors equipped with jesses) was enough to vote against natural occurrence. The single accepted record for California remains that of a juvenile female captured at the Marin Headlands, MRN, 23 Oct 2007 (Singer and Terrill 2009).

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer* (115, 9). An adult at La Mirada Creek Park, LA, 2 Dec 2017–8 Mar 2018 (JRow†\$, 2017-150) had returned for its 11th consecutive winter; the bird was first recorded 27 Feb–7 Apr 2008 (2008-040; Pike and Compton 2010). One at Crab Park, HUM, 29 Nov–1 Dec 2017 (MMcC†, EF†\$, RFow†; 2017-145) was the only Dusky-capped Flycatcher reported from northern California in 2017. Additional individuals were at Ford Park in Bell Gardens, LA, 10–15 Mar 2017 (JFG†, DK-B†; 2017-020), Ladera Park, LA, 1 Dec 2017–27 May 2018 (RBA†, DSch†, MZa†; 2017-146), Berry Park in Nestor, SD, 15 Dec 2017–12 Jan 2018 (PEL, GMcC, MStr†, MSen†; 2017-157), Runnymede Recreation Center in Winnetka, LA, 16 Dec 2017–16 Mar 2018 (DJB†, HSp†, JTe†; 2017-164), California State University Channel Islands in Camarillo, VEN, 16 Dec 2017–14 Jan 2018 (TAB†, JLD, JCS†; 2017-163), the San Diego Botanic Garden, Encinitas, SD, 4 Jan–1 May 2017 (AHi†, TAB†, SES\$, JTS†; 2017-011), Meadow Creek, SLO, 12 Jan–8 Mar 2017 (EGa†, TAB†; 2017-012) and Cucamonga-Guasti Regional Park, SBE, 21 Jan–21 Apr 2017 (HBK†, TAB†; 2017-013). The committee voted to remove this species from the review list during its annual meeting in 2018 and reviews records only through 2017.

GREAT CRESTED FLYCATCHER *Myiarchus crinitus* (62, 2). An adult was at Carpinteria, SBA, 17–19 Sep 2017 (DMC, JEL, CAM†, DPer†; 2017-085) and one in formative plumage was at Big Sycamore Canyon, VEN, 1 Oct 2017 (DPer†, CAM†; 2017-099), the latter being a county first. Both fit the typical pattern of occurrence of this species in California, where over 85% of accepted records have been of first-cycle birds from mid-September to mid-October. The lone spring record is from Point Loma, SD, 9 May 2009 (2009-089; Pyle et al. 2011). IDENTIFICATION NOT ESTABLISHED: One reported at Carlsbad, SD, 4 Sep 2017 (2017-077) was considered an Ash-throated Flycatcher (*M. cinerascens*) by most members.

THICK-BILLED KINGBIRD *Tyrannus crassirostris* (24, 1). An adult returned for its eighth winter to Otay Valley at the mouth of Poggi Canyon in Chula Vista, SD, 23 Oct 2017–8 Apr 2018 (NC†, EGK†, DK-B†, GMcC, NJO†, RO†, DPov, DEQ†, MSen†; 2017-120). An adult at the San Diego Botanic Garden, SD, 1 Nov 2107 (JQu†; 2017-125) represents one of the few single-day records of the Thick-billed Kingbird in California.

FORK-TAILED FLYCATCHER *Tyrannus savana* (3, 1). One with a fully developed tail at Sea Ranch, SON, 12 Sep 2017 (PFr†; 2017-082) was only the third recorded in California but the second for Sonoma County. The Fork-tailed Flycatcher occurs annually in eastern North America but remains very rare west of the Rocky Mountains (Howell et al. 2014).

GREATER PEWEE *Contopus pertinax* (43, 2). One in Pacific Palisades, LA, 12–29 Oct 2017 (SMo†, SBr†, BGa, CAM†, JTS; 2017-114) and another at Balboa Park, SD, 5 Dec 2017–16 Apr 2018 (PEL; DWA†, TAB†, NC†, AH†, EGK†, GMcC, NJO†, RO†, LP†, DPov, MSen†, JTS†, TRS†, RW†; 2017-151) fit a long-established pattern of fall and winter occurrence.

EASTERN WOOD-PEWEE *Contopus virens* (15, 1). One in its first cycle at Laguna Grande, MTY, 3–10 Nov 2017 (RC†, DEQ†, DR†, BLS†; 2017-128; Figure 11) represented a first record for Monterey County.

YELLOW-BELLIED FLYCATCHER *Empidonax flaviventris* (29, 0). IDENTIFICATION NOT ESTABLISHED: One reported at Point Reyes NS, MRN, 7 Sep 2016 (2017-149) was considered a Pacific-slope/Cordilleran Flycatcher (*E. difficilis/occidentalis*) by most committee members.

WHITE-EYED VIREO *Vireo griseus* (83, 6). Six occurred during mid or late spring, with one lingering well into summer. Singing males were at Point Loma, SD, 21 May–26 Jun 2017 (SESS; ARA†, EGK†, PEL, GMcC; 2017-035), Playa Vista, LA, 30 May–11 Jun 2017 (DS†; TAB†; 2017-044), and Talbert Regional Park, Costa Mesa, ORA, 10 Jun–6 Aug 2017 (TEW†, TAB†, DK-B†, CAM\$, RSch†, RSh†, RSW†; 2017-051), where it built a nest with one or two Hutton's Vireos (*V. huttoni*). Silent birds, possibly females, were at Deep Springs College, INY, 16 May 2017 (JFi†; 2017-034) and Canyon Park, Costa Mesa, ORA, 2–6 Jun 2017 (TAB†; 2017-047). A singing male near Hidden Lake Park, Milpitas, SCL, 23 May 2017 (AFo†; 2017-039) was the only White-eyed Vireo recorded in northern California in 2017.

BLUE-HEADED VIREO *Vireo solitarius* (83, 1). One in formative plumage was at Rocky Nook Park, SBA, 13 Sep 2017 (RFC, LFr†; 2017-091). IDENTIFICATION NOT ESTABLISHED: The report of one at Harbor City, LA, 9 May 2016 (2016-151) received no support. One at Fort Rosecrans National Cemetery, Point Loma, SD, 20 Sep 2017 (2017-089) lacked photographic documentation to support the accompanying description, highlighting committee members' interest in thorough documentation for this vexing taxon. One reported along the San Gabriel River in Lakewood, LA, 15 Oct 2017 (2017-115) was considered a bright Cassin's Vireo (*V. cassinii*) by a majority of members, in part on the basis of audio recordings that most members thought better matched Cassin's.

WINTER WREN *Troglodytes hiemalis* (23, 1). The identity of one at Big Morongo Canyon Preserve, SBE, 12 Feb–15 Apr 2017 (TAB†; 2017-024) wasn't confirmed until an audio recording was obtained 31 March.

SEDGE WREN *Cistothorus platensis* (11, 1). One on Santa Barbara I., SBA, 2–3 Nov 2017 (AJS†; 2017-124; Figure 12) was a first for any island in California. IDENTIFICATION NOT ESTABLISHED: One reported at Arcata Marsh, HUM, 4 Dec 2017 (2017-148) was seen briefly, and most members considered the documentation inadequate for acceptance.

DUSKY WARBLER *Phylloscopus fuscatus* (20, 4). One at Madrona Marsh, Torrance, LA, 29 Sep–1 Oct 2017 (TD†, TAB†, JLD, CAM†, DWN†, EdS, DeS\$, CTa†, RST†; 2017-100; Figure 13), representing a county first, was followed by another at San Clemente I., LA, 11–12 Oct 2017 (NJD†, JTS†; 2017-105). One was at Coyote Point, SM, 10–12 Oct 2017 (LK†, BTo†; DA†, JM, DWN†, GW†; 2017-101). One along Indian Head Trail, Encinitas, SD, 12 Oct 2017 (PGN†, SES\$; 2017-106) was also a county first. An apparent influx of this magnitude reached California once previously, in 1997 (Rottenborn and Morlan 2000).

ARCTIC/KAMCHATKA LEAF WARBLER *Phylloscopus borealis/examinandus* (9, 1). One in Cambria, SLO, 17–19 Sep 2017 (WKN†, TME†, HEL†, CAM†, 2017-086; Figure 14) was the ninth recorded in California and the first in five years. The Arctic

Warbler was split into three species by Chesser et al. (2014) following research showing genetic (Saitoh et al. 2008, 2010) and vocal (Alström et al. 2011) differences among three geographically defined taxa. The group comprises the Japanese Leaf Warbler (*P. xanthodryas*), which breeds in Japan south of Hokkaido; the Arctic Warbler (*P. borealis*), which breeds across the northern Holarctic from Sweden to western Alaska; and the Kamchatka Leaf Warbler (*P. examinandus*), the breeding range of which includes the southern Kamchatka Peninsula, Sakhalin, the Kuril Islands, and northeast Hokkaido (Clements et al. 2018). The Kamchatka Leaf Warbler has occurred intermittently ($\geq 30\%$ of years, but not annually) in the western Aleutian Islands (Withrow et al. 2016); there is no evidence that the Japanese Leaf Warbler has reached North America. On the basis of present knowledge, prior records of the Arctic Warbler (*sensu lato*) in California do not allow identification beyond the species group. As a result, the committee voted in 2015 to remove the Arctic Warbler from the state list and replace it with Arctic/Kamchatka Leaf Warbler (Rottenborn et al. 2016).

GRAY-CHEEKED THRUSH *Catharus minimus* (25, 0). IDENTIFICATION NOT ESTABLISHED: Details of one reported at Point Reyes NS, MRN, 23 Sep 2017 (2017-177) were considered too brief for acceptance by some members.

WOOD THRUSH *Hylocichla mustelina* (35, 2). A singing male at the Thousand Palms Oasis, RIV, 29 May–10 Jun 2017 (HBK†, TAB†, CAM, GMcC; 2017-043) represented the earliest spring arrival date for a Wood Thrush in California, while another singing male at Chesbro Reservoir, SCL, 1 Jun 2017 (MJM, RWR, MMR, SCR; 2017-045) was a first for Santa Clara County. These are the first spring records since 2005.

RUFOUS-BACKED ROBIN *Turdus rufopalliatus* (25, 1). An adult was at Barstow Community College, SBE, 25 Nov–3 Dec 2017 (ADa, LDa†, TAB†, JLD; 2017-138).

CURVE-BILLED THRASHER *Toxostoma curvirostre* (35, 1). One was at Senator Wash Reservoir, IMP, 22–24 Nov 2017 (GREu†; 2017-137).

EURASIAN TREE SPARROW *Passer montanus* (0, 0). NATURAL OCCURRENCE QUESTIONABLE: One in Wilmington, LA, 8 Feb 2017–6 Sep 2019 (2017-019) was presumably either an escaped cage bird or ship assisted. Both California records of the Eurasian Tree Sparrow have been of birds found near busy shipping ports in Los Angeles County (CBRC 2007).

CITRINE WAGTAIL *Motacilla citreola* (1, 1). A male at the Yolo Bypass Wildlife Area, YOL, 15–16 Dec 2017 (MDeM†, SCH†; 2017-160; Figure 15) represents the first record for California and the third for North America, the other two being of a male near Starkville, Mississippi, 31 Jan–1 Feb 1992 (DeBenedictis et al. 1995) and a first-cycle bird in Comox, British Columbia, 15 Nov 2012–25 Mar 2013 (N. Am. Birds 67: 144, 327, and 507). This species breeds in northwestern and central Russia south to central Asia, and winters primarily in the Indian subcontinent and southeast Asia (Alström and Mild 2003).

WHITE WAGTAIL *Motacilla alba* (36, 4). A migrant of subspecies *ocularis* at the Santa Margarita River estuary in Camp Pendleton, SD, 18 Apr 2017 (RLSt†; 2017-029) and another at the San Diego River mouth in San Diego, SD, 23–26 Apr 2017 (RyA†, GMcC, GN†, JTS†; 2017-030) were different individuals, apparently an adult and a first-cycle bird, respectively, on the basis of detailed comparisons of photographs. Presumed wintering individuals along the Santa Ana River in Anaheim, ORA, 1–7 Feb 2017 (JC, NH†, CM†, JMB†; 2017-015) and at Prado Regional Park, SBE, 21 Dec 2017–30 Jan 2018 (JBU†, TAB†, JLD†, GMcC, AEM†, SJM†, NJO†, RO†, DPort†, BSi†, ESto†; 2017-167) were also *ocularis*.

PECHORA PIPIT *Anthus gustavi* (0, 0). IDENTIFICATION NOT ESTABLISHED: The observer submitted a lengthy and detailed written account of a pipit at Humboldt Bay NWR, HUM, 12 Feb 2017 (2017-021), persuading over half the committee mem-

bers that the bird may well have been a Pechora Pipit. Without photographs or a specimen, however, committee members are reluctant to endorse a species new to California.

WHITE-WINGED CROSSBILL *Loxia leucoptera* (17, 5). A major southward flight of Red Crossbills (*Loxia curvirostra*) along the Pacific coast in the fall and early winter of 2017 included smaller numbers of White-winged Crossbills in coastal southern British Columbia, Washington, and Oregon (www.eBird.org). In extreme northwestern California, a female at the Elk Valley Casino in Crescent City, DN, 12 Dec 2017 (ADB§; 2017-156) was the first of eight reported in coastal Del Norte and northern Humboldt counties. An adult male was at the town of Smith River, DN, 17 Dec 2017 (RFo; 2017-159), but the report of this same or another male at this location the following day lacked convincing details. Additional birds included single females or first-cycle males near the Del Norte County Regional Airport in Crescent City, DN, 16 Dec 2017 (SS; 2017-158), at Patrick's Point State Park, HUM, 22 Dec 2017 (GG, KMS; 2017-169), and one photographed near the Klamath River mouth in Redwood National Park (NP), DN, 23 Dec 2017 (AS†; LB†; 2017-170; Figure 16)—the first photograph taken in California of this species, for which a specimen is still lacking. The lone previous occurrence of the White-winged Crossbill in California involved a flock of 12 at Mosquito Lake, TRI, 1 Sep 1978 (Luther et al. 1983), at a time when the species was in southern British Columbia and in Washington as far south as Skamania County (AB 33:208). IDENTIFICATION NOT ESTABLISHED: Reports of single White-winged Crossbills with Red Crossbills near Big Lagoon, HUM, 21 Dec 2017 (2017-173), in Crescent City, DN, 28 Dec 2017 (2017-171), and at Big Lagoon, HUM, 28 Dec 2017 (2017-174) were unsupported by documentation that eliminated Red Crossbills with white on the wings.

SNOW BUNTING *Plectrophenax nivalis* (138, 2). A female in formative plumage at North Beach in Point Reyes NS, MRN, 23 Jun 2017 (ML†; 2017-055) was the first Snow Bunting recorded in California in summer. An adult male in the Fall River Valley ~3 km north of McArthur, SHA, 3–6 Nov 2017 (KPA†; 2017-127) was at an expected time of the year but well inland and of an age atypical for California (most records being of first-cycle birds along the coast).

CASSIN'S SPARROW *Peucaea cassinii* (55, 3). One at Arcata Marsh, HUM, 7–10 Oct 2017 (NSa†, RFo†, DK-B, FL†; 2017-103; Figure 17) provided the third record for Humboldt County. Another frequented a residential lawn in Pacific Palisades, LA, 21–22 Oct 2017 (TAB†, CAM†; 2017-116). A third was in Coronado, SD, 21–25 Oct 2017 (BCF†, RyA†, TAB†, CAM†, GMcC; 2017-117), providing San Diego County's second record, under the assumption that the occurrences near El Cajon in 1970, 1976, and 1978 represent the same individual. All 16 Cassin's Sparrows recorded in California in fall have occurred along the coast or on offshore islands, 13 Sep–2 Nov.

FIELD SPARROW *Spizella pusilla* (17, 1). The first record for Alameda County was of a bird in formative plumage photographed at Gomes Park in Fremont, ALA, 12 Oct 2017 (BCh†; 2017-107; Figure 18). Like other Field Sparrows that have reached California, this individual was rather dull, suggesting the western subspecies, *S. p. arenacea*.

LECONTE'S SPARROW *Ammospiza leconteii* (39, 2). Two first county records, both of birds in formative plumage, were of one at Blufftop Coastal Park in Half Moon Bay, SM, 13–31 Oct 2017 (AJ†, WGB†, RFi, JM†, SBT†; 2017-109), and another at Andree Clark Bird Refuge, SBA, 10 Dec 2017 (HPR†; 2017-152).

ORCHARD ORIOLE *Icterus spurius* (8**, 1). A male in formative plumage or an adult female was at Furnace Creek Ranch, INY, 19 Nov 1972 (GMcC; 1972-802). The CBRC reviews records of the Orchard Oriole only from 1972 and 1973. In 1973 the committee decided the Orchard Oriole was among the species occurring in California too frequently to require review (Winter 1973).

RUSTY BLACKBIRD *Euphagus carolinus* (55*, 5). A male was at Centennial Park, ORA, 6 Jan–26 Feb 2017 (JEP†, TAB†; 2017-010), while single females were at the Baker sewage ponds, SBE, 1–3 Dec 2017 (KSCh†; 2017-147), Almansor Park, Alhambra, LA, 10 Dec 2017–8 Apr 2018 (DAB, LT†, DJB†, TAB†, JSF, HSp†, ESt†, LST†, SBT†; 2017-153), the mouth of Trancas Canyon, LA, 17 Dec 2017–20 Jan 2018 (KLG†; 2017-161), and Mammoth, MNO, 17–19 Dec 2017 (KNN†, DJH†; 2017-162). IDENTIFICATION NOT ESTABLISHED: A description of a bird at Terrace Point, SCZ, 8 Mar 2017 (2017-023) did not adequately eliminate a Brewer's Blackbird (*E. cyanocephalus*).

WORM-EATING WARBLER *Helmitheros vermivorum* (134, 2). Single birds were at Butterbred Spring, KER, 27 May 2017 (RPO†; 2017-042; Figure 19) and in a backyard in San Luis Obispo, SLO, 10 Oct 2017 (NJM; 2017-110).

LOUISIANA WATERTHRUSH *Parkesia motacilla* (21, 2). Single birds were at Gilman Park, Fullerton, ORA, 16 Sep 2017 (SBr†, TAB†, JLD†, ABL†, EdS†, RSCh†, JTSI†; 2017-083; Figure 20) and near the Big Sur River mouth, MTY, 23 Dec 2017–14 Jan 2018 (RFo†, DR†, BLS†, SBT†, KSw†; 2017-168).

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (79, 2). A singing male was at Blue Lake, HUM, 25 May 1998 (KMS; 1998-234), while a female was at the same location 29–30 Aug 2017 (KMS, GCh; 2017-075).

BLUE-WINGED WARBLER *Vermivora cyanoptera* (53, 2). A male visited a yard in Pacific Grove, MTY, 24–26 May 2017 (DR†, RC†; 2017-040). Another was singing near Bishop, INY, 27–28 May 2017 (CH†, RH, RPO†; 2017-041).

CONNECTICUT WARBLER *Oporornis agilis* (122, 1). One was at Rancho del Oso, SCZ, 22 Oct 2017 (CRO†; 2017-119).

MOURNING WARBLER *Geothlypis philadelphia* (160, 5). Single individuals were at Southeast Farallon I., SF, 1 Sep 2017 (JRT, TOrt†; 2017-076) and 16 Sep 2017 (DMax†; 2017-084), Piute Ponds, LA, 10 Sep 2017 (JSF†; 2017-079), the “fish docks” at Point Reyes NS, MRN, (AWL†, KCK†; 2017-081), and Drakes Beach, MRN, 15–19 Sep 2017 (KCK†; 2017-088). All of these appeared to be in formative plumage, as expected. Of the 160 records of the Mourning Warbler accepted for California, 70 have been from Southeast Farallon I. IDENTIFICATION NOT ESTABLISHED: One was reported at the Arcata Marsh, HUM, 12–13 Oct 2017 (2017-108).

CAPE MAY WARBLER *Setophaga tigrina* (44*, 3). First-cycle birds included a male at Famosa Slough, SD, 5 Jun 2017 (YoL†; 2017-049), a female at San Clemente I., CA, 21 Jun 2017 (NJD†, JTS†; 2017-054), and a male at Balboa Park, SD, 30 Oct 2017 (NJD†; 2017-123). The CBRC did not review records of the Cape May Warbler from 1975 to 2010.

GRACE'S WARBLER *Setophaga graciae* (72, 2). Single birds of undetermined age or sex were at the Tunnel View parking lot in Yosemite NP, MRP, 2 Jun 2017 (DL†; 2017-050) and at Villa La Jolla Park, La Jolla, SD, 28–29 Sep 2017 (NC†; 2017-098).

MISCELLANEOUS

The long-staying Northern Gannet (*Morus bassanus*; 2012-058) first seen at Southeast Farallon I., SF, 25 Apr 2012 (Pike et al. 2014), and the female Common Black Hawk (*Buteogallus anthracinus*; 2008-053) resident near Santa Rosa, SON, since 14 May 2005 (Iliff et al. 2007) were both still present through 31 Dec 2017.

CORRIGENDA

The committee reviewed additional documentation for two records at its meeting in January 2019 and voted to extend the date ranges for both records. The late date for the Yellow-throated Vireo at Point Loma, SD (Bevier 1990; 1986-002), is corrected to 13–23 Nov 1985, and the date span for the Blue Jay in Quincy, PLU (Searcy et al. 2018; 2015-169) is corrected to 31 Oct 2015–9 May 2016. In the 42nd report, the Magnificent/Great/Lesser Frigatebird at Isla Vista, SBA, 31 Jul 2016, was listed as one individual, but should have been two (McCaskie et al. 2018; 2016-094). With this correction, the number of new individuals accepted in the 42nd report is eight instead of seven.

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LITERATURE CITED

- Alström, P., and Mild, K. 2003. *Pipits and Wagtails*. Princeton Univ. Press, Princeton, NJ.
- Alström, P., Saitoh, T., Williams, D., Nishiumi, I., Shigeta, Y., Ueda, K., Irestedt, M., Björklund, M., and Olsson, U. 2011. The Arctic Warbler *Phylloscopus borealis*—three anciently separated cryptic species revealed. *Ibis* 153:395–410; doi 10.1111/j.1474-919X.2011.01116.x.
- Bailey, A. M. 1945. Wryneck from Cape Prince of Wales, Alaska. *Auk* 64:456; doi 10.2307/4080394.
- Bevier, L. R. 1990. Eleventh report of the California Bird Records Committee. *W. Birds* 21:145–176.
- California Bird Records Committee (R. A. Hamilton, M. A. Patten, and R. A. Erickson, eds.). 2007. *Rare Birds of California*. W. Field Ornithol., Camarillo, CA.
- Chesser, R. T., Banks, R. C., Cicero, C., Dunn, J. L., Kratter, A. W., Lovette, I. J., Navarro-Sigüenza, A. G., Rasmussen, P. C., Remsen, J. V. Jr, Rising, J. D., Stotz,

- D. F., and Winker, K. 2014. Fifty-fifth supplement to the American Ornithologists' Union *Check-list of North American Birds*. Auk 131:CSi-CSxv; doi 10.1642/AUK-14-124.1.
- Cole, L. W., and McCaskie, G. 2004. Report of the California Bird Records Committee. W. Birds 35:2–31.
- Clements, J. F., Schulenberg T. S., Iliff, M. J., Roberson, D., Fredericks, T. A., Sullivan, B. L., and Wood, C. L. 2018. The eBird/Clements checklist of birds of the world: version 2018; www.birds.cornell.edu/clementschecklist/download/.
- DeBenedictis, P., Dittman, D. L., Dunn, J. L., Garrett, K., Lasley, G., Tingley, S., and Tobish, T. 1995. 1994 ABA Checklist Report. Birding 27:367–368.
- Dunning, J. B. Jr., Beheler, A., Crowder, M., Andrews, S., and Weiss, R. 2002. A Eurasian Wryneck specimen from southern Indiana. N. Am. Birds 56:264–267.
- Howell, S. N. G. 2012. Petrels, Albatrosses and Storm-Petrels of North America. Princeton Univ. Press, Princeton, NJ; doi 10.1515/9781400839629.
- Howell, S. N. G., and Pyle, P. 2015. Use of “definitive” and other terms in molt nomenclature: A response to Wolfe et al. (2014). Auk 132:365–369; doi 10.1642/AUK-14-180.1.
- Howell, S. N. G., Corben, C., Pyle, P., and Rogers, D. I. 2003. The first basic problem: A review of molt and plumage homologies. Condor 105:635–653; doi 10.1093/condor/105.4.635.
- Howell, S. N. G., Lewington, I., and Russell, W. 2014. Rare Birds of North America. Princeton Univ. Press, Princeton, NJ; doi 10.1515/9781400848072.
- Humphrey, P. S., and Parkes, K. C. 1959. An approach to the study of molts and plumages. Auk 76:1–31; doi 10.2307/4081839.
- Iliff, M. J., McCaskie, G., and Heindel, M. T. 2007. The 31st report of the California Bird Records Committee: 2005 records. W. Birds 38:161–205.
- Lehman, P. E. 2005. Fall bird migration at Gambell, St. Lawrence Island, Alaska. W. Birds 36:2–55.
- Luther, J. S., McCaskie, G., and Dunn, J. 1983. Fifth report of the California Bird Records Committee. W. Birds 14:1–16.
- McCaskie, G. 2007. A Ross's Gull reaches southern California. W. Birds 38:137–140.
- McCaskie, G., Rottenborn, S. C., Terrill, S. B., and Benson, T. A. 2018. The 42nd annual report of the California Bird Records Committee: 2016 records. W. Birds 49:238–257; doi 10.21199/WB49.4.1.
- Pike, J. E., and Compton, D. M. 2010. The 34th report of the California Bird Records Committee: 2008 records. W. Birds 41:130–159.
- Pike, J. E., Garrett, K. L., and Searcy, A. J. 2014. The 38th report of the California Bird Records Committee: 2012 records. W. Birds 45:246–275.
- Pitman, R., and Jehl, J. 1998. Geographic variation and reassessment of species limits in the “Masked” Boobies of the eastern Pacific Ocean. Wilson Bull. 110:155–170.
- Pyle, P. 2008. Identification Guide to North American Birds, part 2. Slate Creek Press, Point Reyes Station, CA.
- Pyle, P., Tietz, J., and McCaskie, G. 2011. The 35th report of the California Bird Records Committee: 2009 records. W. Birds 42:134–163.
- Rottenborn, S. C., and Morlan, J. 2000. Report of the California Bird Records Committee: 1997 records. W. Birds 31:1–37.
- Rottenborn, S. C., McCaskie, G., Daniels, B. E., and Garrett, J. 2016. The 39th annual report of the California Bird Records Committee: 2013 records. W. Birds 47:2–26.
- Saitoh, T., Shigeta, Y., and Ueda, K. 2008. Morphological differences among populations of the Arctic Warbler with some intraspecific taxonomic notes. Ornithol. Sci. 7:135–142; doi 10.2326/1347-0558-7.2.135.
- Saitoh, T., Alström, P., Nishiumi, I., Shigeta, Y., Williams, D., Olsson, U., and

- Ueda, K. 2010. Old divergences in a boreal bird supports long-term survival through the Ice Ages. *BMC Evol. Biol.* 10:35; doi 10.1186/1471-2148-10-35; doi 10.1186/1471-2148-10-35.
- Searcy, A. J., Daniels, B. E., Feenstra, J. S., Tietz, J. R., and Benson, T. A. 2018. The 41st annual report of the California Bird Records Committee: 2015 records. *W. Birds* 49:24–46; doi 10.21199/WB49.1.2.
- Singer, D. S. and Terrill, S. B. 2009. The 33rd report of the California Bird Records Committee: 2007 records. *W. Birds* 40:158–190.
- Singer, D. S., Dunn, J. L., Harter, L. B., and McCaskie, G. 2016. The 40th annual report of the California Bird Records Committee: 2014 records. *W. Birds* 47:291–313; doi 10.21199/WB47.4.3.
- Smith, A. L., and Friesen, V. L., 2007. Differentiation of sympatric populations of the Band-rumped Storm-Petrel in the Galapagos Islands: An examination of genetics, morphology, and vocalizations. *Molec. Ecol.* 16:1593–1603; doi 10.1111/j.1365-294X.2006.03154.x.
- Smith, A. L., Monteiro, L., Hasegawa, O., and Friesen, V. L. 2007. Global phylogeny of the Band-rumped Storm-Petrel (*Oceanodroma castro*; Procellariiformes: Hydrobatidae). *Molec. Phylogen. Evol.* 43:755–773; doi 10.1016/j.ympev.2007.02.012.
- Sole, P. 2017. Peregrine Falcons attack a Ross's Gull in central coastal California. *W. Birds* 48:150–151; doi 10.21199/WB48.2.6.
- Winter, J. 1973. The California Field Ornithologists Records Committee report 1970–1972. *W. Birds* 4:101–106.
- Withrow, J. J., Gibson, D. D., Gerasimov, Y., Gerasimov, N., Shestopalov, A., and Winker, K. 2016. Occurrence and taxonomy of Arctic Warblers (*Phylloscopus borealis*) *sensu lato* in North America. *Wilson J. Ornithol.* 128:268–277; doi 10.1676/wils-128-02-268-277.1.

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NEVADA BIRD RECORDS COMMITTEE REPORT FOR 2018

JEANNE TINSMAN, P. O. Box 752045, Las Vegas, Nevada 89136;
philohela17@gmail.com

MARTIN MEYERS, c/o Great Basin Bird Observatory, 1755 E. Plumb Lane #256,
Reno, Nevada 89502; NevadaBirdRecords@gbbo.org

ABSTRACT: In 2018, the Nevada Bird Records Committee reviewed 56 reports from the period 23 May 1981–23 July 2018; 46 were endorsed. No new species were added to the state list, which stands at 489 species. The review list underwent a major revision in August 2018, reducing the number of full species requiring review from 141 to 108; two additional subspecies remain on the list.

The Nevada Bird Records Committee (NBRC) began 2018 with 19 reports pending review. During the year, 63 reports were added to the pending queue. Eight of those were either rescinded before review or combined with another record as representing a “continuing” individual. The committee completed reviews of 56 reports during 2018. Therefore, the year ended with 18 reports in the pending queue. Since its founding in 1994, the NBRC has reviewed 1401 reports, endorsing 1260 (89.9%) of them.

At its founding in 1994, the committee decided not to review any sightings prior to that year, but it reversed that decision several years later. Fortunately, founding secretary James Cressman and his wife, Marian, continued to accumulate documentation for “pre-committee” reports. One of the committee’s long-term goals since 2007 has been to organize and review as many of those reports as possible. In addition, the NBRC has also searched for additional reviewable documentation from multiple sources (e.g., museum specimens and journal articles) for early unreviewed reports. Since 2007, the committee has reviewed 211 reports of sightings prior to the committee’s founding date; 178 of those have been endorsed. Of the 56 reports reviewed in 2018, 15 preceded the founding date, and 11 of them were endorsed. Six of those became the earliest NBRC-endorsed records.

Of the 56 reports reviewed by the committee in 2018, 46 were endorsed. Fourteen of the endorsed records were supported only by written documentation. Photographs accompanied the documentation for 32 of the endorsed records. Of those 32, one was also accompanied by a video recording, another by an audio recording. None were accompanied by video or audio without also being supported by photographs. For the first time since 2012, none of the records were supported by museum specimens. Of the 10 reports not endorsed, five included photographs. The remaining five were supported by written descriptions only.

The NBRC has six voting members, one of whom serves as chair, and a nonvoting secretary. During 2018, the committee’s voting members were Aaron Ambos, Paul Hurtado, Greg Scyphers, Justin Streit, Jeanne Tinsman, and Ben Zyla. The position of secretary continued to be held by Martin Meyers, and the position of chairperson continued to be held by Jeanne Tinsman. At the end of 2018, Greg Scyphers and Aaron Ambos rotated off the com-

mittee because of term limits; Frank Fogarty and Alex Harper were elected to assume those positions in 2019.

The NBRC's website at <http://gbbo.org/nbrc> contains a statement of purpose, answers to frequently asked questions, links to a submission form that can be downloaded or completed online, the Nevada checklist, the review list, a list of current and past NBRC members, and the committee's bylaws. There is a link to a list of all submissions to the NBRC, with the status of each with respect to endorsement and, if available, a photograph. All previous NBRC reports are available through the website. NBRC reports through 2007 (1994–1996, 1997, 1998, 1999, 2000, 2004, 2005, and 2007) appeared in *Great Basin Birds*, published by the Great Basin Bird Observatory. Reports for 2008 through 2010 are available only at the NBRC website. Beginning with the 2011 report, annual reports have appeared in *Western Birds*.

REVISIONS TO THE NEVADA STATE LIST

There were no changes to the Nevada state list in 2018. At the end of the year, the list included 489 species, including the Arctic Warbler (*Phylloscopus borealis*) *sensu lato*, based on a bird identified only to the group comprising the Arctic, Kamchatka Leaf (*P. examinandus*), and Japanese Leaf (*P. xanthodryas*) Warblers (see Tinsman and Meyers 2018).

REVISIONS TO THE NEVADA REVIEW LIST

The Nevada review list underwent a major revision in August 2018. The NBRC members decided that our focus is to be the truly rare species observed in the state. The decision removed seven regionally exempt species (known to breed in restricted areas of Nevada) and any species of which the committee had endorsed at least five records in the preceding 15 years.

On further reflection, we found that all but one of the 27 species removed as a result of the latter criterion had at least five endorsed records in the preceding 10 years. The committee agreed then to amend the criterion to fit that circumstance; the 26 species that fell into that category are no more than uncommon visitors to Nevada. The Western Gull (*Larus occidentalis*), with only two endorsed records in the preceding 10 years, was reinstated to the review list. From this point forward, any species with five or more endorsed records within the most recent 10-year period is automatically removed from the review list.

While it is certainly still worthwhile to watch for trends in all of these species, the committee concluded that such trends could be monitored through www.eBird.org. This platform may not be quite as rigorous as the NBRC's review process, but it serves to illustrate trends.

Consequently, at the end of 2018, the NBRC had reduced its review list to 108 species. Two subspecies also remained on the list, the Mexican Mallard (*Anas platyrhynchos diazi*) and Eurasian Green-winged Teal (*Anas crecca crecca*). The committee placed the Mexican Mallard on the review list to accumulate data on its occurrence. There are five unreviewed reports of this subspecies, but we have decided to wait to review them until there is more clarity on its taxonomic status and identification criteria. The committee has endorsed four records of the Eurasian Green-winged Teal.

SPECIES ACCOUNTS

Each species account is introduced with a header in the following format: English name; scientific name; and, in parentheses, the total number of endorsed records of the species (including those endorsed in this report), followed by the number of records endorsed in this year's report. An asterisk preceding the species' name signifies that the species is no longer on the review list. Two asterisks after the total of records denote that the number of records refers to a restricted review period, usually signifying that the species is no longer on the review list, was added to the review list because of a perceived drop in frequency of occurrence in Nevada, or was exempt from review in some locations.

After the heading for each species, each report of that species reviewed in 2018 is provided in the following format: NBRC report number, location (county in parentheses), and date or range of dates of observations submitted to the NBRC. If the report involved multiple birds, the number follows the date information. Then, for endorsed records, the name of each submitter, followed by the notation "(P)," "(V)," and/or "(A)" if he or she provided a photo, video, and/or audio recording, respectively; if there is no such annotation, only written documentation was provided. If the finder(s) sent documentation to the NBRC, their names are listed first. A semicolon follows the finders' names if other observers submitted additional documentation.

Multiple observations of a species are ordered chronologically. Any discussion of the species in general, not specific to an observation, concludes the account if warranted. In text, citations of the journals *American Birds* and *National Audubon Society Field Notes* are abbreviated AB and NASFN.

*BRANT *Branta bernicla* (9**, 1). 2017-077, Henderson Bird Viewing Preserve (Clark), 6 Nov 2017. A. Harper (P). Immature, subspecies *nigricans*.

*TRUMPETER SWAN *Cygnus buccinator* (5**, 1). 2017-081, Bowman Reservoir (Clark), 29 Nov 2017, seven birds. A. Harper (P). All adults.

2018-001, Vya (Washoe), 30 Dec 2017, two birds. NOT ENDORSED. This is the only record in this year's report that failed to win endorsement because of a question over the birds' origin. The two immature birds wore collars identifying them as having been hatched in a captive-breeding program at the Topeka (Kansas) Zoo and then transported to Oregon, where they were released by Oregon Department of Fish and Wildlife (Chris Nicolai, U. S. Fish and Wildlife Service, in litt., 2017). They were last seen in Oregon on 3 Dec 2017. The majority of the committee did not think that the birds met the criteria for endorsement as naturally occurring individuals.

*BLACK SCOTER *Melanitta americana* (14**, 1). 2018-027, Sunset Park, Las Vegas (Clark), 16 Apr 2015. D. Chang, J. Roombos (P). Immature male.

COMMON GROUND-DOVE *Columbina passerina* (8, 1). 2018-035, Pahrnagat National Wildlife Refuge (NWR) (Lincoln), 24 May 2018. NOT ENDORSED.

2018-043, Las Vegas Bay, Lake Mead National Recreation Area (NRA) (Clark), 23 Jul 2018. B. Zyla.

RUFF *Calidris pugnax* (6, 1). 2018-009, S-Line Reservoir, Fallon (Churchill), 29-30 Jan 2018. M. Meyers (P), N. Hoffman (P), R. Strickland, F. Welden (P; Figure 1), G. Scyphers (P), M. Andrews, D. Ghiglieri (V). First reported by Rob Lowry on 28 Jan 2015. This is the first winter observation of the Ruff in Nevada. Previous records are from April and September.



FIGURE 1. Ruff (*Calidris pugnax*), 29 Jan 2018, S-Line Reservoir, Fallon, Churchill County, Nevada.

Photo by F. Welden

LAUGHING GULL *Leucophaeus atricilla* (4, 1). 2018-020, Henderson Bird Viewing Preserve (Clark), 31 May 1992. M. Cressman, E. Wells (AB 46:455, 1992). Earliest NBRC-endorsed record. Immature.

*YELLOW-BILLED LOON *Gavia adamsii* (10**, 1). 2017-083, Government Wash, Lake Mead NRA (Clark), 28 Dec 2017–21 Jan 2018. J. Streit (P); C. Wilhite (P), B. Zyla (P), J. Switalla (P; Figure 2). Immature.

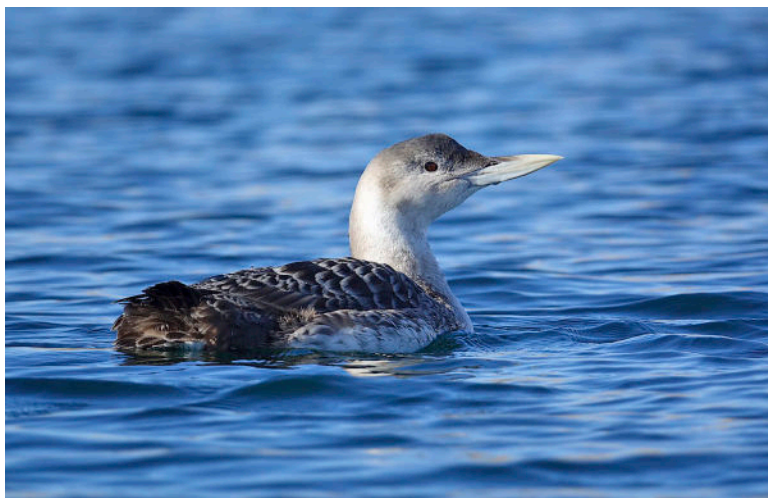


FIGURE 2. Yellow-billed Loon (*Gavia adamsii*), 15 Jan 2018, Government Wash, Lake Mead National Recreation Area, Clark County, Nevada.

Photo by J. Switalla



FIGURE 3. Tropical Kingbird (*Tyrannus melancholicus*), 8 Jun 2018, Corn Creek, Desert National Wildlife Refuge, Clark County, Nevada.

Photo by S. Krammer



FIGURE 4. Thick-billed Kingbird (*Tyrannus crassirostris*), 13 Nov 2017, Floyd Lamb Park at Tule Springs, Las Vegas, Clark County, Nevada.

Photo by C. Gaffey

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REDDISH EGRET *Egretta rufescens* (4, 1). 2018-024, Lake Mead Marina (old location at Boulder Harbor), Lake Mead NRA (Clark), 23 Aug 1990. M. V. Mowbray, J. Harman (AB 45:132, 1991). Earliest NBRC-endorsed record. Adult.

*MISSISSIPPI KITE *Ictinia mississippiensis* (11**, 3). 2018-021, Pahranaagat Valley (Lincoln), 21 Mar 1982. NOT ENDORSED.

2018-014, Corn Creek, Desert NWR (Clark), 6 Jun 1986. M. V. Mowbray (AB 40:1234, 1986). Earliest NBRC-endorsed record. A second-year bird.

2018-022, Corn Creek, Desert NWR (Clark), 16 May 1992. R. Rucker, R. McArthur (AB 46:454, 1992). Adult.

2018-013, Corn Creek, Desert NWR (Clark), 14 May 1993. D. Crowe. Adult.

*HARRIS'S HAWK *Parabuteo unicinctus* (13**, 1). 2017-082, Searchlight (Clark), 30 Nov 2017. J. Bundorf (P). Adult.

CRESTED CARACARA *Caracara cheriway* (4, 1). 2018-029, Amargosa Valley (Nye), 29 Apr 2018. L. Harter (P). Adult.

*LEAST FLYCATCHER *Empidonax minimus* (12**, 1). 2018-012, Blue Diamond (Clark), 24 Apr 1993. NOT ENDORSED.

2018-042R, Rafter 7 Ranch (Lyon), 11 Jun–2 Jul 2018. M. Dorriesfield (P, V, A). Found singing on the same study plot on a private ranch where Dorriesfield had documented a singing Least Flycatcher on 9 Jun 2016, endorsed as record 2016-033 (Tinsman and Meyers 2018). He did not survey the plot in 2017. The committee, on a 4–2 vote, decided to consider 2018-042 to be a return of 2016-033.

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer* (2, 1). 2018-028, Warm Springs Natural Area (Clark), 15 Apr 2018. B. Wilcox (P, A). Adult. Nevada's only previous Dusky-capped Flycatcher occurred in mid-December 2012 (Meyers 2015).

TROPICAL KINGBIRD *Tyrannus melancholicus* (2, 1). 2018-039, Corn Creek, Desert NWR (Clark), 8–9 Jun 2018. J. Streit (P); S. Krammer (P; Figure 3), J. Tinsman (P), N. McDonal (P). Adult female; flight shots provided the opportunity to verify that the outer primaries were notched, but not to the degree that would be observed on an adult male. Streit heard the characteristic twitter call that distinguishes the Tropical Kingbird from the similar Couch's Kingbird (*T. couchii*).

THICK-BILLED KINGBIRD *Tyrannus crassirostris* (4, 1). 2017-073, Floyd Lamb Park (Clark), 13 Nov–1 Dec 2017. J. Tinsman (P), C. Gaffey (P; Figure 4), P. Gaffey (P), N. McDonal (P), C. Coxe (P), B. Zyla (P). Found by Rita Schlageter. A hatch-year bird. Previous Nevada records come from late October to early November in 1996, 2014, and 2017. This species is observed nearly annually in California, thanks to wintering birds returning year after year (Tietz and McCaskie 2019). The first and only record in Utah was from 2009 (UBRC 2019).

*SCISSOR-TAILED FLYCATCHER *Tyrannus forficatus* (15**, 3). 2018-030, Warm Springs Natural Area (Clark), 10–13 May 2018. E. Swanson (P); M. Dorriesfield (P). Adult.

2018-033, Corn Creek, Desert NWR (Clark), 19 May 2018. C. Ritter (P). Adult.

2018-038, Corn Creek, Desert NWR (Clark), 7 Jun 2018. Desert NWR Corn Creek staff (P). Adult. The committee considered whether it would be appropriate to combine 2018-033 and 2018-038 into a single record; photos were not definitive in clarifying whether they represented the same individual. Because Corn Creek (an oasis surrounded by desert) is one of the most heavily birded locations in southern Nevada and the species is hard to miss, the majority agreed that it was unlikely that the bird remained during the period between the two sightings without being reported.

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*WHITE-EYED VIREO *Vireo griseus* (10**, 2). 2018-045, Corn Creek, Desert NWR (Clark), 17 Jun 2018. B. Zyla. Adult.

2018-041, Floyd Lamb Park (Clark), 7 Jul 2018. B. Miller (P). Adult.

*PURPLE MARTIN *Progne subis* (17**, 1). 2018-040, Corn Creek, Desert NWR (Clark), 11 Jun 2018. B. Miller (P); B. Zyla.

WINTER WREN *Troglodytes hiemalis* (3, 0). 2017-079, Floyd Lamb Park (Clark), 21 Nov 2017. NOT ENDORSED. This bird was heard once giving what the observer described as a rapid alarm call at a distance of about 150–200 feet. It was not heard again. Photos showed plumage that suggested the Winter Wren, but the committee decided that they did not conclusively eliminate the more likely Pacific Wren (*T. pacificus*).

RUFIOUS-BACKED ROBIN *Turdus rufopalliatu*s (2, 1). 2017-076, Spring Mountain Ranch State Park (SP) (Clark), 25 Nov–3 Dec 2017. J. Thompson (P); A. Poe (P), D. Crail-Rugotzke, J. Streit (P), B. Zyla, M. Meyers (P; Figure 5). A hatch-year bird. Another was observed at the same time 195 km to the southwest in California at Barstow Community College (Singer et al. 2020). The only other Rufous-backed Robin confirmed in Nevada occurred on 14 and 15 Nov 2012 (Meyers 2015).

*PURPLE FINCH *Haemorhous purpureus* (20**, 10). 2018-015, Corn Creek, Desert NWR (Clark), 13 Mar 1993. NOT ENDORSED.

2018-004, Carson River Park, Carson City (Carson City), 24 Nov 2016, three birds. NOT ENDORSED.

2017-074, Corn Creek, Desert NWR (Clark), 5–18 Nov 2017. A. Harper (P), B. Miller (P); C. Gaffey (P), P. Gaffey, J. Tinsman (P).

2017-080, Red Rock Canyon National Conservation Area (Clark), 5 Nov 2017–4 Jan 2018, three birds. C. Neumamn (P), J. Streit (P).

2018-010, Floyd Lamb Park (Clark), 18 Nov 2017. NOT ENDORSED.

2017-075, Rancho San Rafael Park, Reno (Washoe), 21 Nov–24 Dec 2017, three birds. P. Hurtado (P, A); J. Bleam (P), M. Meyers (P), F. Petersen (P).

2018-005, Riverview Park, Carson City (Carson City), 8–17 Dec 2017. N. Rosen (P).

2018-007, Verdi (Washoe), 10 Jan 2018. P. Hurtado (P).

2018-003, Caughlin Parkway, Reno (Washoe), 10–18 Jan 2018, three birds. P. Hurtado (P); M. Meyers (P), J. Bleam (P).

2018-006, Upper Plateau Road, Reno (Washoe), 20–23 Jan 2018, four birds. M. Meyers (P).

2018-008, Reno (Washoe), 23–26 Jan 2018, seven birds. L. Dimitroff (P).

2018-017, Chrissie Caughlin Park, Reno (Washoe), 4 Feb 2018. P. Hurtado (P).

2018-031, Primm (Clark), 11 Apr 2018. B. Zyla (P).

The NBRC report for 2017 (Tinsman and Meyers 2019) described the increasing frequency of satisfactorily documented reports of the Purple Finch beginning around 2014. It is clear that the increase continued through 2018. NBRC members did not always indicate the subspecies when voting on these records, but none were thought to represent *H. p. purpureus*.

*LAWRENCE'S GOLDFINCH *Spinus lawrencei* (18**, 1). 2018-011, Red Rock Canyon National Conservation Area (Clark), 24 Apr 1994. M. Cressman (NASFN 48:324, 1994). Adult male. This species was removed from the Nevada review list in 2011; this early record antedates that decision.

SMITH'S LONGSPUR *Calcarius pictus* (3, 1). 2018-026, Henderson Bird Viewing Preserve (Clark), 30 Mar 1991. M. Cressman. Adult male. A detailed written description of the bird, which was in breeding plumage, resulted in a unanimous vote for endorsement. Though Smith's Longspurs are often gregarious, Cressman stated, "it did not pay attention to us or other birds except to avoid a Savannah Sparrow now and then."



FIGURE 5. Rufous-backed Robin (*Turdus rufopalliatu*), 3 Dec 2017, Spring Mountain Ranch State Park, Clark County, Nevada.

Photo by M. Meyers



FIGURE 6. Hepatic Tanager (*Piranga flava*), 4 Jun 2018, Cactus Springs, Clark County, Nevada.

Photo by G. Scyphers

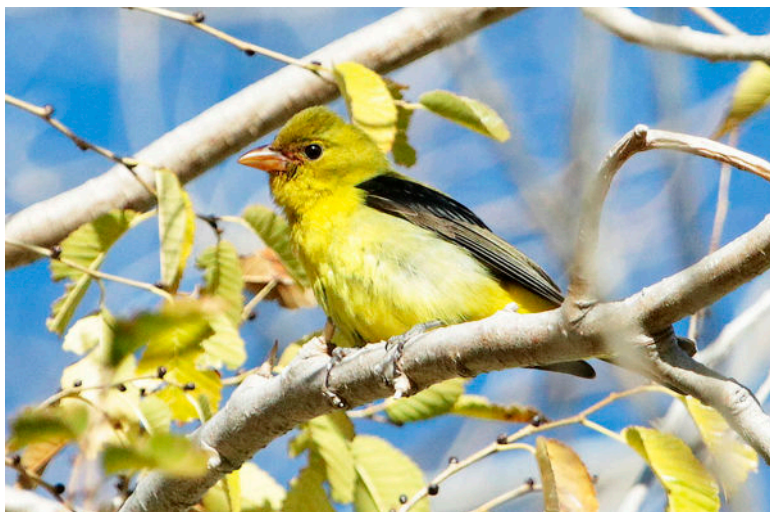


FIGURE 7. Scarlet Tanager (*Piranga olivacea*), 4 Nov 2017, Corn Creek, Desert National Wildlife Refuge, Clark County, Nevada.

Photo by N. McDonal

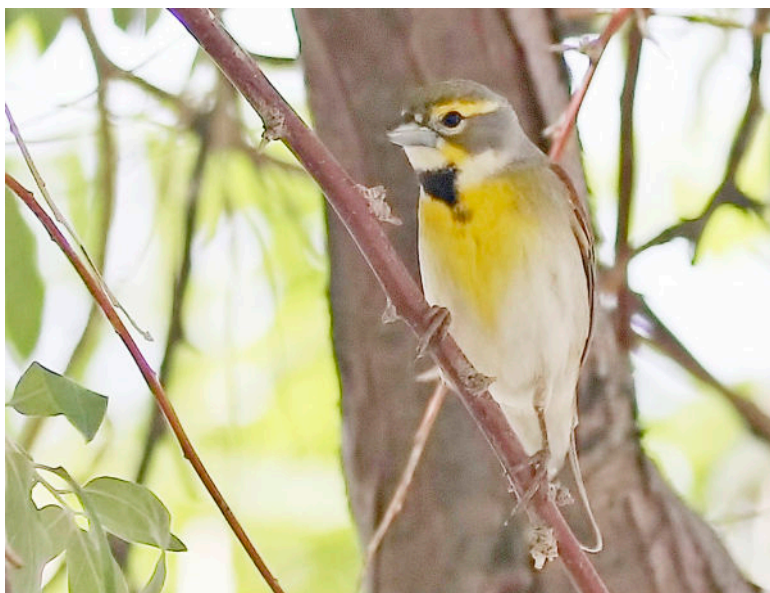


FIGURE 8. Dickcissel (*Spiza americana*), 5 Jun 2018, Miller's Rest Stop, Esmeralda County, Nevada.

Photo by M. Meyers

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Arizona has two records of this species (Rosenberg et al. 2017), and California has 11 (McCaskie et al. 2018).

*GRASSHOPPER SPARROW *Ammodramus savannarum* (15**, 1). 2017-078, Sunset Park, Las Vegas (Clark), 26 Sep 2017. J. Streit (P).

*ORCHARD ORIOLE *Icterus spurius* (14**, 1). 2018-032, Amargosa Valley (Nye), 26 Sep 1991. P. E. Lehman, S. Finnegan (P; AB 46:129, 1992). Earliest NBRC-endorsed record.

2017-060, Corn Creek, Desert NWR (Clark), 22–23 Sep 2017. NOT ENDORSED.

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (6, 1). 2018-036, Corn Creek, Desert NWR (Clark), 2 Jun 2018. J. Brady (P); J. Tinsman (P), G. Scyphers (P). Adult female.

CONNECTICUT WARBLER *Oporornis agilis* (4, 1). 2017-072, Miller's Rest Stop (Esmeralda), 15–17 Sep 1992. J. Brack (P; AB 47:126, 1993). Earliest NBRC-endorsed record. A hatch-year bird. This submission required three separate reviews by the committee; it passed when archived notes that accompanied the previously circulated photographs were found.

*KENTUCKY WARBLER *Geothlypis formosa* (11**, 3). 2018-016, Dyer (Esmeralda), 23 May 1981. P. E. Lehman; J. Langham (AB 35:848, 1981). Earliest NBRC-endorsed record.

2018-018, Corn Creek, Desert NWR (Clark), 23 May 1987. K. Wallace (AB 41:470, 1987).

2018-019, Corn Creek, Desert NWR (Clark), 16 Jun 1992. M. Cressman (AB 46:1159, 1992).

HEPATIC TANAGER *Piranga flava* (3, 1). 2018-037, Cactus Springs (Clark), 4 Jun 2018. G. Scyphers (P; Figure 6), M. Meyers (P). Adult female. Although Austin and Bradley (1971) and Alcorn (1988) considered the species a rare summer visitor to the mountains of southern Nevada, the first Hepatic Tanager the NBRC endorsed (2002-18) was at a well-known vagrant/migrant trap, Miller's Rest Stop (Esmeralda), and this third one was also at a vagrant/migrant trap, a tiny oasis northwest of Indian Springs (Clark). The second (2014-043) was a male at Mt. Charleston (Clark) in the Spring Mountains, where breeding has been suspected but not confirmed. That male was accompanied by a yellow tanager not identified to species (Meyers 2016). The dearth of recent records from the Spring Mountains, noted also by Floyd et al. (2007), suggests that the Hepatic Tanager is not regular there, as Austin and Bradley (1971) and Alcorn (1988) implied.

*SCARLET TANAGER *Piranga olivacea* (9**, 1). 2018-025, Corn Creek, Desert NWR (Clark), 25 Oct 1987. NOT ENDORSED.

2017-071, Corn Creek, Desert NWR (Clark), 4–8 Nov 2017. N. McDonal (P; Figure 7); P. Gaffey (P), B. Zyla (P).

*DICKCISSEL *Spiza americana* (12**, 1). 2018-034, Miller's Rest Stop (Esmeralda), 5 Jun 2018. K. Reed (P); M. Meyers (P; Figure 8). Adult male.

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This annual report is dedicated to the memory of our good friend Neil McDonal.

LITERATURE CITED

- Alcorn, J. R. 1988. *The Birds of Nevada*. Fairview West Publishing, Fallon, NV.
- Austin, G. T., and Bradley, W. G. 1971. The avifauna of Clark County, Nevada. *J. Ariz. Acad. Sci.* 6:283–303; doi 10.2307/40022840.
- Floyd, T., Elphick, C. S., Chisholm, G., Mack, K., Elston, R. G., Ammon, E. M., and Boone, J. D. 2007. *Atlas of the Breeding Birds of Nevada*. Univ. of Nev. Press, Reno.
- McCaskie, G., Rottenborn, S. C., Terrill, S. B., and Benson, T. A. 2018. The 42nd annual report of the California Bird Records Committee: 2016 records. *W. Birds* 49:238–257; doi 10.21199/WB49.4.1.
- Meyers, M. 2015. Nevada Bird Records Committee report for 2013. *W. Birds* 46:8–27.
- Meyers, M. 2016. Nevada Bird Records Committee report for 2014. *W. Birds* 47:120–137; doi 10.21199/WB47.2.2.
- Rosenberg, G. H., Radamaker, K., and Vander Pluym, D. 2017. Arizona Bird Committee report, 2010–2014 records. *W. Birds* 48:74–112; doi 10.21199/WB48.2.1.
- Singer, D. S., Benson, T. A., McCaskie, G., and Stahl, J. 2020. The 43rd annual report of the California Bird Records Committee: 2017 records. *W. Birds* 51:2–20.
- Tietz, J., and McCaskie, G. 2019. Update to *Rare Birds of California*, 1 January 2004–5 October 2019; www.californiabirds.org/cbrc_book/update.pdf.
- Tinsman, J., and Meyers, M. 2018. Nevada Bird Records Committee report for 2016. *W. Birds* 49:98–112; doi 10.21199/WB49.2.1.
- Tinsman, J., and Meyers, M. 2019. Nevada Bird Records Committee report for 2017. *W. Birds* 50:2–15; doi 10.21199/WB50.1.1.
- Utah Bird Records Committee (UBRC). 2019. Documented sightings of Utah review species; www.utahbirds.org/RecCom/UBRC_SightingsIndex.html.

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POPULATION ASSESSMENT OF BELDING'S YELLOWTHROAT (*GEOTHYLPIS BELDINGI*) AT SAN IGNACIO OASIS, BAJA CALIFORNIA SUR, MEXICO

ROBERTO CARMONA, GERARDO MARRÓN, SERGIO ÁGUILA, ABIGAIL RIVAS, SERGIO FLORES RAMÍREZ, and HÉCTOR REYES BONILLA, Departamento Académico de Ciencias Marinas y Costeras, Universidad Autónoma de Baja California Sur, A.P. 19-B, La Paz, Baja California Sur, Mexico, 23080; beauty@uabcs.mx

ABSTRACT: Belding's Yellowthroat (*Geothlypis beldingi*) is an endangered species endemic to the southern half of the Baja California Peninsula. There are no current estimates of the species' population, crucial to scientifically based management for its conservation. Therefore, we assessed the species' population at one of its major sites, the oasis of San Ignacio. During the reproductive season, the density of birds reached around 17 individuals per hectare, representing an estimated total population of about 250 birds. Previous estimates of the abundance of Belding's Yellowthroat are inconsistent, emphasizing the need for a re-evaluation with more robust methods. In addition, we recorded a significant decrease in the number of males of the species immediately after the reproductive season, which suggests that these birds may disperse immediately after the breeding season, possibly to avoid competition with their conspecifics. If so, this has important implications for this bird's spatial population structure.

RESUMEN: La Mascarita peninsular (*Geothlypis beldingi*) es una especie endémica de la península de Baja California, México, que está en peligro de extinción, además no cuenta con estimados poblacionales recientes, por lo que en este trabajo evaluamos la población de uno de los sitios de mayor importancia para la especie, el oasis de San Ignacio. La densidad de aves en la época reproductiva fue de cercana a 17 aves/ha, con lo que el tamaño poblacional estimado para el oasis es de aproximadamente 250 aves. Estimados anteriores de la abundancia de la Mascarita peninsular son inconsistentes, lo que enfatiza la necesidad de una evaluación con métodos más robustos. Adicionalmente, registramos una disminución drástica en el número de machos de la especie inmediatamente después de la época de reproducción, lo que sugiere que estas aves podrían dispersarse después de la temporada de anidación, para evitar la competencia con sus hembras y juveniles, lo cual tendría importantes implicaciones para la estructura espacial de la población.

The Baja California Peninsula is characterized by its aridity. However, scattered freshwater bodies of significant size (i. e., oases) provide attractive habitats for several species of migratory and resident birds, including Belding's Yellowthroat (*Geothlypis beldingi*), endemic to the peninsula. This species is largely restricted to oases with large patches of Southern Cattail (*Typha domingensis*), Common Reed (*Phragmites australis*), or both (Rodríguez-Estrella et al. 1997, 1999, Escalante 2000). BirdLife International (2016) estimated its total population size at between 1500 and 4000 birds. Because of its restricted distribution and small population size, Belding's Yellowthroat has been designated as endangered by the Mexican government (SEMARNAT 2010) and by the International Union for the Conservation of Nature (BirdLife International 2016).

Because of its restricted distribution and its association with emergent

plants, until recently it was thought that the species' ability to disperse was quite limited. In their study of its habitat preferences, Rodríguez-Estrella et al. (1999) reported that 80% of their sightings were on cattail or reed. Only 15% and 5% were on palms or nearby desert vegetation, respectively, but always within 50 m of the main water body. Therefore, they inferred that Belding's Yellowthroats are unable to leave the oasis in which they reside. Nevertheless, Erickson et al. (2008) reported Belding's Yellowthroats far from their reproductive areas, pointing to the need for more studies of the species' capability for dispersal.

The restricted distribution, reduced abundance, and limited dispersal ability of Belding's Yellowthroat suggest that the species may comprise non-equilibrium metapopulations. This has major implications for its conservation and management, since non-equilibrium metapopulations consist of demographically independent unconnected subpopulations and are thus prone to extirpation because of their isolation and small size (Stith et al. 1996).

San Ignacio oasis, located within the Vizcaíno Biosphere Reserve in northern Baja California Sur, is recognized as the site of the largest concentration of Belding's Yellowthroat (Rodríguez-Estrella et al. 1999, Erickson et al. 2008). BirdLife International (2000, 2007, cited by Erickson et al. 2008) reported a population estimated at 537 to 648 individuals between November 1994 and August 1996 but did not specify the methods by which the estimate was generated.

Belding's Yellowthroat's status as endangered, its limited range, and the lack of a robust evaluation of its population (Rodríguez-Estrella et al. 1999, Escalante 2000, BirdLife International 2016) call for updated and precise assessments in areas where the population is concentrated, as at San Ignacio (Erickson et al. 2008). Such estimates are essential to effective management toward the species' conservation. Hence, our objective was to assess the abundance of the Belding's Yellowthroat at the oasis of San Ignacio during the species' reproductive season (from March to June, Bent 1953) and to generate more information on the species' ability to disperse.

MATERIALS AND METHODS

Study Area

The San Ignacio oasis (27° 17' 55" N, 112° 53' 35" W; Figure 1) is located less than 2 km from the town of San Ignacio, at the center of the Baja California Peninsula, an area that encompasses a diversity of ecosystems. San Ignacio is the main oasis in the area, and the largest on the peninsula, with a total surface of 269 ha (Maya et al. 1997). The water level in the oasis fluctuates only slightly, and the substrate varies from boulders to sand (Ruíz-Campos et al. 2014). The vegetation is mostly riparian abutted by xeric scrubland, interspersed with opportunistic exotic species (Ruíz-Campos et al. 2014).

Field Work

We visited the San Ignacio oasis from 29 May to 4 June ("May") and from 28 June to 4 July ("June") 2016. During both periods, we made point counts around the whole periphery of the oasis, starting at 07:00 and ending

SURVEYS OF BELDING'S YELLOWTHROAT AT SAN IGNACIO

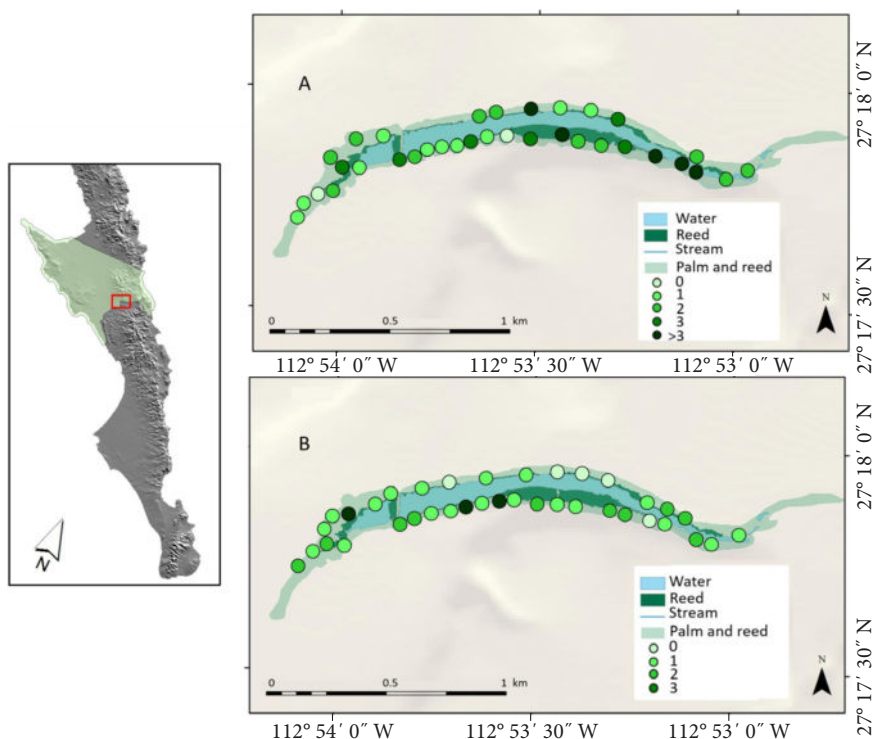


FIGURE 1. San Ignacio oasis, showing the habitat suitable for Belding's Yellowthroat and the count points. The color of the circles is scaled to the number of birds observed during silent counts. A, survey 29 May–4 June 2016; B, survey 28 June–4 July 2016.

at 11:00. We counted within a radius of 25 m of each point, and points were separated by at least 50 m. In May, we counted from 34 points, in June from 37. Between the two survey periods, 26 of the points coincided, and 80% of the area covered by the points overlapped. At each point, we counted in silence for 5 minutes and recorded the distance to each Belding's Yellowthroat detected ("silent counts"). For birds seen we measured the distance with a laser rangefinder, but for birds heard only we had to estimate the distance. We followed this silent count immediately by 10-minute "call counts," during which we broadcast calls and songs of the target species to attract birds. Because the points were situated at the edges of reedbeds, each 25-m radius encompassed about 50% prime habitat (reed and cattail) and 50% suboptimal habitat (primarily palms). Also, the 25-m radii surrounding the points did not cover the whole area of suitable habitat, so the counts represent a minimum estimate of abundance (Mikol 1980, Ralph et al. 1996). During both types of counts we recorded the sex and age (young or adult) of each individual seen according to its plumage (Dunn and Garrett 1997). We categorized birds that

could not be observed carefully or that were only heard as undetermined. Also, we recorded the type of vegetation (cattail, reed, palm, or other) with which each bird (sighted or heard) was associated. In June we recorded whether the bird had been banded in May (see below).

The assumptions for both types of counts were those suggested by Wunderle (1994): (1) birds must be accurately identified, (2) sampling efforts must be adequate to detect the presence of the species, (3) differences among observers should be slight or accounted for, (4) differences in detectability among sites and months should be slight or accounted for.

Additionally, we captured Belding's Yellowthroats with mist nets (12 m long $\times$ 2 m wide, 36-mm mesh) placed adjacent to the oasis' water body. The capture effort consisted of 278 mist-net hours in May and 279 mist-net hours in June. During the first field trip (May), we determined the sex and age of each bird we captured, and applied unique combinations of colored bands to the tibia and tarsus of each bird. During the second field trip (June) we recorded whether each bird captured had been banded in May as well as its sex and age.

Analysis

We estimated the density and abundance of Belding's Yellowthroat at the San Ignacio oasis by three approaches: analyzing the results of the silent counts with the program Distance 7.3 (Thomas et al. 2010), extrapolating minimal abundance (as based on the call counts), and mark-recapture methods.

Distance Sampling. Distance 7.3 incorporates the distance of the observer to the bird to evaluate the probability of detection as a function of distance, from which it generates density estimates. The procedure is efficient and has delivered satisfactory results in studies of cryptic bird species like Belding's Yellowthroat (Rajpar and Zakaria 2010). Therefore, we recorded the distance to each bird found from the corresponding count point. The key function for estimating the abundance was half-normal, because of the high value of Akaike's information criterion (AIC) obtained and the decrease in the coefficient of variation compared to other functions (Thomas et al. 2010).

The assumptions for analysis with Distance 7.3 are that (1) the birds at the center point will always be detected, (2) the density is not affected by the presence or activities of the observers, and (3) the distance to each bird was measured accurately.

To estimate the total area (ha) of habitat (cattail and reed patches) suitable for Belding's Yellowthroat at San Ignacio, we examined Google Earth images. We corrected the area of suitable habitat with field data on the distribution of cattail and reed patches, as palm groves impede their detection by satellite photography. Then we multiplied density estimates obtained with the software Distance (average, maximum, and minimum) by the area of suitable habitat for the species to calculate an abundance estimate.

Extrapolation from Numbers Observed. We also obtained an approximation of the population size by extrapolating the minimum abundance of the species during the call counts. To do this, we divided the number of birds found by the total area covered in these counts, then multiplied by the total habitat available for the Belding's Yellowthroat at the oasis.

The assumptions for the use of the data from calling counts to estimate

density were: (1) the observers' activities at one point do not affect the results of counts at the other points and (2) the birds counted were originally in the count circle in which they were detected.

Mark-Resighting Data. Finally, we obtained a third abundance estimation with the Chapman estimator (N), developed for use with mark-recapture data. With the numbers of birds banded during May (T), and resighted during call counts in June (R), we applied the equation $N = [(C + 1)(T + 1)/(R + 1)] - 1$, where C is the total number of individuals observed in June (Brittain and Böhning 2009). Only one individual banded in May was actually recaptured in June.

The assumptions for the analysis of the population size with the Chapman estimator are that (1) all birds banded in May were potentially observable in June and that (2) the number of birds resighted and counted in June represented a proportion of the total population similar to that of the birds banded in May.

Population Structure by Age/Sex Class. To assess the population structure, we compared the numbers recorded during the silent counts and the numbers captured. We categorized these numbers by three attributes: the month (May or June), the method (silent count or capture), and the birds' sex and age class (adult male, adult female, or juvenile). Then we used a χ^2 test for multiple samples to determine whether the three classification criteria were independent (Zar 2010). Additionally, we carried out three χ^2 tests of partial independence (Zar 2010) to evaluate whether (1) the frequencies of the group depended on the combined effect of the method and month, (2) the frequencies per month depended on the combination of method and group, and (3) the frequencies per method depended on the combination of the month and group ($\alpha = 0.05$, in all cases).

RESULTS

We detected 78 Belding's Yellowthroats during silent counts in May but only 51 in June. In contrast, during call counts we detected 103 birds in May and 98 in June.

We estimate the extent of habitat suitable for the Belding's Yellowthroat in the San Ignacio oasis at 14.95 ha. Corroboration in the field was important to avoid an underestimation of this area because at several points the palm trees screened cattails and reeds in satellite images.

Using the silent-count data, the software Distance calculated an effective detection radius between 13 and 21 m and an average population density between 16 and 18 birds/ha in both May and June (Table 1). From these average densities we estimate a total population of 271 birds during May and 240 birds during June (Table 1). Therefore, according to distance sampling, the population of Belding's Yellowthroat at the San Ignacio oasis is close to 250 (Table 1).

Those estimates are slightly greater than those obtained by extrapolation of the birds' density from call counts: 231 and 202 birds during May and June, respectively (Table 1). Finally, the population according to the Chapman estimator was similar: 260 birds (of 14 birds banded during May, 4 were resighted during June, Table 1).

The χ^2 test indicated that the three classification criteria (age/sex class,

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TABLE 1 Radius of Detection, Density, and Abundance of Belding's Yellowthroat at San Ignacio by Three Methods

	Distance sampling		Abundance extrapolation		Mark-resighting
Month of survey	May	June	May	June	June
Detection radius (m)	20.06	13.46	NA ^a	NA	NA
Average density (birds/ha)	18.16	16.05	15.28	13.49	20.13
Density upper limit ^b (birds/ha)	25.82	24.15	19.92	16.49	NA
Density lower limit ^b (birds/ha)	12.76	10.67	10.93	10.49	NA
Estimated abundance	271	240	231	202	301
Abundance upper limit ^b	386	361	298	246	NA
Abundance lower limit ^b	191	160	163	157	NA

^aNA, not applicable.

^bUpper and lower values of 95% confidence interval.

TABLE 2 Population Structure of Belding's Yellowthroat at San Ignacio by Two Methods in Each Month of Sampling^a

	Silent counts		Captures	
	May	June	May	June
Males	8 (61.5)	3 (33.3)	12 (75.0)	3 (25.0)
Females	5 (38.5)	3 (33.3)	3 (18.7)	2 (16.7)
Juveniles	0	3 (33.3)	1 (6.3)	7 (58.3)
Unidentified	65	42		
Total	13	9	16	12

^aNumber of birds recorded, with percentage in parentheses.

month, and method) were interdependent ($\chi^2_7 = 18.41$, $p = 0.01$). The tests of partial independence revealed that the frequency by age/sex class was dependent on the combination of method and month ($\chi^2_6 = 18.21$, $p < 0.01$). Similarly, the frequency of records per month was dependent on the combination of age/sex class and method ($\chi^2_5 = 14.97$, $p = 0.01$). In contrast, the frequency by method was independent of the combination of month and age/sex class ($\chi^2_5 = 3.42$, $p = 0.63$), which we interpret as implying that the silent counts and mist-netting yielded equivalent results. These tests also imply that between May and June the population structure changed, as a result of the incorporation of juveniles and a decrease in the frequency of adult males.

DISCUSSION

The number of Belding's Yellowthroats found during call counts, 98 to 103, represents a minimum value, since only 32% of the species' suitable habitat (cattail and reed) was surveyed. It is noteworthy that the total abundance extrapolated from this method is close to those the estimates generated by the other methods based on more rigorous principles, provided that the methods' assumptions are met. Our results, however, suggest that assumption 4 of distance sampling was not fully met: the difference in detectability by month may have been significant.

Both the number of birds detected and the apparent density decreased from May to June (Table 1). But the radius of detection decreased, implying the birds became more difficult to detect. This may have been due to a change in the males' behavior, but if so that change in behavior affected the probability that an adult male would be captured as well as the probability that it would be observed. Another possibility is that some adult males dispersed away from the area. In June the juveniles began to appear, but these, being less conspicuous, were reflected in a small proportion in the counts.

Our estimates of the density of Belding's Yellowthroat at San Ignacio oasis (~20 birds/ha) are much higher than those found at two locations farther south in Baja California Sur where the species' density has been assessed: San José del Cabo (23° 03' 05" N, 109° 41' 17" W) with 3.38–4.77 birds/ha, and Santiago (23° 29' 13" N, 109° 43' 03" W) with 6.19 birds/ha (E. Palacios and D. Galindo in litt.). Four plausible reasons may explain these marked differences:

(1) The densities obtained by Palacios and Galindo (in litt.) are underestimates, as they were calculated from counts of adults only, while ours at the San Ignacio oasis were assessed from counts of young and adult birds. However, during May, when only adults were present and counted at San Ignacio oasis, densities estimated there were still much higher than those reported by Palacios and Galindo (in litt.).

(2) Those researchers obtained their data from fixed-radius point counts (not considering the distance to each bird), a method prone to underestimating bird densities because it overlooks the fact that the probability of detecting a bird diminishes as the distance between the bird and the observer increases (Buckland et al. 1993, Whitworth et al. 2007).

(3) Also with respect to detectability, the fixed 45-m radius used by Palacios and Galindo (in litt.) appears to be too great for a species as cryptic as Belding's Yellowthroat. Ralph et al. (1996) recommended a radius of 25 m for such species.

(4) Finally, the possibility that the oasis of San Ignacio offers better habitat for Belding's Yellowthroat cannot be ruled out, because both San José del Cabo and Santiago are surrounded by human settlements.

Oases harbor a greater number of organisms than do adjacent arid areas (Rodríguez-Estrella et al. 1997), and in the oases of Baja California Sur the maximum density of all species of birds combined reaches nearly 20 birds/ha (Carmona et al. 2005). In the central section of the peninsula few other species use cattail and reed habitats during the breeding season (Bancroft 1930), so it is plausible for this habitat to support ~20 Belding's Yellowthroats/ha.

There is one previous estimate of the population of Belding's Yellowthroat at the San Ignacio oasis (537–648 birds, BirdLife International 2016). However, there is a conceptual problem with this estimate, since it was obtained by extrapolating a descriptor of abundance measured in birds/hour (Rodríguez-Estrella et al. 1999) to the total area of the oasis, as if it were a density descriptor (BirdLife International 2016). In this way, Belding's Yellowthroat's abundance at four peninsular oases was calculated, and from there the species' current total population size was extrapolated. Therefore, the estimates by BirdLife International (2016) for San Ignacio and the other four peninsular oases should be improved and updated. On the basis of current data, we cannot say whether the apparent decrease from 1994–1996 to 2016 represents an actual change.

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In such context, the coincidence among the abundances we estimated by three different techniques (Table 1) suggests that the estimates' accuracy is adequate. The convergence encourages us to recommend an update of estimates of the Belding's Yellowthroat population elsewhere, following standardized methods like those we report here.

The decrease in males (in both abundance and proportion) detected between May and June was possibly due to their dispersal from the oasis, while the females stay longer. Early post-breeding dispersal of the adults has been recorded in other species with specialized dietary requirements, like the Magnificent Frigatebird (*Fregata magnificens*, Moreno and Carmona 1988) and is interpreted as an adaptation for reducing competition for food. In accordance with the concept of such dispersal, adult Belding's Yellowthroats of both sexes have been seen in the nonbreeding season away from the species' breeding areas, three males (Erickson et al. 2008) and two females (pers. obs.). This evidence suggests that the species can disperse, so if a population of Belding's Yellowthroats is eradicated by a catastrophe the site could be recolonized if the suitable conditions regenerate.

In summary, the San Ignacio oasis currently supports a population of approximately 250 Belding's Yellowthroats. Because of the apparent decrease in the number of males from May to June, it is plausible that some adults disperse to other areas after the reproductive season (between June and July), as has been observed in some other species.

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LITERATURE CITED

- Bancroft, G. 1930. The breeding birds of central Lower California. *Condor* 32:20–49; doi 10.2307/1363635.
- Bent, A. C. 1953. Life histories of North American wood warblers. U.S. Natl. Mus. Bull 203; doi 10.5479/si.03629236.203.1.
- BirdLife International. 2016. Species factsheet: *Geothlypis beldingi*, in The IUCN Red List of Threatened Species 2016; www.iucnredlist.org/species/22721839/118502506.
- Brittain, S., and D. Böhning. 2009. Estimators in capture–recapture studies with two sources. *Adv. Stat. Analysis* 93:23–47; doi 10.1007/s10182-008-0085-y.
- Buckland, S. T., Anderson, D. R., Burnham, K. P., and Laake, J. L. 1993. Distance Sampling: Estimating Abundance of Biological Populations. Chapman and Hall, London; doi 10.1007/978-94-011-1572-8.
- Carmona, R., Ruiz-Campos, G., Castillo-Guerrero, J. A., and Brabata, G. 2005. Patterns of occurrence and abundance of land birds on Espíritu Santo Island, Gulf of California, México. *Southwest. Nat.* 50:440–447; doi 10.1894/0038-4909(2005)050[0440:POOAAO]2.0.CO;2.
- Dunn, J. L., and Garrett, K. L. 1997. A Field Guide to Warblers of North America. Houghton Mifflin, Boston.

- Erickson, R. A., Hamilton, R. A., and Mlodinow, S. G. 2008. Status review of Belding's Yellowthroat *Geothlypis beldingi*, and implications for its conservation. *Bird Cons. Int.* 18:219–228; doi 10.1017/S0959270908000221.
- Escalante, P. 2000. Mascarita peninsular (*Geothlypis beldingi*), in *Las Aves de México en Peligro de Extinción* (G. Ceballos and L. V. Márquez, eds.), pp. 304–305. CONABIO–Instituto de Ecología–Fondo de Cultura Económica, Mexico City.
- Maya, Y., Coria, R., and Dominguez, R. 1997. Características de los oasis, in *Los Oasis de la Península de Baja California* (L. Arriaga and R. Rodríguez-Estrella, eds.), pp. 5–26. SIMAC–CIB, La Paz, Mexico.
- Mikol, S. A. 1980. Field guidelines for using transects to sample nongame bird populations. FWS/OBS-80/58, U.S. Fish and Wildlife Service, Biological Services Program, Washington, DC.
- Moreno M., L. A., and Carmona P., L. R. 1988. Ecología reproductiva de *Fregata magnificens* en isla Santa Margarita, B. C. S. Bachelor thesis, Universidad Autónoma de Baja California Sur, La Paz, México.
- Rajpar, M. N., and Zakaria, M. 2010. Density and diversity of water birds and terrestrial birds at Paya Indah Wetland Reserve, Selangor Peninsular Malaysia. *J. Biol. Sci.* 10:658–666; doi doi.org/10.3923/jbs.2010.658.666.
- Ralph, C. J., Geupel, G. R., Pyle, P., Martin, T. E., DeSante, D. F., and Milá, B. 1996. Manual de métodos de campo para el monitoreo de aves terrestres. Gen. Tech. Rep. PSW-GTR-159, Pacific Southwest Res. Sta., U.S. Forest Service, Berkeley, CA; doi 10.2737/PSW-GTR-159.
- Rodríguez-Estrella, R., Rubio, R. L., and Pineda, E. 1997. Los oasis como parches atractivos para las aves terrestres residentes e invernantes, in *Los Oasis de la Península de Baja California* (L. Arriaga and R. Rodríguez-Estrella, eds.), pp. 157–195. SIMAC–CIB, La Paz, Mexico.
- Rodríguez-Estrella, R., Delgado, L. R., Pineda, E., and Blanco, G. 1999. Belding's Yellowthroat: Current status, habitat preferences and threats in oases of Baja California, Mexico. *Anim. Cons.* 2:77–84; doi 10.1111/j.1469-1795.1999.tb00052.x.
- Ruiz-Campos, G., Andreu-Soler, A., Vidal-Abarca, M. R., Delgadillo-Rodríguez, J., Suárez A., M. L., González-Abraham, C., and Luja, V. H. 2014. Catálogo de Humedales Dulceacuícolas de Baja California Sur, México. INECC–SEMARNAT, Mexico City.
- SEMARNAT. 2010. Norma Oficial Mexicana NOM-059-SEMARNAT-2010. Diario Oficial de la Federación, 30 diciembre, segunda sección.
- Stith, B. M., Fitzpatrick, J. W., Woolfenden, G. E., and Pranty, B. 1996. Classification and conservation of metapopulations: A case study of the Florida Scrub-Jay, in *Metapopulations and Wildlife Conservation* (D. R. McCullough, ed.), pp. 187–215. Island Press, Washington, DC.
- Thomas, L., Buckland, S. T., Rexstad, E. A., Laake, J. L., Stringer, S., Hedley, S. L., Bishop, J. R. B., Marques, T. A., and Burnham, K. P. 2010. Distance software: Design and analysis of distance sampling surveys for estimating population size. *J. Appl. Ecol.* 47:5–14; doi 10.1111/j.1365-2664.2009.01737.x.
- Whitworth, D., Newman, S. H., Mundkur, T., and Harris, P. 2007. Wild birds and avian influenza: An introduction to applied field research and disease sampling techniques. FAO Animal Production and Health Manual 5. Food and Agriculture Organization of the United Nations, Rome; www.fao.org/3/a1521e/a1521e.pdf.
- Wunderle, J. M. 1994. Census methods for Caribbean land birds. Gen. Tech. Rep. SO-98, Southern Forest Exp. Sta., U.S. Forest Service, New Orleans; doi 10.2737/SO-GTR-98.
- Zar, J. H. 2010. Biostatistical Analysis, 5th ed. Prentice Hall, Upper Saddle River, NJ.

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EARLIER SPRING ARRIVAL OF THE MOUNTAIN BLUEBIRD IN CENTRAL ALBERTA, CANADA

MYRNA PEARMAN and LEO DE GROOT, Ellis Bird Farm, Box 5090, Lacombe, Alberta, T4L 1W7, Canada; mpearman@ellisbirdfarm.ca

GEOFFREY L. HOLROYD and STEPHANIE THUNBERG, Beaverhill Bird Observatory, Box 1418, Edmonton, Alberta, T5J 2N5, Canada

ABSTRACT: Much attention has been given to the topic of bird phenology in response to climate change. While strong evidence supports a general pattern of advancement in spring migrants' arrival dates with warming temperatures, the mechanisms underlying these changes are not clearly understood. We summarize the spring arrival of the Mountain Bluebird (*Sialia currucoides*) in central Alberta from 58 years of data and examine the influence of temperature and snow cover on the patterns of arrival. We hypothesized that a significant advance in the Mountain Bluebird's first arrival date was related to weather variables. In central Alberta, March temperatures increased, and first arrival dates for the Mountain Bluebird advanced 0.33 days per year from 1961 to 2018 or 19 days over the 58 years. However, temperatures on the date of arrival have cooled slightly (2.8 °C) over the study period, and snow depth on the date of arrival decreased slightly (1.5 cm) over the study period, which may influence early migrants' opportunities for foraging. Although Mountain Bluebirds have arrived at our central Alberta study area considerably earlier over the past decades, temperatures and snow depth have been highly variable, suggesting that the species is likely responding to multiple cues that influence its arrival dates. Given the Mountain Bluebird's migratory nature, environmental and behavioral stimuli en route to breeding areas likely exert considerable influence on arrival dates.

Studies of the phenology of spring migration in birds breeding in the North Temperate Zone have sought to determine which species are adjusting their arrival times in response to changing temperatures and other variables associated with climate change (Swanson and Palmer 2009, Ward et al. 2016). The date of spring departure from the winter range, migration time, and date of arrival at the breeding grounds can all be affected by local weather conditions from the start to end of migration (Pulido 2007, Lehtikoinen and Sparks 2010). While changing day length (Rowan 1932) and endogenous hormonal changes (Gwinner 1986) are the initial triggers for migration (Gienapp et al. 2007, Pearce-Higgins and Green 2014), variables such as temperature, wind, and other weather conditions modify the time and length of migration (Winkler et al. 2016). In response to climate change, a general pattern of advancement of spring movements and breeding of migratory birds has been found, irrespective of the metric considered (Winkler et al. 2016). Phenological responses to climate change may also be dependent on the distance of migration, with long-distance migrants' phenological response being smaller than that of short-distance migrants (Knudsen et al. 2011). However, variability among species is wide and poorly understood, and the mechanisms underlying these changes need further study (Knudsen et al. 2011). Furthermore, seasonally asynchronous climate change—when a region warms during some parts of the year then cools in others—may constrain species' responses to climate change (Senner et al. 2018).

The Mountain Bluebird (*Sialia currucoides*) is a common harbinger of

spring in many parts of northern North America. It breeds from Alaska across western Canada to the western contiguous USA, and winters from the western USA to central Mexico (Johnson and Dawson 2019). By means of light-level geolocators, Mountain Bluebirds that nest in central Alberta have been tracked as wintering in the southwestern USA and northern Mexico (K. C. Fraser unpubl. data). Accordingly, bluebirds nesting in this area are considered short-distance migrants and typically arrive in March. At least during the breeding season, terrestrial invertebrates, hawked from perches, are the species' primary food source (Herlugson 1982), so the birds require accessible and active insects and spiders upon their arrival. They also hover-hunt, especially on warm windy days (Power and Lombardo 1996). Therefore, they rely on relatively benign conditions that facilitate the emergence and activity of their insect prey. The Mountain Bluebird is more insectivorous than most North American thrushes but during the fall and winter does eat berries (Johnson and Dawson 2019). Although it is not known if berries are consumed during spring migration, when the birds first arrive on their breeding grounds, and/or during periods of inclement weather when insect prey are temporarily unavailable, their spring and summer diets may be supplemented to some extent by berries. Nevertheless, Beal (1907) found that in California Mountain Bluebirds ate few berries.

Mountain Bluebirds nest in tree cavities or, as in this study area, in artificial nest boxes. Since bluebirds do not make their own nest cavities and are dependent on cavities made by woodpeckers, they are considered secondary cavity nesters. Therefore, competition for limited nest sites results in pressure for males to arrive at breeding grounds and claim sites before competitors (Winkler et al. 2016).

A common metric for detecting changes in migration timing is first arrival date (Goodenough et al. 2015). This method may have shortcomings since it may reflect an effect on the earliest-arriving birds that does not necessarily represent a shift in the arrival dates of the total population, and detections are dependent on observer effort and chance (Knudsen et al. 2011, Lehtikoinen et al. 2019). Despite these potential shortcomings, first arrival date is easily measured and has broad appeal in long-term monitoring and citizen-science programs. We determined the changes in first arrival date from a 58-year record of the Mountain Bluebird in central Alberta (1961–2018). We investigated whether bluebirds were arriving earlier in the spring and, if so, what conditions they faced upon arrival. We assessed the effect of temperature and snow depth on first arrival date. Our hypothesis was that Mountain Bluebirds have been arriving earlier in central Alberta because of warmer March temperatures and shallower snow depths. In addition, we hypothesized that because of climate change, birds should face, on average, similar conditions upon arrival across the study period despite the advancement in arrival date. We tested this hypothesis by comparing temperatures and snow depth to the dates when the birds first arrived.

METHODS

This study took place near Lacombe, in central Alberta, Canada (52° 28' 06" N, 113° 44' 13" W, elevation 916 m above sea level). Between 1961 and

1981 (except in 1966, when no date was noted), Charlie and Winnie Ellis recorded first arrival dates on their 388-ha farm, where they monitored up to 250 nest boxes at a time when there were few other boxes in the surrounding area. In March, they drove local roadways, focusing their efforts on areas along Highway 597 where steep south-facing slopes were usually the first to be clear of snow and hence where the bluebirds were first seen (Winnie Ellis pers. comm., 1986). Their actions represent an early, valuable example of citizen science.

With the establishment of Ellis Bird Farm Ltd. in 1982, the Ellis's farm-based trail of nest boxes was expanded to cover 256 km² around the farm. The responsibility for monitoring this trail, recording data, and banding Mountain Bluebirds was assumed by the farm's resident biologist. First arrival dates were recorded by Bryan Shantz from 1982 to 1986 and by Myrna Pearman from 1987 to 2018.

Starting in the 1980s, other bluebird trails were established throughout Alberta, and the trails' monitors looked for first spring arrivals in their respective areas. Hence some of the dates noted between 1983 and 2018 were reported by others from over a wider area, up to approximately 120 km in all directions. Nevertheless, all were within the Aspen Parkland Ecoregion (Bird and Bird 1967). Both Pearman and Shantz also drove local roads in mid-March and compiled reports of first arrival dates from other bluebird-trail operators in the wider area. When we received dates from several observers within the same year, we used the one closest to Ellis Bird Farm.

We obtained historical temperature and snow-depth data from Environment Canada (http://climate.weather.gc.ca/historical_data/search_historic_data_e.html). The records from the Red Deer Regional Airport, located 30 km southwest of Ellis Bird Farm, were the region's most extensive, and so we used these records in our analysis. Because at any given time weather conditions across the Aspen Parkland region of central Alberta are similar (Beaubien 2013), we had confidence that the data from this weather station reflected conditions across our study area.

March is the month when temperature increases in central Alberta are the greatest of any month (Beaubien 2013). We compared first arrival dates to spring temperatures and snow depths on 1, 15, and 31 March and found the results were similar to those for the whole month. Therefore, we used the mean temperature for the month as a predictor variable. We tested our prediction of an advancement in first arrival dates from 1961 to 2018 by a simple linear regression that included the first arrival date as the dependent variable and the year as a continuous explanatory variable. We rescaled the years to range from 1 to 58 by subtracting 1960 from each value. Likewise, we tested for trends in temperature and snow depth for the same years. We also tested for any correlation between first arrival date and temperature on the arrival dates, and likewise for snow depth on first arrival. Finally, we evaluated the most likely weather factors influencing the Mountain Bluebird's first arrival date with multiple linear regression models developed in the statistical package R (R Core Team 2019). The model assessed how temperature on the first arrival date (°C), snow depth on the first arrival date (cm), mean March temperature, and mean March snowfall influenced the first arrival date from 1962 to 2018. Data from 1963, 1966, 2008, and 2017 were incomplete and not included in this analysis. We

created a set of additive models that included all unique possible combinations of the four variables. We ranked the models by Akaike's information criterion corrected for sample size (AIC_c) and, following the approach of Burnham and Anderson (2002), used Akaike weights (w_i) to assess the models' support. We averaged the estimated parameters across all models with the R package *AICcmodavg* (Mazerolle 2019) and considered parameters with 95% confidence intervals that did not overlap zero to be biologically meaningful.

RESULTS

Over the past 58 years, the date of spring arrival of the Mountain Bluebird in central Alberta has advanced by 19 days (Figure 1). In the early 1960s, birds tended to arrive around 30 March, but by the 2010s, they were arriving around 11 March (Figure 1). The trend to earlier arrival over the study period ($r^2 = 0.37$, $P < 0.001$) yielded advancement of first arrival date at a rate of 0.33 days per year. The trend from 1961 to 1986, when only the Ellis siblings made observations around their farm, differed from that in the years after 1987, when more observers were involved over a larger study area (Figure 1). The trend toward earlier arrival was 0.66 days per year from 1961 to 1986 ($r^2 = 0.23$, $P = 0.01$) but 0.14 days per year from 1987 onward ($r^2 = 0.07$, $P = 0.16$).

While March temperatures varied substantially from year to year, the trend over the past 58 years in our study area has been an increase (Figure 2). Overall, the mean monthly average temperature for March trended upward, rising from -5.2°C to -3.2°C , but this relationship was not statistically significant ($r^2 = 0.05$, $P = 0.10$). Bluebirds arrived significantly earlier when mean March temperatures were warmer (Figure 3; $r^2 = 0.35$, $P = 0.001$).

The variability of average snow depth for March was greater than that of temperature (Figure 4). For example, mean snow depth in March reached a maximum of 47.7 cm in 1974 and a minimum of 0.2 cm in 1968. Snow depth in March increased from the late 1960s to the early 1970s, then decreased until the 2010s, when it began to increase again. Overall, however, mean March snow depth decreased from 17 cm to 11.5 cm over the study period, but this trend was not statistically significant (Figure 4; $r^2 = 0.02$, $P = 0.32$). Mountain Bluebirds arrived earlier in Marches when the average snow depth was low (Figure 5), a relationship that bordered statistical significance ($r^2 = 0.07$, $P = 0.06$). The amount of snow present when Mountain Bluebirds arrived decreased from 12.7 cm in 1961 to 9.9 cm in 2018.

In our model-ranking exercise, two models carried nearly all the weight ($w_i = 0.96$; Table 1). Only two of the four predictor variables (temperature on first arrival date and mean March temperature) had 95% confidence intervals that did not overlap zero. The parameter estimate ($\pm 95\%$ confidence interval) for temperature on first arrival date was 0.853 (confidence interval 0.295–1.412), and for mean March temperature was -1.835 (-2.534 to -1.137). Over the 58 years of our study, the mean temperature on the first arrival date was $0.73^\circ\text{C} \pm 3.70$ SD, and the average mean March temperature was $-4.5^\circ\text{C} \pm 3.82$ SD. In relation to our parameter estimates for temperature, this indicates that Mountain Bluebirds generally arrived in central Alberta as temperatures broke the freezing point, and that bluebirds arrived earlier in warmer Marches. The parameter estimates for variables based on snow cover

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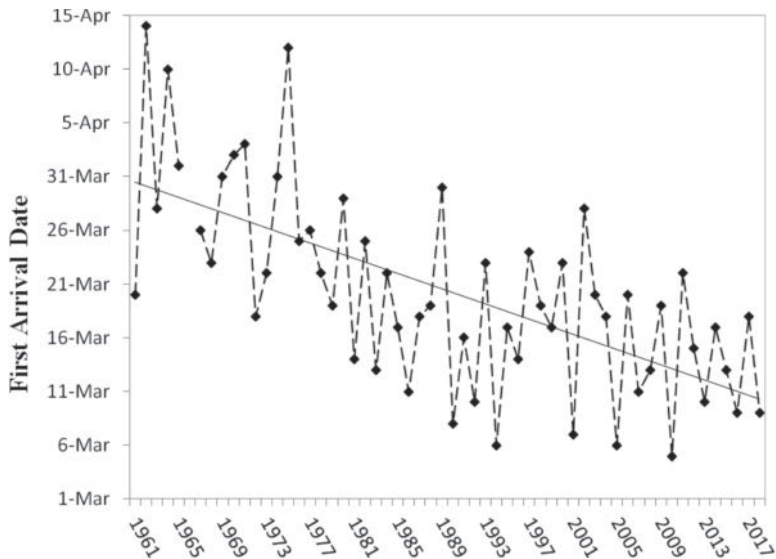


FIGURE 1. Dates of first arrival of the Mountain Bluebird in central Alberta, 1961–2018. Solid line represents linear regression ($r^2 = 0.371$, $P < 0.001$). No information was recorded in 1966.

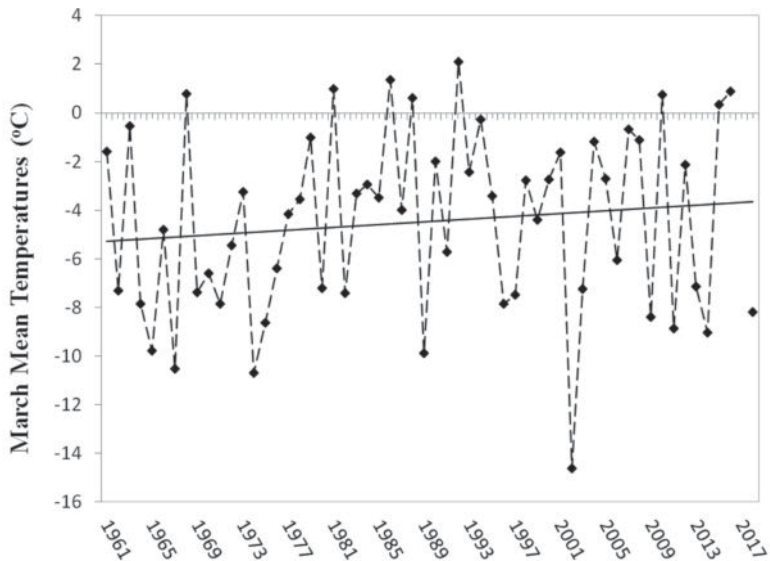


FIGURE 2. Mean March temperature (°C) recorded at Red Deer Regional Airport, Alberta, 1961–2018. Data for 2017 were unavailable.

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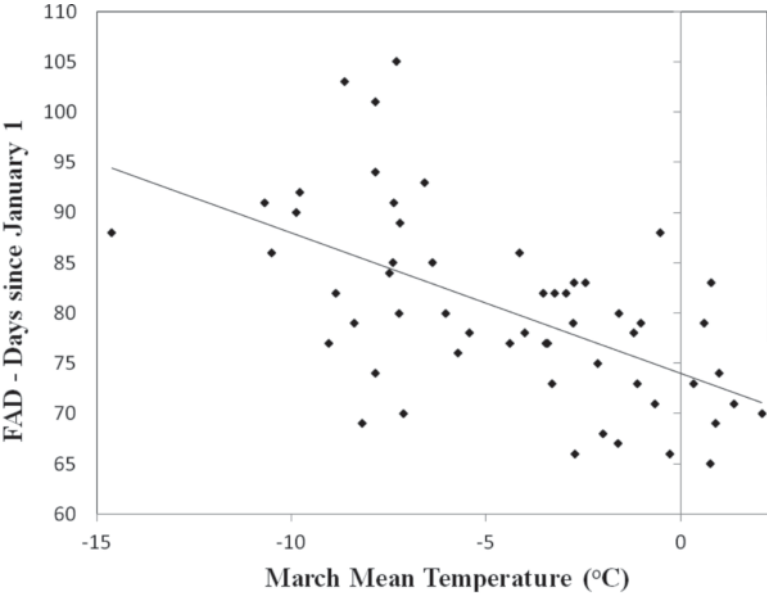


FIGURE 3. Date of first arrival of the Mountain Bluebird in central Alberta as a function of mean March temperature (°C) recorded at Red Deer Regional Airport, Alberta, 1961–2018. Data for 2017 were unavailable.

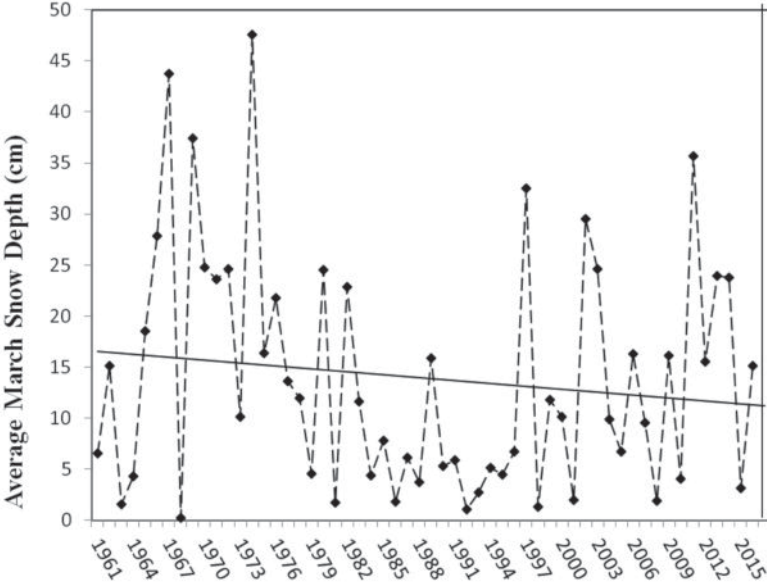


FIGURE 4. Average March snow depth (cm) recorded at Red Deer Regional Airport, Alberta, 1961–2018. Data for 1961, 1963, 1966, 2008, and 2018 were unavailable.

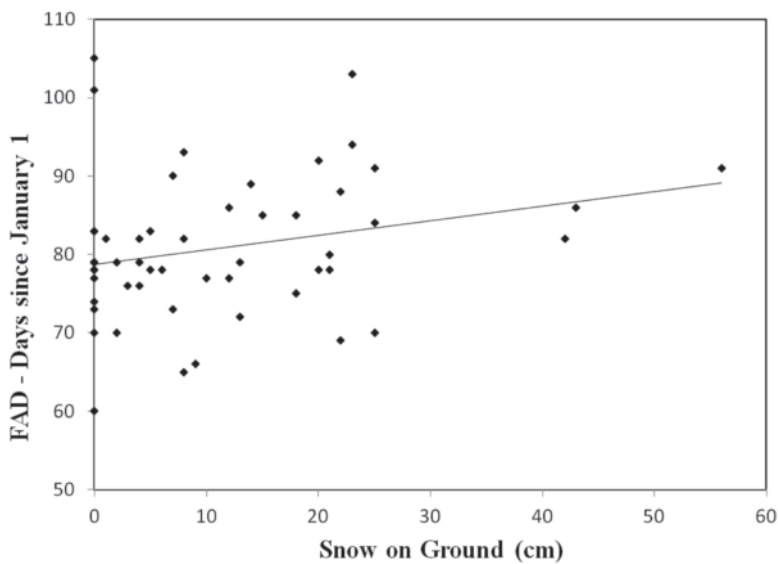


FIGURE 5. Date of first arrival of the Mountain Bluebird in central Alberta as a function of snow depth (cm) recorded at Red Deer Regional Airport, Alberta, 1961–2018. Data for 1961, 1963, 1966, 2008, and 2018 were unavailable.

largely overlapped zero: 95% confidence interval -0.403 – 0.194 for snow depth on first arrival date, -0.197 – 0.678 for mean March snow depth), suggesting that they were uninformative predictors of Mountain Bluebird arrival. Over the course of our study, the average snow depth on the first arrival date was $11.4 \text{ cm} \pm 12.5 \text{ SD}$, and mean March snow depth was $13.9 \text{ cm} \pm 11.5 \text{ SD}$.

TABLE 1 Rankings of Models Describing Effect of Environmental Variables on Dates of First Arrival of the Mountain Bluebirds in Central Alberta, 1961–2018

Model ^a	K^b	ΔAIC_c^c	w_i^d
$T_{\text{FAD}} + S_{\text{FAD}} + T_{\text{MAR}}$	5	0.00	0.63
$T_{\text{FAD}} + S_{\text{FAD}} + T_{\text{MAR}} + S_{\text{MAR}}$	6	1.29	0.33
$S_{\text{FAD}} + T_{\text{MAR}}$	4	6.50	0.02
$S_{\text{FAD}} + T_{\text{MAR}} + S_{\text{MAR}}$	5	7.70	0.01
$T_{\text{FAD}} + S_{\text{MAR}}$	4	11.29	0.00
Intercept	2	43.88	0.00

^aThe variables constituting the models are temperature ($^{\circ}\text{C}$) on first arrival date (T_{FAD}), snow depth (cm) on first arrival date (S_{FAD}), mean March temperature ($^{\circ}\text{C}$; T_{MAR}), and mean March snow depth (cm; S_{MAR}). Only the top five models and the intercept-only model are shown.

^bNumber of parameters.

^cDifference between model's Akaike's information criterion corrected for sample size (AIC_c) and the lowest AIC_c value (352.3).

^dRelative weight of AIC_c attributed to model.

DISCUSSION

This study confirmed our hypothesis and supports earlier findings (Lane and Pearman 2003) that spring arrival of Mountain Bluebirds breeding in central Alberta has advanced. Lane and Pearman (2003) found the arrival date had advanced by 16 days over 40 years since 1961 (0.4 days per year). Over a span of 58 years, first arrival dates have advanced by 19 days, a statistically significant finding. The rate of change found in our study (0.33 days per year) is more than double the rate of change in bird-arrival dates found at Buffalo, New York, by DeLeon et al. (2011) over a similar period. They reported that from 1967 to 2008, short-distance migrants arrived earlier by an average 0.15 days per year, which is the same as the rate of change in the latter part (after 1987) of our study. As in our study, DeLeon et al. (2011) found warming spring temperatures correlated with earlier arrival dates. The advance of 0.15 days per year is the same as the rate of average annual advance of the last day of frost across North America (Schwartz et al. 2006). The more rapid rate of change in first arrival date (0.33 days per year) for the Mountain Bluebird in central Alberta is similar to the 0.31 days per year change of first arrival date for birds in Europe (Thackeray et al. 2010). A review of migration timing of 195 species at 21 bird observatories in Europe and North America, based on 57 years of daily data, found that birds' spring arrival had advanced by one week over 50 years, or 0.14 days per year (Lehikoinen et al. 2019). They compared the timing of migration as a whole, not just first arrival dates, yet found values similar to those above.

We presume this advance in first arrival dates is an effect of global climate change. Mean temperatures in our study area in March increased by 2.7 °C from 1961 to 2018, but because the bluebirds arrived earlier, the temperatures on the date of their arrival cooled by nearly 3.0 °C over the same period. However, snow depth at first arrival date decreased (by 3.6 cm) over the long term, a factor that may favor foraging by exposing more bare ground, especially on south-facing slopes. Our analysis suggested that the mean March temperature and temperature on the first arrival date were the most significant weather factors that affected that date. Mountain Bluebirds rely on early spring temperatures warm enough for terrestrial invertebrates, their primary food source, to be active and accessible on bare ground. Thus our study suggests that the bluebirds were responding to warming March temperatures.

Advancement of first arrival date was more pronounced prior to the late 1980s than after 1990 (Figure 1). Lehikoinen et al. (2019: figure 3) found a similar tendency to less change in arrival dates after the late 1990s. The similarity in their rate of change and that noted in our study may indicate that certain species are approaching a limitation of the ability of their arrival dates to advance further (Sennner et al. 2018). In early spring migrants such advancement may be constrained by cold, wet spring weather (Holroyd and Beaubien 1997a, b).

The urgency for birds, including cavity-nesting birds, to arrive early is driven by the need to secure a nest site and territory (Winkler et al. 2016). The availability of cavities has been shown to limit the populations of cavity-nesting birds (Holroyd 1975, Newton 1998). Thus migratory cavity-nesters that arrive first are most likely to secure a nest site. Knudsen et al. (2011)

pointed out that any differences in the age and sex of cohorts affected by climate change are typically not reported or are unknown. In our study, the first bluebirds to arrive were males, which presumably arrived early to establish territories and claim a nest site (Johnson and Dawson 2019). The risk of arriving too early for an insectivore, however, is the increased chance of encountering adverse weather—an increase of which is another predicted result of anthropogenic climate change (Donat et al. 2016, Blunden and Arndt 2016, 2017). Severe cold weather can reduce the availability of arthropods, impair the survival of adult birds, and depress their productivity over the long term (Holroyd and Beaubien 1997a, b, Wormworth and Şekercioglu 2011). Severe spring weather in central Alberta usually entails snowfall and often freezing temperatures, high wind, and wet, deep snow (Holroyd and Beaubien 1997a, b). Such conditions can reduce or eliminate opportunities for foraging on open ground and lead to high mortality (Newton 1998).

Changes, either too rapid or too slow, in timing of arrival can lead to reduced fitness through a temporal mismatch between consumer demands and resource availability (Mayor et al. 2017, Knudsen et al. 2011). Ultimately, a population's fitness may be compromised if migratory birds breed too early or too late relative to peak food resource availability, resulting in a trophic mismatch (Both et al. 2009, Thackeray et al. 2010). However, the Mountain Bluebird's trend to earlier arrival in March in central Alberta parallels plants' trend to earlier spring flowering (Beaubien and Freeland 2000). If the supply of arthropod prey is also more advanced in the warmer springs, any mismatch with bluebird nesting is reduced. We did not measure seasonal food availability or chick growth and survival during our study, so the extent to which changes in the Mountain Bluebird's breeding phenology is moderating the effects of climate change is unknown.

First arrival dates have been criticized since they do not necessarily reflect the arrival of the whole population of birds, and they are subject to variation in effort and to chance sightings (Knudsen et al. 2011, Pearce-Higgins and Green 2014). Lehikoinen et al. (2019) analyzed the continuous daily records of spring migration at 21 bird observatories and found that the earliest 5% of birds were arriving earlier even though the median and 95% arrival did not advance as much. Nevertheless, they found an earlier arrival of 0.14 days per year for the populations of numerous species on two continents over a half century. Similarly, Pearce-Higgins and Green (2014) summarized first arrival dates in 79 studies and found a positive correlation between first and median arrival dates, indicating the utility of first arrival dates as a meaningful biological metric.

In our study, two biologists continued the efforts of two self-trained citizen scientists, then expanded efforts to include other observers of nearby trails of bluebird nest boxes. Thus the change in effort could have influenced the accuracy of any given year. However, the change in first arrival dates is so dramatic that we believe our observations reflect a true shift in the dates of the Mountain Bluebirds' arrival in central Alberta. Apparent first arrival dates can also be confounded if any apparent arrivals had actually wintered locally, but no winter records of the Mountain Bluebird in Alberta have been reported via www.eBird.org, so overwintering is not likely a consideration in this study.

We demonstrated that spring arrival of the Mountain Bluebird in central Alberta has advanced by 0.33 days per year over the past 58 years. Over the

same period, spring temperatures have increased and snow depths have decreased, but these trends are not statistically significant because of wide year-to-year variation. Our findings suggest that climate change is influencing arrival dates of these short-distance migrants in central Alberta. An increase in snow-free areas as average snow depth decreases may be facilitating the trend. The development of strong El Niño events in the northern Pacific Ocean and wide annual variability in spring snow depth in western Canada are two of the many changes (Møller et al. 2010, Pearce-Higgins and Green 2014) that may affect the phenology of migratory birds in western Canada. Our study demonstrates the value of long-term data sets collected by citizen scientists, and also identifies the need for a better understanding of how spring temperatures and snow depth affect the availability and abundance of invertebrates. Since arrival dates have increased so significantly, yet temperature and snow depth are extremely variable, are Mountain Bluebirds responding to other, more meaningful cues? Further research could also investigate how changes in first arrival date affect the species' success in breeding.

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LITERATURE CITED

- Beal, F. E. L. 1907. Birds of California in relation to the fruit industry, part 1. U.S. Dept. Agric. Biol. Survey Bull. 30; doi 10.5962/bhl.title.62785.
- Beaubien, E. 2013. Spring flowering trends in Alberta, Canada: Response to climate change, urban heat island effects, and an evaluation of a citizen science network. Ph.D. thesis, Univ. Alberta, Edmonton, Canada.
- Beaubien, E. G., and Freeland, H. J. 2000. Spring phenology trends in Alberta, Canada: Links to ocean temperature. *Int. J. Biometeorol.* 44:53–59; doi 10.1007/s004840000050.
- Bird, C. D., and Bird, R. D. 1967. The aspen parkland, in *Alberta, a Natural History* (W. G. Hardy, ed.), pp. 135–149. Hurtig, Edmonton, Alberta.
- Blunden, J., and Arndt, D. S. (eds.). 2016. State of the climate in 2015. *Bull. Am. Meteorol. Soc.* 97:S1–S275; doi 10.1175/2016BAMSStateoftheClimate.1.
- Blunden, J., and Arndt, D. S. (eds.). 2017. State of the climate in 2016. *Bull. Am. Meteorol. Soc.* 98:S1–S277; doi 10.1175/2017BAMSStateoftheClimate.1.
- Both, C., Van Asch, M., Bijlsma, E. G., Van Den Burg, A. B., and Visser, M. E. 2009. Climate change and unequal phenological changes across four tropic levels: Constraints or adaptations? *J. Anim. Ecol.* 78:73–83; doi 10.1111/j.1365-2656.2008.01458.x.
- Burnham, K. P., and Anderson, D. R. 2002. *Model Selection and Multimodel Inference: A Practical Information-Theoretic Approach*. Springer-Verlag, New York.
- DeLeon, R. L., DeLeon, E. E., and Rising, G. R. 2011. Influence of climate change on avian migrants' first arrival dates. *Condor* 113:915–923; doi 10.1525/cond.2011.100223.
- Donat, M. G., Dunn, R. J. H., and Perkins-Kirkpatrick, S. E. 2016. Land surface temperature extremes. *Bull. Am. Meteorol. Soc.* 97:S192–S193.

- Gienapp, P., Leimu, R., and Merila, J. 2007. Responses to climate change in avian migration time—microevolution versus phenotypic plasticity. *Climate Res.* 35:25–35; doi 10.3354/cr00712.
- Goodenough, A., Fairhurst, S. M., Morrison, J. B., Cade, M., Morgan, P. J., and Wood, M. J. 2015. Quantifying the robustness of first arrival dates as a measure of avian migratory phenology. *Ibis* 157:384–390; doi 10.3354/cr00712.
- Gwinner, E. 1986. *Circuannual Rhythms: Endogenous Annual Clocks in the Organization of Seasonal Processes*. Springer-Verlag, Berlin.
- Herlugson, C. J. 1982. Food of adult and nestling Western and Mountain Bluebirds. *Murrelet* 63:59–65; doi 10.2307/3533829.
- Holroyd, G. L. 1975. Nest site availability as a factor limiting population size of swallows. *Can. Field-Nat.* 89:60–63.
- Holroyd, G. L., and Beaubien, E. G. 1997a. Responses of prairie biodiversity to climate variability and change, in *Preparing for Climate Variability and Change on the Canadian Prairies*, Summary Report of a Workshop 14–15 February 1996 (R. Herrington, ed.), pp. 2.18–2.20. Environment Canada, Regina, Saskatchewan.
- Holroyd, G. L., and Beaubien, E. G. 1997b. Some possible effects of atmospheric change on wildlife, in *Ecosystem Effects of Atmospheric Change*, Proceedings of a Meeting Held at Pointe Claire, Quebec, Canada, 5–6 March 1996, pp. 177–182. Natl. Water Res. Inst., Environment Canada, Burlington, Ontario.
- Johnson, L. S., and Dawson, R. D. 2019. Mountain Bluebird (*Sialia currucoides*), version 2.0, in *The Birds of North America* (P. G. Rodewald, ed.). Cornell Lab. Ornithol., Ithaca, NY; doi 10.2173/bna.moublu.02.
- Knudsen, E., Linden, A., Both, C., Jonzen, N., and Pulido, F. 2011. Challenging claims in the study of migratory birds and climate change. *Biol. Rev.* 86:928–946; doi 10.1111/j.1469-185X.2011.00179.x.
- Lane, R. K., and Pearman, M. 2003. Comparison of spring return dates of Mountain Bluebirds (*Sialia currucoides*) and Tree Swallows (*Tachycineta bicolor*) with monthly air temperatures. *Can. Field-Nat.* 117:110–111.
- Lehikoinen, A., Linden, A., Karlsson, M., Andersson, A., Crewe, T. L., Dunn, E. H., Gregory, G., Karlsson, L., Kristiansen, V., Mackenzie, S., Newman, S., Roer, J. E., Sharpe, C., Sokolov, L. V., Steinholtz, Å., Stervander, M., Tirri, I.-S., and Tjornlov, R. S. 2019. Phenology of the avian spring migratory passage in Europe and North America: Asymmetric advancement in time and increase in duration. *Ecol. Indicators* 101:985–991; doi 10.1016/j.ecolind.2019.01.083.
- Lehikoinen, E., and Sparks, T. H. 2010. Changes in migration, in *Effects of Climate Change on Birds* (A. P. Möller, W. Fiedler, and P. Berthold, eds.), pp. 89–112. Oxford Univ. Press, Oxford, England.
- Mayor, S. J., Guralnick, R. P., Tingley, M. W., Otegui, J., and Withey, J. C. 2017. Increasing phenological asynchrony between spring green-up and arrival of migratory birds. *Sci. Rep.* 7(1902); doi 10.1038/s41598-017-02045-z.
- Mazerolle, M. J. 2019. AICcmodavg: Model selection and multimodel inference based on (Q)AIC(c). R package version 2.2-2; <https://cran.r-project.org/package=AICcmodavg>.
- Møller, A. P., Fiedler, W., and Berthold, P. 2010. *Effects of Climate Change on Birds*. Oxford Univ. Press, Oxford, England.
- Newton, I. 1998. *Population Limitation in Birds*. Elsevier Academic Press, Chicago.
- Pearce-Higgins, J. W., and Green, R. E. 2014. *Birds and Climate Change: Impact and Conservation Responses*. Cambridge Univ. Press, Cambridge, England; doi 10.1017/CBO9781139047791.
- Power, H. W., and Lombardo, M. P. 1996. Mountain Bluebird (*Sialia currucoides*), version 1.0, in *The Birds of North America* (A. F. Poole and F. B. Gill, eds.), no. 222. Acad. Nat. Sci., Philadelphia; doi 10.2173/bna.222.

- Pulido, F. 2007. Phenotypic changes in spring arrival: Evolution, phenotypic plasticity, effects of weather and conditions. *Climate Res.* 35:5023; doi 10.3354/cr00711.
- R Core Team. 2019. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria; www.r-project.org.
- Rowan, W. 1932. Experiments in bird migration. III. The effects of artificial light, castration and certain extracts on the autumn movements of the American Crow (*Corvus brachyrhynchos*). *Proc. Natl. Acad. Sci. USA* 18:639–654; doi 10.1073/pnas.18.11.639.
- Schwartz, M. W., Ahas, R., and Aasa, A. 2006. Onset of spring starting earlier across the Northern Hemisphere. *Global Change Biol.* 12:343–351; doi 10.1111/j.1365-2486.2005.01097.x.
- Senner, N. R., Stager, M., and Cheviron, Z. 2018. Spatial and temporal heterogeneity in climate change limits species' dispersal capabilities and adaptive potential. *Ecography* 41:1428–1440; doi 10.1111/ecog.03234.
- Swanson, D. L., and Palmer, J. S. 2009. Spring migration phenology of birds in the northern prairie region is correlated with local climate change. *J. Field Ornithol.* 80:351–363; doi 10.1111/j.1557-9263.2009.00241.x.
- Thackeray, S. J., Sparks, T. H., Frederiksen, M., Burthe, S., and Bacon, P. J. 2010. Trophic level asynchrony in rates of phenological change for marine freshwater and terrestrial environments. *Global Change Biol.* 16:3304–3313; doi 10.1111/j.1365-2486.2010.02165.x.
- Ward, D. H., Helmericks, J., and Hupp, J. W. 2016. Multi-decadal trends in spring arrival of avian migrants to the central arctic coast of Alaska: Effects of environmental and ecological factors. *J. Avian Biol.* 47:197–207; doi 10.1111/jav.00774.
- Winkler, D. W., Shamoun-Baranes, J., and Piersma, T. 2016. Avian migration and dispersal, in *Handbook of Bird Biology* (I. J. Lovette and J. W. Fitzpatrick, eds.), pp. 453–492. Wiley, Chichester, England.
- Wormworth, J., and Şekercioglu, Ç. H. 2011. *Winged Sentinels: Birds and Climate Change*. Cambridge Univ. Press, Cambridge, England; doi 10.1017/CBO9781139150026.

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OVERLAP OF MOLT AND FALL MIGRATION OF THE WESTERN TANAGER AND WARBLING VIREO IN SOUTHERN CALIFORNIA

PHILIP UNITT, LORI HARGROVE, and KEVIN B. CLARK, San Diego Natural History Museum, P. O. Box 121390, San Diego, California 92112-1390; birds@sdnhm.org

It is an axiom of ornithology that the energy-demanding phases of a small bird's life cycle, such as molt and migration, are segregated temporally (e.g., Newton 2008). This principle applies so widely that exceptions to it may be instructive. Here we report apparent exceptions in two species, the Warbling Vireo (*Vireo gilvus*) and Western Tanager (*Piranga ludoviciana*), on the basis of recent specimens from southern California.

A migratory bird may undergo its annual prebasic molt before or after migration. Molt after breeding but before long-distance migration is more common, but molt after migration, or at a stop during fall migration, is also widespread (Pyle et al. 2018). In passerines of western North America, molt after migration, or at a stop in the region of summer rain centering on northwestern mainland Mexico, predominates among the families Tyrannidae and Cardinalidae (Rohwer et al. 2005, Pyle et al. 2009). The age classes of a species may differ. If the first-year birds replace their juvenile plumage before departing their breeding range, the adults may molt after migration. Among the species in which the adults, after crossing the deserts, typically molt at a stop in the "Mexican monsoon region" are the Warbling Vireo and Western Tanager. The molt of both of these species with respect to migration has been studied thoroughly by Voelker and Rohwer (1998) and by Butler et al. (2002), respectively. Both species breed widely in forested regions of the western United States, from which they migrate to winter almost entirely in Mexico and Central America (the wintering of a few Western Tanagers in California has arisen only since urbanization and is essentially confined to urban landscaping with ample trees).

In southern California, migrating adult Western Tanagers begin appearing to the southeast of the species' breeding range in early July and are seen from mid-July through most of August in moderate numbers. Butler et al. (2002) reported that 24% of 175 adult Western Tanagers collected north of 30° N from 16 July onward had molted one or more flight feathers, but only 4% had replaced them all. They found that adults with substantial body molt were collected mostly in late August and early September—by which time nearly all adult Western Tanagers have already passed through southern California. Butler et al. (2002) concluded that, before they reach the monsoon region, Western Tanagers do not molt flight feathers and migrate simultaneously.

As one component of a study of wildlife use of inland wetlands in San Diego County, we mist-netted birds at three sites in 2017 and 2018. One of our five-day surveys at each site took place in late July or August when adult Western Tanagers and Warbling Vireos are migrating south through southern California: San Felipe Valley, 24–28 July 2017; Puerta la Cruz, 6–10 August 2017; and Clover Flat, 13–17 August 2018. These sites are oases of riparian vegetation at springs amid chaparral, grassland, and sagebrush, at elevations between 875 and 900 m. Neither the Western Tanager nor the Warbling Vireo breeds or winters at either site (cf. Unitt 2004). At the latitude of these sites, the Western Tanager breeds at higher elevations, and the Warbling Vireo is restricted to a few remnant populations in more extensively wooded

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habitats (Unitt 2004). All three sites are near the eastern margin of the Peninsular Ranges, where migrating birds may stop before attempting a late-summer crossing of ~500 km of desert to reach the monsoon region.

On dates from 8 to 15 August, we captured and collected five adult Western Tanagers two at Puerta La Cruz and three at Clover Flat. All were in light to moderate body molt, and two were replacing flight feathers (Table 1). A sample of five specimens is small, but that all five should be in body molt, and two in flight-feather molt, diverges widely from expectations based on the findings of Butler et al. (2002). Outside the Western Tanager's breeding range, north or west of extreme southern Arizona, Butler et al. (2002: figure 1B) mapped only one specimen (from along the Colorado River in southeastern California) that was molting flight feathers. Evidently this specimen is San Diego Natural History Museum (SDNHM) 33671, collected by May Canfield 2 miles north of Bard, Imperial County, on 16 August 1925, in which primary 2 is growing.

The single Warbling Vireo we caught, at Clover Flat on 16 August 2018, was a female at least two years old (SDNHM 55908). It was molting primaries and rectrices. On both sides, primaries 1–3 were new, primary 4 was growing, and primaries 5–10 were old (Figure 1A). In the tail, rectrix pair 1 was fresh, pairs 2–4 were growing (4 just emerging from the sheath), and 5 and 6 were old and worn. In addition, body molt was moderate on the crown and light on the back, throat, and breast (Figure 1B). The bird was carrying a heavy load of fat.

The comprehensive study of the Warbling Vireo's molt by Voelker and Rohwer (1998) was based on 1228 specimens, from 26 museums, collected from 1 July to 31 December. They found no adult specimens of the western subspecies *V. g. swainsoni* collected northwest of Sonora to be replacing any flight feathers or to have completed body molt. They did, however, find several specimens from northwestern Mexico, some collected before 15 August, in active flight-feather molt. They concluded that adults of *V. g. swainsoni* undertake a molt-migration to northwestern Mexico before beginning flight-feather molt. By contrast, they found initiation though not completion of body molt in the breeding range to be widespread (58% of 363 specimens from the western U.S. and southwestern Canada). They mapped several adult specimens from southeastern California, collected outside the breeding or winter range between

TABLE 1 Molt of Five Adult Western Tanagers from San Diego County, August 2017–2018

	SDNHM 55238	SDNHM 55243	SDNHM 55896	SDNHM 55903	SDNHM 55904
Date	8 Aug 2017	9 Aug 2017	14 Aug 2018	15 Aug 2018	15 Aug 2018
Sex	female	male	female	female	female
Locality	Puerta La Cruz	Puerta La Cruz	Clover Flat	Clover Flat	Clover Flat
Body molt	small patch on breast; small patch on nape/upper back	light on crown and breast; 4 feathers on upper back	scattered feathers on forehead, neck, and breast	light on crown and nape; a few other scattered body feathers	Light in most tracts of body feathers, fairly heavy on lower throat and upper breast
Flight-feather molt	none	none	none	primary 1, left side	primaries 1 and 2 and rectrix pair 1 growing
Fat	moderate to heavy	heavy	heavy	heavy	heavy

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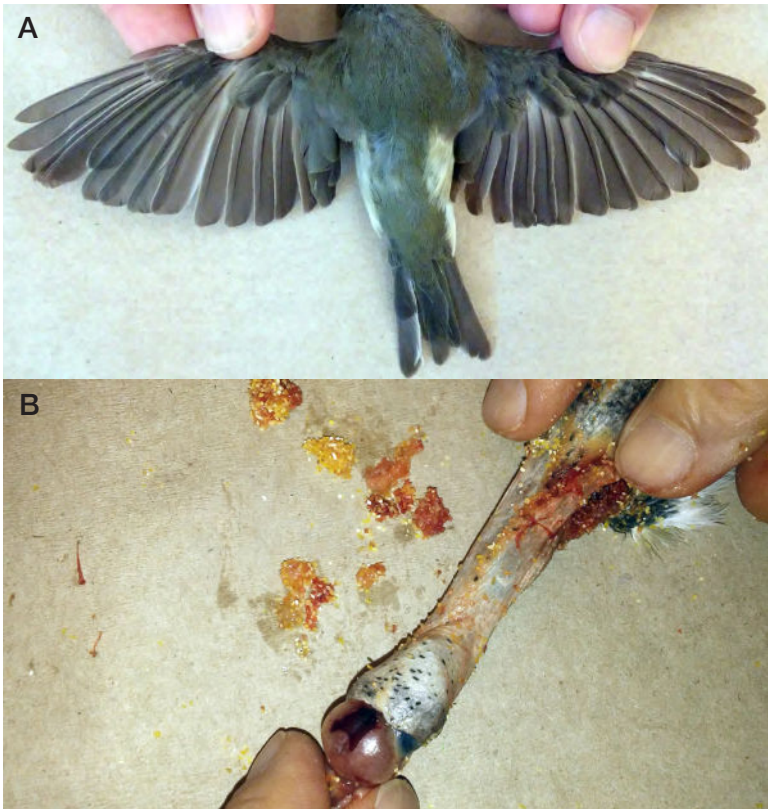


FIGURE 1. Adult Warbling Vireo from south-central San Diego County, California, 16 August 2018. (A) Dorsal view, showing molt of primaries (primary 4 growing) and rectrices (pairs 2–4 growing). (B) Inside of skin, showing moderate molt on crown and light molt on remainder of upperparts. Notice also the ample fat scraped off the skin.

1 July and 30 September, as in active body molt, and wrote, “thus far, *swainsoni* is the only vireo known to replace its body feathers during migratory flights” (p. 147).

Therefore these recent specimens of both the Western Tanager and Warbling Vireo from southern California represent stages of molt that should be expected only much farther southeast, on the opposite side of the Sonoran Desert in southeastern Arizona or northwestern mainland Mexico. One possibility for the atypical molt of these specimens is that they began or continued their molt in the middle of migration, in contradiction of the standard principle and previous evidence for these species. This possibility is supported by the birds’ abundant reserves of fat, as typically found in both the Western Tanager and Warbling Vireo as they pass through southern California. In this case the specimens would represent “continuous molt-migration” as defined by Tonra and Reudink (2018:1127), previously unknown in these species.

One possibility is that these birds had been somehow delayed in migration until the time intrinsic or extrinsic stimuli triggered the onset of molt. But many

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specimens in molt have been collected later in the year, after 16 August (Voelker and Rohwer 1998, Butler et al. 2002), negating this possibility.

Another possibility is that these birds had cut their breeding season short and moved on to the next stage in their life cycle earlier than is typical. In years of severe drought, as prevailed in southern California from 2013 to 2018, nesting of land birds in southern California typically ends early in the summer (if it takes place at all; Bolger et al. 2005), and the molt that follows also can begin earlier than in wet years. This pattern is seen in sedentary species such as the California Towhee (*Melospiza crissalis*; Unitt pers. obs.) and species that molt before migration such as Bell's Vireo (*Vireo bellii*; Clark pers. obs.). But whether it prevails in species that molt after migration, or at an intermediate stop, has not been investigated.

Perhaps the most likely possibility is that these Western Tanagers and Warbling Vireo had stopped to complete their molt, as if they had reached Sonora, even though a stop for molt in southern California by these species is previously unknown.

The Western Tanager and Warbling Vireo are considered exemplars of species that complete most or all of their molt south of the breeding range in the region centering on northwestern mainland Mexico that receives monsoon rain in summer. Even though summer thundershowers are occasional in the mountains of southern California, on average they represent a minor fraction of the region's precipitation, which falls largely from November to April. Southern California has never been considered part of the "monsoon region." Yet the specimens we report here were molting as if they had reached it. Therefore the birds may have been stimulated by unusual or novel factors that mimic those in northwestern mainland Mexico.

Since 2014, summer ocean temperatures along the southern California coast have been unusually warm, contributing to increased humidity in the region. In late July and early August 2018, a succession of record ocean temperatures at La Jolla peaked at 26.4°C on 9 August (Carter et al. 2019; <https://scripps.ucsd.edu/programs/shorestations/shore-stations-data/data-sio/>). In the mountains of San Diego County to the east, in the region where these tanagers and vireo were collected, the weather was also hot and humid. On the basis of data for 1993 through 2018 from six stations (Ranchita, Julian, Descanso, Mount Laguna, Cameron Fire Station, and Potrero) combined, 2017 and 2018 were two of only four years in which both the average temperature in July was above 24°C and the relative humidity in July was above 45% (data from <https://raws.dri.edu/wraws/scaFhtml>, downloaded September 2019). Longer-term humidity data for this region are not available, but at Henshaw Dam, a nearby station for which temperature data are available from 1943 onward, the average July temperature from 1943 to 2000 was 22.4°C. In 2017 and 2018 it was 24.5°C and 25.5°C, respectively. The 2018 value was the highest on record. At Campo, just 7 km southwest of Clover Flat, the precipitation in July and August 2018, 27.2 mm, was over double the average of the preceding 20 years, 12.9 mm.

Climate change should affect all aspects of a bird's biology, but very few studies have addressed its effects on molt (Seavy et al. 2018). Taylor et al. (2018) reported an increase in the duration of molt in the Dunlin (*Calidris alpina*) in Alaska. In the Netherlands, Jukema and Wiersma (2014) found a shift toward earlier molt of primaries in the Eurasian Golden Plover (*Pluvialis apricaria*) and Tomotani et al. (2017) found a shift toward earlier molt in the Pied Flycatcher (*Ficedula hypoleuca*). Kiat et al. (2019) reported a trend toward more extensive post-juvenile molt in 19 species of western palearctic thrushes, flycatchers, and shrikes. Our observations of atypical molt in the Western Tanager and Warbling Vireo, however, may represent climate change leading to a shift in *location* of molt. Predictions for the future climate of southern California's mountains include also hotter and wetter summers. In California, heat waves characterized by high humidity and high nighttime temperatures, such as that of late July–early August 2018, have increased in the 21st century (Gershunov and Guirguis 2012). Though Gershunov and Guirguis (2012) projected

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both humid and dry heat waves to increase, their models indicate that the humid heat waves will increase disproportionately.

After capturing and assessing the molt of fall migrants from 1 July to 9 October over two years at 13 sites in southeastern Arizona, Sonora, and Sinaloa, Pyle et al. (2009) found that the fidelity of such molt migrants to sites of molting is low. They concluded that the sites of these birds' molts are flexible, varying with varying environmental conditions. Apparently, this flexibility may include molting at a point along the path of migration far short of the Mexican monsoon region as previously understood. Modeling (Figure S1 in Pyle et al. 2018) suggests that the Western Tanager and Warbling Vireo are more likely to molt than to breed in southeastern California, but on the basis of extrapolation from few records from a few banding stations lying largely outside the breeding range of both species.

If the site of molt-migrants' molt is as flexible as Pyle et al. (2009) suggested, the issue of climate change inducing a phenological mismatch between supply and demand may be less for molt than it is for breeding. But the proximal stimuli for molt may differ from the conditions that generate a flush of insects sufficient to fuel an insectivorous bird's molt. Summer rain in southern California must increase greatly and become far more reliable before it replicates conditions in the monsoon region. And the prediction for California's future precipitation is increased variability (Swain et al. 2018), so a bird could well be stimulated to molt in southern California one year but not the next.

The importance of riparian oases as resources for migrating birds that must cross deserts is widely known. In southeastern Arizona, Chambers et al. (2011) found molt-migrants tending to congregate in riparian habitat, especially in drier years. If molt is a burden additional to accumulating the fat needed to make a long nonstop flight across the desert in late summer, however, then the value of these oases as critical resources in southern California is even greater than previously appreciated.

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LITERATURE CITED

- Bolger, D. T., Patten, M. A., and Bostock, D. C. 2005. Avian reproductive failure in response to an extreme climatic event. *Oecologia* 142:398–406; doi 10.1007/s00442-004-1734-9.
- Butler, L. K., Donahue, M. G., and Rohwer, S. 2002. Molt-migration in Western Tanagers (*Piranga ludoviciana*): Age effects, aerodynamics, and conservation implications. *Auk* 119:1010–1023; doi 10.1093/auk/119.4.1010.
- Carter, M. L., Fumo, J. T., McGowan, J. A., Terrill, E., and Flick, R. E. 2019. Surface water temperatures and salinities at shore stations. California. 2018. Scripps Inst. Oceanogr., Univ. Calif., La Jolla; <https://scripps.ucsd.edu/programs/shorestations/wp-content/uploads/sites/96/2019/08/2018-Shore-Stations-Annual-Report.pdf>.
- Chambers, M., David, G., Ray, C., Leitner, B., and Pyle, P. 2011. Habitats and conservation of molt-migrant birds in southeastern Arizona. *Southwest. Nat.* 56:204–211; doi 10.1894/F09-KF-13.1.
- Gershunov, A., and Giguere, K. 2012. California heat waves in the present and

NOTES

- future. *Geophys. Res. Lett.* 39:L18710; doi 10.1029/2012GL052979.
- Jukema, J., and Wiersma, P. 2014. Climate change and advanced primary moult in Eurasian Golden Plovers *Pluvialis apricaria*. *Ardea* 102:153–159; doi 10.5253/arde.v102i2.a5.
- Kiat, Y., Vortman, Y., and Sapir, N. 2019. Feather moult and bird appearance are correlated with global warming over the last 200 years. *Nat. Commun.* 10(2540); doi 10.1038/s41467-019-10452-1.
- Newton, I. 2008. *The Migration Ecology of Birds*. Academic Press, Amsterdam.
- Pyle, P., Leitner, W. A., Lozano-Angulo, L., Avilez-Teran, F., Swanson, H., Gómez-Limón, E., and Chambers, M. K. 2009. Temporal, spatial, and annual variation in the occurrence of molt-migrant passerines in the Mexican monsoon region. *Condor* 111:583–590; doi 10.1525/cond.2009.090085.
- Pyle, P., Saracco, J. F., and DeSante, D. F. 2018. Evidence of widespread movements from breeding to molting grounds by North American landbirds. *Auk* 135:506–520; doi 10.1642/AUK-17-201.1.
- Rohwer, S., Butler, L. K., and Froehlich, D. 2005. Ecology and demography of east–west differences in molt scheduling of neotropical migrant passerines, *in* *Birds of Two Worlds: The Ecology and Evolution of Migratory Birds* (R. Greenberg and P. P. Marra, eds.), pp. 87–105. Johns Hopkins Univ. Press, Baltimore.
- Seavy, N. E., Humple, D. L., Cormier, J. R., Porzig, E. L., and Gardali, T. 2018. Evidence of the effects of climate change on landbirds in western North America: A review and recommendations for future research, *in* *Trends and traditions: Avifaunal change in western North America* (W. D. Shuford, R. E. Gill Jr., and C. M. Handel, eds.), pp. 331–343. *Studies of Western Birds* 3. W. Field Ornithol., Camarillo, CA; doi 10.21199/SWB3.18.
- Swain, D. L., Langenbrunner, B., Neelin, J. D., and Hall, A. 2018. Increasing precipitation volatility in twenty-first century California. *Nature Climate Change* 8:427–433.
- Taylor, A. R., Lanctot, R. B., and Holmes, R. T. 2018. An evaluation of 60 years of shorebird response to environmental change at Utqiagvik (Barrow), Alaska, *in* *Trends and traditions: Avifaunal change in western North America* (W. D. Shuford, R. E. Gill Jr., and C. M. Handel, eds.), pp. 312–330. *Studies of Western Birds* 3. W. Field Ornithol., Camarillo, CA; doi 10.21199/SWB3.17.
- Tomotani, B. M., van der Jeugd, H., Gienapp, P., de la Hera, I., Pilzecker, J., Teichmann, C., and Visser, M. E. 2017. Climate change leads to differential shifts in the timing of annual cycle changes in a migratory bird. *Global Change Biol.* 24:823–835; doi 10.1111/gcb.14006.
- Tonra, C. M., and Reudink, M. W. 2018. Expanding the traditional definition of molt-migration. *Auk* 135:1123–1132; doi 10.1642/AUK-17-187.1.
- Unitt, P. 2004. San Diego County bird atlas. *Proc. San Diego Soc. Nat. Hist.* 39.
- Voelker, G., and Rohwer, S. 1998. Contrasts in scheduling of molt and migration in eastern and western Warbling Vireos. *Auk* 115:142–155; doi 10.2307/4089119.

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NORTHERN PYGMY-OWL PREDATION ON AN ADULT CALIFORNIA QUAIL

MITCHEL D. BOSMA, HAYLEY H. ROSS, and ROBERT B. DOUGLAS, Mendocino Redwood Company, P.O. Box 489/32601 Holquist Lane, Fort Bragg, California 95437; rdouglas@humboldt.edu (current address of Bosma, P.O. Box 371, Boonville, California 95415; of Douglas, Strix Wildlife Consulting, 32850 Collins Lane, Fort Bragg, California 95437)

The Northern Pygmy-Owl (*Glaucidium gnoma*) opportunistically hunts and feeds on songbirds, small mammals, reptiles, and insects (Merrill 1888, Holman 1926, Brock 1958, Bull et al. 1987). Diet studies indicate that although pygmy-owls feed primarily on species smaller than themselves, they also take species with body masses similar to or slightly larger than themselves (70–100 g; Giese and Forsman 2003). Occasionally they take even larger prey (i.e. $\geq$ twice body mass, such as the Northern Flicker (*Colaptes auratus*; Holt and Leroux 1996).

Few direct observations of predation of relatively large species have been reported in the literature: Northern Pygmy-Owls have been observed preying on species of the family Odontophoridae, including the Northern Bobwhite (*Colinus virginianus*; Aiken and Warren 1914), Gambel's Quail (*Callipepla gambelii*; Kimball 1925), and an immature female California Quail (*Callipepla californica*; Balgooyen 1969). Other accounts have reported pygmy-owls preying on and attacking immature domestic chickens (*Gallus gallus domesticus*), specifically “chick[s]” (Walker 1924:181) and “half grown chickens” (Aiken and Warren 1914:513). Holt and Norton (1986) also



FIGURE 1. California Quail killed and partially eaten by a Northern Pygmy-Owl near Elk, Mendocino County, California, 13 April 2007.

Photo by Mitchel D. Bosma

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observed a female Northern Pygmy-Owl kill and feed on a Red Squirrel (*Tamiasciurus hudsonicus*), possibly representing the largest mammalian species confirmed as prey. However, diet studies typically identify prey from sparse remains found in pellets and around nests, and most historical observations of predation lack specific information such as mass, condition, or developmental stage from which the size of the prey can be gauged. An exception is Balgooyen (1969), who provided a photograph and mass measurements of both the California Quail and Northern Pygmy-Owl. We add to this body of observations by providing an account of a Northern Pygmy-Owl feeding on an adult male California Quail.

On 13 April 2007 at 16:48, after visiting a known Northern Spotted Owl (*Strix occidentalis caurina*) territory located 2.4 km east of Elk, Mendocino County, California (39.0759° N, 123.4213° W), Bosma observed a Northern Pygmy-Owl fly up from the side of a seasonal road and perch in a Red Alder (*Alnus rubra*), where it remained fixated on its previous location. Bosma lured the bird closer with a live mouse placed atop a Douglas-Fir (*Pseudotsuga menziesii*) sapling. After several minutes of intently watching the mouse, the owl captured the mouse and flew to the ground with it out of view. Bosma then investigated the spot where the owl had been initially seen and discovered a dead adult male California Quail. The carcass was still warm and flexible, indicating it was recently killed. The quail was mostly clean and undamaged, with nearly all its body and flight feathers intact, but its head had been stripped of flesh and eaten down to the skull. From the condition of the quail carcass and the manner in which it was killed, we inferred that the pygmy-owl killed the quail.

Although we did not weigh the quail carcass, the reported mean mass for the subspecies of the California Quail (*C. c. brunnescens*) in coastal northern California is 180+ g for both sexes (Sumner 1935). The body mass of quail fluctuates seasonally with males attaining peak body mass in early spring (Genelly 1955, Lewin 1963). In comparison, the Northern Pygmy-Owl has an average mass of 64.5 g (range, both sexes: 45–75 g, standard deviation = 7.2, $n = 50$, Bird Banding Laboratory data 2013–2018).

Accounts of pygmy-owls killing large prey, though few, span over a century. Further studies on the Northern Pygmy-Owl's feeding behavior are necessary to understand if specific demographic and/or ecological factors drive the occasional selection of large prey or if this behavior is more associated with chance opportunity.

LITERATURE CITED

- Aiken, C. E. H., and Warren, E. R. 1914. The birds of El Paso County, Colorado. Colo. College Sci. Ser. 12:455–603; doi 10.5962/bhl.title.54105.
- Balgooyen, T. G. 1969. Pygmy Owl attacks California Quail. Auk 86:358; doi 10.2307/4083519.
- Brock, E. M. 1958. Some prey of the Pygmy Owl. Condor 60:338.
- Bull, E. L., Hohmann, J. E., and Henjum, M. G. 1987. Northern Pygmy-Owl nests in northeastern Oregon. J. Raptor Res. 21:77–78.
- Genelly, R. E. 1955. Annual cycle in a population of California Quail. Condor 57:263–285; doi 10.2307/1364732.
- Giese, A. R., and Forsman, E. D. 2003. Breeding season habitat use and ecology of male Northern Pygmy-Owls. J. Raptor Res. 37:117–124.
- Holman, F. C. 1926. Nesting of the California Pygmy Owl in Yosemite. Condor 28:92–93; doi 10.2307/1362930.
- Holt, D. W., and Leroux, L. A. 1996. Diets of Northern Pygmy-Owls and Northern Saw-whet Owls in west-central Montana. Wilson Bull. 108:123–128.
- Holt, D. W., and Norton, W. D. 1986. Observations of nesting Northern Pygmy-Owls. J. Raptor Res. 20:39–41.

NOTES

- Kimball, H. H. 1925. Pygmy Owl killing a quail. *Condor* 27:209–210.
- Lewin, V. 1963. Reproduction and development of young in a population of California Quail. *Condor* 65:249–278; doi 10.2307/1365353.
- Merrill, J. C. 1888. Notes on the birds of Fort Klamath, Oregon. *Auk* 5:139–146; doi 10.2307/4067148.
- Sumner, E. L. Jr. 1935. A life history study of the California Quail, with recommendations for its conservation and management. *Calif. Fish and Game* 21:167–344.
- Walker, A. 1924. Notes on some birds from Tillamook County, Oregon. *Condor* 26:180–182; doi 10.2307/1363172.

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Northern Pygmy-Owl

Painting by Bryce Robinson

A REVIEW OF WESTERN BIRD RECORDS COMMITTEE WEBSITES

DESMOND E. SIEBURTH, 2644 Hermosa Avenue, Montrose, California 91020

Every state and most provinces in the western United States and Canada have a bird records committee (BRC). The committees receive thousands of reports of rare birds from the birding community each year. The goals of each committee are to assess the identification, origin, date, and location of the rare birds reported, as well as to maintain the checklist for each state. In addition, each committee communicates records of rare bird sightings to the public through publications in journals and through the committee's website. The wealth of information found on each website can be used by researchers and birders alike. This review focuses on the websites of the eleven bird records committees in the western states and provinces and discusses how each website allows observers to submit documentation of rare birds and how effectively it conveys these records.

The California Bird Records Committee (CBRC) maintains an excellent website that makes searching and submitting records quite easy. Perhaps the most useful part of the website is that the main page has a database query in which one can simply type in the species and access all accepted and rejected records rather than having to scroll through pages of records to find the desired species. One can also submit records, including photographs, directly to the committee through the main page of the website. Additional pages include an annotated state list, all publications by the committee, and photographs of rare birds. The photos, however, have not been updated since 2015. "Rare Birds of California," the publication of the CBRC, is located on the main page. The publication analyzes rare bird records, the history of California birding, the history of the CBRC, and California birding localities. The name "Rare Birds" is somewhat misleading given that a large portion of the book is about California birding history. Perhaps "California Records History" would be more appropriate. In order to access the wealth of information for each review species within "Rare Birds," one must click on the Main List, then click on each species to access its status and distribution in the state. This search is somewhat confusing, and it might have been better if a separate tab for the species accounts had been created. Overall, however, the CBRC's website is very informative and allows viewers to access records easily.

The Oregon Bird Records Committee's (OBRC) website is part of the Oregon Birding Association's (OBA) website. This website allows birders to access both OBRC records and to explore OBA field trips, birding locations in Oregon, and additional information about birding in Oregon. OBRC records are sorted by species in an Excel spreadsheet, and each species is sorted by whether the record was accepted or not. The records are also located in a PDF file, updated in 2019, which provides an easy mechanism for locating records. The official Oregon bird checklist, as well as the review list, are easily found in a PDF file. One can submit written documentation directly to the OBRC through the website, but to submit a photograph, audio recording, or video, one must e-mail the secretary directly. I recommend that the OBRC alter its website to allow submission of photographs through that medium as well. There are no links to publications by the committee on the OBRC website or elsewhere on the OBA website. Publications are a crucial part of any bird record committee's output. Finally, the website does not provide any photographs of review species. Adding such photographs would enhance the user's experience.

The Washington Bird Records Committee's (WBRC) website is part of the Washington Ornithological Society's (WOS) website. Like the OBRC's website, it is simple, with a list of committee members, the official Washington checklist and

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review list, and a list of records assessed by the committee. The records can be found in an Excel spreadsheet and in PDF format. The PDF is much easier to search, and the records are split into accepted and not accepted. The WBRC's periodic reports dating back to 2009 are also included. The shortcomings of the website are similar to those of the OBRC website: photos, audio, and videos must be e-mailed to the committee, and there are no photographs of review species on the WBRC website or elsewhere on the WOS page.

The British Columbia Bird Records Committee's (BCBRC) website is a part of the British Columbia Field Ornithologists' (BCFO) website. The BCBRC website is excellent; there are tabs showing the committee's decisions and photographs of the birds representing accepted records on a quarterly basis. The main page links to PDF files in which all records are sorted by date and species. Unfortunately, the sightings have not been updated since August 2018. Most records have comments, further describing the bird's location, age, and sex, and identifying first provincial records. For example, the BCBRC incorporates comments like "possibly present as early [as] 29 September 2016; first confirmed BC record" and "undergoing prebasic molt." I would like to see these kinds of comments on other bird record committees' websites. The review list and forms for submission of records are easily found in the labeled tabs. However, it is difficult to get to the publications of the committee; one must first go to the publication of the BCFO (*British Columbia Birds*), then search the journal for the BCBRC. Having links to publications directly on the committee's tab would make the search easier.

The Arizona Bird Committee has its own website, which unfortunately does not do justice to the state's incredible wealth of birds. The state and review lists are easily found in the tabs, and publications are easily located as well. However, searching the database of records effectively is challenging. The only way the database can be sorted is by date, which is not very helpful when one tries to determine how many Arizona records there may be of a species. The county in which the bird was sighted is missing, and many localities are identified with opaque abbreviations such as "ROLA" and "ALSP" which are not defined. There is a "search for" option, but to search for Black Scoter records, for example, one must type in "Species" "equals" "Black Scoter." The database creates a separate entry for each submission of observations of a long-staying bird, which is confusing. For example, from the database, one might assume that Arizona has nine records of the White-throated Thrush. In reality, it has only two; the reason for this apparent discrepancy is that multiple people submitted documentation for the same bird. For the fall of 2019, there are four entries of the Long-tailed Jaeger at Lake Pleasant, but there is no way of knowing whether these represent one or four individuals. The database could be improved by refining the spreadsheet and formatting it similarly to those of other bird records committees.

The New Mexico Bird Records Committee's website is part of the New Mexico Ornithological Society's website. The website is simple, with four major features: the state checklist, review list, how to submit sightings, and publications. This committee's website includes a "sketch details" list—species that are unusual enough in the state to warrant documentation, but not rare enough to be considered a review species. I liked this unique feature, as it encourages birders to document all rarities—not just those on the review list. Unfortunately, there is no database on the website, though by selecting the option "publications" then "Field Notes database," reports in the *NMOS Field Notes* can be searched. New Mexico has the fourth-highest state list in the United States, and allowing birders to access records more easily may help the public become more aware of this underappreciated state. Also, sightings can not be submitted through the website; one must e-mail the committee's secretary with documentation.

The Colorado Bird Records Committee (CBRC) has its own website. The home page is dedicated to the mission of the committee, as well as submitting sightings.

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To submit a report to the committee directly, one must create a CBRC account. Although at first this seemed unnecessary to me, it allows birders to see in one place all records that they have submitted to the committee. The website also links to the committee's published annual reports, as well as a few interesting articles written by committee members, such as *Determining Status of the Cackling Goose in Colorado*. The database can be sorted by species, and then further sorted by date, observer, and county by means of the "Create Your Own Query" tab or the "Reports from the Data" tab. These two tabs serve essentially the same purpose. I prefer the "Reports from the Data" tab, since this option yields a photograph of the species. The "Create Your Own Query" tab does not show records when nonreview species are selected. Thus I feel the CBRC's options are confusingly redundant; I recommend the committee consider removing one of the tabs. Finally, the species are listed in taxonomic order, which changes, so searching for a species can take quite a while. Perhaps adding an alphabetical option, or simply allowing users to type in the species, would solve this problem.

The Nevada Bird Records Committee's (NBRC) website is a portion of the Great Basin Bird Observatory's website. The introductory page presents an overview, which includes a few photos, as well as the committee's purpose and contact point. The following page links to the state and review lists, which unfortunately can not be downloaded as a PDF file. Written documentation of rare birds can be submitted via the website, but photos must be e-mailed. The database is excellent, as it can be sorted alphabetically, taxonomically, and by record number. The database also includes photographs supporting each submission, which is an excellent feature. Finally, annual reports can be accessed.

The Utah Bird Records Committee (UBRC) website consists of a home page with many links. The first set of links details how to submit sightings to the committee, and the next set includes the state and review lists. A very helpful link is to the Review Species Table. By clicking the link, one can see maps of where review species have occurred in the past, as well as links to the bar charts at www.eBird.org to let the user know exactly when a review species is expected to occur in Utah. I would like to see other committees include a feature like this. The next set of links, labeled "sight records," is somewhat misleading; it is simply the database of Utah's rare birds rather than birds supported by sight records only (no photographs or specimens). I recommend the UBRC change "sight records" to simply "records." The database is viewable only taxonomically. Finally, the last set of links goes to "special features," highlighting articles about difficult field identification problems, and once more detailing maps and bar charts of review species. Overall, the website offers a wealth of information, though it can be difficult to navigate because of everything being presented on one page.

The Idaho Bird Records Committee (IBRC) maintains its own website with multiple tabs. One links to a downloadable checklist, another to the review list. The next tab links to the excellent database, which is easily sorted by species and by county. My only complaint is that the website does not specify whether a record is accepted or rejected. Presumably, this means all records in the database were accepted, but it would be nice to know for sure. Finally, another excellent part of the website is the "history" tab. It leads to a history of the IBRC, important figures, and a history of how the database of Idaho rare bird records was created.

The Montana Bird Records Committee's (MBRC) website is a tab within the Montana Bird Advocacy's website. The website is rather basic, consisting of state and review lists, as well as annual reports. There is also a photo gallery of rare birds. The website lacks the option of querying a database, which prevents birders from gaining a clear understanding of Montana's rare bird records.

The website of the Hawaii Bird Records Committee, founded in 2014, is linked from the Western Field Ornithologists website. The first two tabs are dedicated to the

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history of the committee. The official Hawaii checklist is also found on the website, and review species are marked with an “X.” The committee’s only published report is linked at the “published reports” tab. I would like to see this website expanded to include a link to a database that can be queried, to allow observers to submit documentation through the website, and to show photos of Hawaiian birds. Adding these features may increase awareness of the island’s birdlife and attract more birders to Hawaii.

Bird record committees’ databases allow birders and researchers to access data of rare bird sightings, but these databases also rely on the birding community to submit sightings with proper documentation. To encourage the birding community to submit their sightings and contribute to citizen science, these websites should be easy to use and should offer information about records of rare birds, as do the websites of the British Columbia, California, Colorado, and Utah committees. Some states and provinces, namely, Wyoming, Alaska, Alberta, Saskatchewan, Yukon Territory, and Northwest Territory, do not have a website, perhaps because of a relatively low number of birders.

Websites:

California: <https://californiabirds.org>

Oregon: <https://oregonbirding.org/oregon-bird-records-committee>

Washington: <http://wos.org/records>

British Columbia: <https://bcfo.ca/bc-bird-records-committee-sightings-database>

Arizona: <http://abc.azfo.org>

New Mexico: <http://www.nmbirds.org/nmbrc>

Colorado: <https://cobrc.org>

Nevada: <https://gbbo.org/nbrc>

Utah: <http://utahbirds.org/RecCom>

Idaho: <https://ibrc.idahobirds.net>

Montana: <https://montanabirdadvocacy.org/about-mbrc>

Hawaii: <https://westernfieldornithologists.org/HBRC/news.php>

FEATURED PHOTO

THE 2018 FLIGHT OF
THE BUFF-BREASTED SANDPIPER

STEVE HAMPTON, 1201 Elk Place, Davis, California 95616;
stevehampton@gmail.com

For the Buff-breasted Sandpiper (*Calidris subruficollis*), fall migration along the west coast of North America in 2018 was exceptional, with 70 individuals reported, five to ten times the norm. The one at Morro Strand State Beach, San Luis Obispo County, California, shown on this issue's back cover, was representative.

This distinctive shorebird breeds on the arctic tundra from western Alaska across northern Canada to Baffin Island (McCarty et al. 2017). It winters over 10,000 km to the south, on the grasslands of the basin of the Río de la Plata in Argentina, Uruguay, and Paraguay. Its primary migration corridor is east of the Rocky Mountains, through the central United States. A secondary route is along the east coast. Although it is frequent enough that the records committees for Washington, Oregon, and California have discontinued reviewing reports, the Buff-breasted Sandpiper remains rare in fall migration along the west coast. In spring, it is almost entirely absent; the only records are of one at Arcata, California, 3–4 May 1980 (Roberson 1986) and Edwards Air Force Base, Mojave Desert, 3–9 June 1990 (Patten and Erickson 1994).

To quantify the magnitude of the irruption of 2018, I compiled data on the Buff-breasted Sandpiper in southern British Columbia, Washington, Oregon, and

Table 1 Occurrences of the Buff-breasted Sandpiper from British Columbia to California, 2014–2018

	2014	2015	2016	2017	2018
British Columbia					
No. individuals	3	3	7	3	19
Size of largest group	2	2	4	1	13
Date range	15 Aug– 24 Sep	17–19 Aug	24 Aug– 13 Sep	16 Aug– 12 Sep	24 Aug– 22 Sep
Washington					
No. individuals	8	1	1	1	9
Size of largest group	3	1	1	1	2
Date range	20 Aug– 17 Sep	20 Aug	17 Sep	30 Jul	30 Aug– 22 Sep
Oregon					
No. individuals	1	0	4	2	19
Size of largest group	1		3	1	5
Date range	2 Sep		19 Aug– 3 Sep	29 Aug– 29 Sep	23 Aug– 19 Sep
California					
No. individuals	4	0	1	2	23
Size of largest group	2		1	1	3
Date range	26 Aug– 4 Sep		20 Aug– 11 Oct	26 Aug– 3 Nov	24 Aug– 17 Nov
Total					
No. individuals	16	4	13	8	70
Size of largest group	3	2	4	1	13
Date range	15 Aug– 24 Sep	17–20 Aug	19 Aug– 11 Oct	16 Aug– 3 Nov	23 Aug– 17 Nov

FEATURED PHOTO

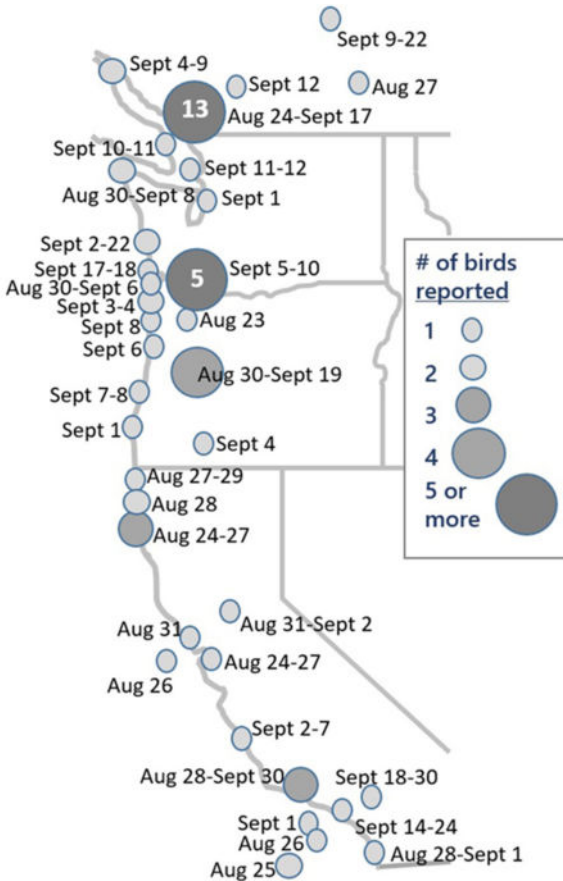


FIGURE 1. Distribution of records of the Buff-breasted Sandpiper from British Columbia to California, fall 2018.

California from www.eBird.org from late July to September from 2014 through 2019. Additional information was provided by key local contacts. Fall migration records outside of this period are few, although the species has lingered in southern California into October and even November.

Four to sixteen individuals were counted each fall between 2014 and 2017 (Table 1). In 2018, 70 individuals were reported (Figure 1).

Some additional observations can be made about the 2018 flight year. While fall migration generally extends from mid-August through late September, within that interval the timing of occurrences is not strongly correlated with latitude. That is, it does not appear that birds are moving from north to south through the period. Each season's latest records, from mid or late September, may come from British Columbia or Washington as easily as from southern California. That said, in 2018, the latest records are indeed from southern California. Moreover, the very few October records over the years (not included in Figure 1) are from southern California.

FEATURED PHOTO

From British Columbia to California, the Buff-breasted Sandpiper occurs most consistently in the Pacific Northwest, reaching California only in years of relative abundance, such as 2018. The only location with records every year from 2014 to 2018 is Salmon Arm Bay of Shuswap Lake, in the interior of British Columbia. Sites with records in all but one of these five years are Boundary Bay, British Columbia, and along the south coast of Washington, such as Ocean Shores and the vicinity of Gray's Harbor.

The vast majority of records are of single individuals. The only time more than four birds were encountered together during these years was in 2018, with five birds at once at Sauvie Island, Oregon, and a remarkable 13 at Boundary Bay.

In the years 2014–2017, Buff-breasted Sandpipers first appeared between 15 and 19 August. In 2018, they did not appear until 23 August, and most were later than in previous years.

In 2018, there were three California records offshore: of one on the Farallon Islands, two from San Clemente Island, and two birds seen together over the ocean ~160 km off southern California. These were all relatively early in migration, between August 25 and September 1. In contrast, that year most records from the Oregon coast were from the first week of September.

2018 represented the largest flight of the Buff-breasted Sandpiper since 2007, when over 80 birds were reported from the region, including a group of 18 at Midway Beach, Washington, on 14 September. In 2007 as in 2018, most of the birds were later than normal, arriving in late August and throughout September.

In 2019, 16 Buff-breasted Sandpipers were again reported from the region, from 16 August to 3 October. These included seven from British Columbia (including Salmon Arm and Boundary Bay), five from Washington (including the south coast, with one record of three birds together), two from Oregon, and two from California. While slightly above the average of 2014–2017, this number suggests 2019 represented little to no echo (a smaller-scale invasion in the following year, as sometimes occurs with species irruptive in winter).

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LITERATURE CITED

- McCarty, J. P., Wolfenbarger, L. L., Laredo, C. D., Pyle, P., and Lanctot, R. B. 2017. Buff-breasted Sandpiper (*Calidris subruficollis*), version 2.0, in *The Birds of North America* (P. G. Rodewald, ed.). Cornell Lab. Ornithol., Ithaca, NY; doi 10.2173/bna.bubsan.02.
- Patten, M. A., and Erickson, R. A. 1994. Fifteenth report of the California Bird Records Committee. *W. Birds* 25:1–34.
- Roberson, D. 1986. Ninth report of the California Bird Records Committee. *W. Birds* 17:49–77.

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President: Kurt M. Leuschner, 70065 Sonora Rd. #267, Mountain Center, CA 92561;
kleuschner@collegeofthedesert.edu

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Assistant Editor: Daniel D. Gibson, P. O. Box 155, Ester, AK 99725

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Graphics Manager: Virginia P. Johnson, 4637 Del Mar Ave., San Diego, CA 92107;
gingerj5@juno.com

Photo Editor: Peter LaTourrette, 1019 Loma Prieta Ct., Los Altos, CA 94024; platourrette@comcast.net

Featured Photo: Ryan Terrill, Moore Laboratory of Zoology, Biology Department, Occidental College, 1600 Campus Rd., Los Angeles, CA 90041

Book Reviews: Catherine Waters, P.O. Box 3505; 25131 Alicia Dr., Dana Point, CA 92629,
cpannellwaters@gmail.com

WFO Website: Timothy W. Brittain; webmaster@westernfieldornithologists.org

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Yellow-billed Loon



Photo by © Jim Switalla of Las Vegas, Nevada:

Yellow-billed Loon (*Gavia adamsii*), Lake Mead, Nevada, 28 December 2017–21 January 2018. Since the 1970s, the Yellow-billed Loon has appeared as a winter visitor in the southwestern United States, but it remains very rare, with a dozen or fewer records each for eastern and inland southern California, Nevada, Utah, Arizona, and New Mexico. Establishment of reservoirs is one factor facilitating these occurrences. Several are from the reservoirs along the Colorado River, such as this one, representing the tenth record for Nevada.



“Featured Photo” by © John Sterling of Woodland, California: Buff-breasted Sandpiper (*Calidris subruficollis*), Morro Strand State Beach, San Luis Obispo County, California, 6 September 2018. The number of Buff-breasted Sandpipers recorded during fall migration each year from British Columbia south through the Pacific states varies widely but is typically under 20. In occasional flight years, such as 2007 and 2018, however, the numbers are much larger: at least 80 in 2007 and 70 in 2018.

