Western Specialty: California Purple Finch

The two subspecies of the Purple Finch are best differentiated in the female plumage, shared by yearling males. As seen in this photo, the western *H. p. californicus* has blurrier brown streaking on the underparts and more brown mottling of the pale supercilium than does the eastern and boreal *H. p. purpureus*; on the upperparts *californicus* has an olive tinge and the streaking muted. In this issue of Western Birds (pp. 284–295), Cameron Rutt, Peter Pyle, Paul W. Collins, Matthew L. Brady, James R. Tietz, and Jon L. Dunn clarify the distributions of the two subspecies in western North America, reporting the first records of *californicus* for Alaska, Colorado, and New Mexico and the first record of nominate *purpureus* for California.
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Front cover photo by © Larry Sansone of Los Angeles, California: White Wagtail (*Motacilla alba*), Cabrillo Beach, Los Angeles Co., California, 8 December 2012. The clean gray rump, dark base to the secondaries, and extensively dark centers to the median and greater secondary coverts specify the subspecies *ocularis*.

Back cover “Featured Photo” by © Floyd Hayes of Angwin, California: Black Skimmer (*Rynchops niger*) over Clear Lake near Lakeport, Lake County, California, 3 July 2013, representing the northernmost inland record in western North America.

*Western Birds* solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but 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 www.westernfieldornithologists.org/docs/journal_guidelines.doc).
THE 38TH ANNUAL REPORT OF THE CALIFORNIA BIRD RECORDS COMMITTEE: 2012 RECORDS

This report is dedicated to the memory of former committee member Jon Winter (member 1970–1976).

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ABSTRACT: The California Bird Records Committee reached decisions on 280 records involving 525 individuals of 88 species and two species pairs documented since the 37th report (Nelson et al. 2013), endorsing 226 records of 471 individuals. The recent addition of the Scaly-breasted Munia (formerly Nutmeg Mannikin, Lonchura punctulata) to the state list, and the split of the Sage Sparrow into the Sagebrush Sparrow (Artemisiospiza nevadensis) and Bell’s Sparrow (A. belli), combined with first accepted state records of the Northern Gannet (Morus bassanus), Gray Hawk (Buteo plagius), and Common Cuckoo (Cuculus canorus) outlined in this report, brings California’s total list of accepted species to 654, 11 of which, including the munia, are established introductions. Other notable records detailed in this report are of the Common Crane (Grus grus), Wood Sandpiper (Tringa glareola), and Varied Bunting (Passerina versicolor).

This 38th report of the California Bird Records Committee (hereafter CBRC or the committee), a formal standing committee of Western Field Ornithologists, summarizes determinations on 280 records of 88 species and two species pairs involving 525 individuals. The committee accepted 226 of the 280 records, involving 471 individuals of 78 species and two species pairs, for an acceptance rate of 81%. We consider 24 of these records, involving 26 individuals, to represent returning or continuing birds that were accepted previously. Fifty-two reports of 34 species were not accepted because the identification was not considered to be substantiated, and two reports of two species were not accepted because natural occurrence was questionable. Reports of multiple individuals together are given the same record number.
for purposes of review; we report the total number of accepted individuals, which may be greater than the number of accepted records. Although the majority of the records in this report pertain to birds documented in 2012, the period covered spans the years 1960 through 2013.

Highlights of this report include the first acceptance to the California state list of three species: the Northern Gannet (Morus bassanus), Gray Hawk (Buteo plagiatus), and Common Cuckoo (Cuculus canorus). Also included are the second state records of the Common Crane (Grus grus) and Wood Sandpiper (Tringa glareola), the third Little Bunting (Emberiza pusilla), and the first spring records of the Long-billed Murrelet (Brachyramphus perdix) and Smith’s Longspur (Calcarius pictus). In addition, the state received the southernmost Gyrfalcon (Falco rusticolus) recorded in North America, the second Varied Bunting (Passerina versicolor) in nearly a century (fourth, overall), and a doubling of records of the White Ibis (Eudocimus albus). Furthermore, the committee added the Scaly-breasted Munia (Lonchura punctulata) to the state list on the basis of a naturalized population. In 2013, the committee accepted first California records of the Marsh Sandpiper (Tringa stagnatilis), Great Black-backed Gull (Larus marinus), and Common Swift (Apus apus), the details of which will be published in the next report. These records, combined with the split of the Sage Sparrow into the Sagebrush Sparrow (Artemisiospiza nevadensis) and Bell’s Sparrow (A. belli) (AOU 2013a), bring the total number of accepted species on California’s state list as of press time to 657. At its 2014 annual meeting, the committee removed from the review list the Neotropic Cormorant (Phalacrocorax brasilianus), Galapagos/Hawaiian Petrel (Pterodroma phaeopygia/sandwichensis), and Pine Warbler (Setophaga pinus). Counties hosting the most accepted records (numbers refer to the number of records, not individual birds) were San Diego (35), Los Angeles (19), Imperial (17), Marin (15), Riverside (14), San Francisco (14), Humboldt (12), Santa Barbara (12), and San Mateo (10). In all, records were accepted from 36 of California’s 58 counties (62%), including all 15 coastal counties.

Species-account headings are organized with English and scientific names first, followed in parentheses by the total number of accepted individuals in the state 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 identification was not established or because natural occurrence was questionable (as applicable). An asterisk (*) preceding the species name indicates that the CBRC has discontinued reviewing records of the species after 2012. A double asterisk (**) following the number of accepted state records indicates that the species has been reviewed for a restricted time span so the number of accepted records does not represent the total number of records for the state. Date ranges for each record are those accepted by the CBRC, and instances where these differ from those published in North American Birds are indicated with italics. A dagger (†) following an observer’s initials indicates submission of a photograph, (§) indicates submission of a sketch, (‡) indicates submission of audio recordings, (#) precedes a specimen number. Museum collections mentioned in the text are LACM (Natural History Museum of Los Angeles County), SDNHM (San Diego Natural History Museum), and
WFVZ (Western Foundation of Vertebrate Zoology). The absence of a symbol following the observer’s initials indicates the submission of a sight report alone. Additional details regarding minutiae of formatting, abbreviations, and our treatment of age, sex, and subspecies in records may be found in previous CBRC reports, at http://www.californiabirds.org/, and in CBRC (2007). Also available at the website is the California bird list, the review list, committee news, recent photos of rare birds in California, the CBRC’s bylaws, a form for querying the CBRC database, and all annual reports from 1996 through 2011. Age terminology follows that used by CBRC (2007).

Observers are encouraged to submit documentation for all species on the CBRC’s review list, sending it to Guy McCaskie, CBRC secretary, P. O. Box 275, Imperial Beach, CA 91933-0275 (e-mail: secretary@californiabirds.org). In recent years, the proportion of records supported only by photographs, without any written documentation, has increased considerably. Even minimal written details on a bird’s appearance, accompanying photographs, can assist significantly in documenting records of rare birds. Documentation of all CBRC records is archived at the Western Foundation of Vertebrate Zoology, 439 Calle San Pablo, Camarillo, CA 93012, and is available for public review.

BLACK-BELLIED WHISTLING-DUCK *Dendrocygna autumnalis* (32, 1). One was at the Toledo Pits 8 km west of Tipton, TUL, 15–27 May 2012 (RHD†; DFa†, JFL, MMa†, BKSt†, SS†; 2012-074). The lone committee member voting against acceptance expressed concerns that the bird might be an escapee, though it was unbanded and considered wary. The date span lies at the early end of the pattern of previous California records, which are mainly from June through August. Nearly all previous California records have been from the Salton Sink, though the first, at Buena Vista L., KER, 19 Jun 1938, was at a site (now largely destroyed) also in the San Joaquin Valley, about 85 km south of Tipton. The species’ northward vagrancy and expansion of its breeding range are well documented (James and Thompson 2001, Corman and Wise-Gervais 2005). This is the first record accepted since 2000.

EMPEROR GOOSE *Chen canagica* (91, 1). The written description of one seen off Rodeo Beach/Lagoon, MRN, 27 Nov 2011 (WL; 2011-270), lacked details of the head pattern, leading to one vote against acceptance. However, other members troubled by the incomplete description acknowledged that the very rare but superficially similar dark-morph Ross’s Goose (*C. rossii*) is highly unlikely on the ocean.

WHOOPER SWAN *Cygnus cygnus* (11, 1). An adult observed at King I., SJ, 9 Jan 2011 (DGY; 2011-179), along with a previous record near Stockton, SJ, 16 Dec 1988 (McCaskie and San Miguel 1999), establishes the southernmost record for California.

FALCATED DUCK *Anas falcata* (3, 1). The committee unanimously considered an adult male at Colusa N. W. R., COL, 2–22 Dec 2012 (CG†; CT†; 2012-196), the same as the one here 8 Dec 2011–10 Feb 2012 (2011-205), and this return was noted by Nelson et al. (2013). A similar male seen shortly thereafter at Sacramento N.W.R., GLE, 30 Dec 2012 (TSt; 2012-238), was agreed to be the same individual, as the sites are about 30 km apart.

KING EIDER *Somateria spectabilis* (41, 1). A first-winter male at Elkhorn Slough, MTY, 27–28 Dec 2012 (LMa†; 2012-249), was photographed alive from a tour boat on 27 Dec by an unknown person, then shot by a hunter the next day. The specimen, if preserved, remains in private hands.
ARCTIC LOON *Gavia arctica* (9, 2). An apparently ill adult at the Palo Alto Baylands, SCL, 12 Nov 2010 (ST†; 2010-192), was accepted on a vote of 8–1. An adult (fide P. Pyle) at the mouth of San Simeon Cr., SLO, 13–15 Jan 2012 (CAM†; DWA†; BB†; TME†; GMcC; BL†; CT†; 2012-006), was extensively photographed; a photo was published in *N. Am. Birds* 66:344. IDENTIFICATION NOT ESTABLISHED: The report of one on Camanche Reservoir, SJ, 2–22 Jan 2011 (2011-274), would have been California’s first inland; good details were provided, but three members felt they were not conclusive. The bird was described as having a “smudgy” and barely complete chin strap; it is not clear whether Arctic Loons ever show such a mark (a chin strap is shown by most Pacific Loons, *G. pacifica*).

YELLOW-BILLED LOON *Gavia adamsii* (94, 3). This species continues to appear annually, most frequently along the central coast. First-winter birds were at Del Monte Beach in Monterey and Seaside, MTY, 31 Jan–8 Feb 2012 (BJW; RBe†; DR†; BLS; 2012-013), and at Monterey harbor, MTY, 30 Dec 2012–3 Jan 2013 (BTM; DR; 2012-250). One was at Half Moon Bay, SM, 11 Aug 2012 (LK; AJ, JMu†, DSS†, SBT, MV†; 2012-113); a handful of these loons have remained into the summer, but this is only the fourth to be discovered in mid-summer. IDENTIFICATION NOT ESTABLISHED: One at Monterey harbor, MTY, 10 May 2012 (2012-098), was nearly accepted on the first round under the presumption it was the same bird as 2012-013, seen three months earlier. However, the relatively brief description (the bird was seen without optics from a paddleboard) and the long gap after the last documentation of the earlier bird eventually whittled the “accept” votes down to three. A loon photographed at the municipal wharf, Santa Cruz, SCZ, 10 Nov 2011 (2011-229) was more likely a Common Loon (*G. immer*).

SHORT-TAILED ALBATROSS *Phoebastria albatrus* (38**, 1). One in its first spring 9.7 km southwest of Noyo Harbor, Ft. Bragg, MEN, 20 May 2012 (RHD†, KAH, RJK†, MMa†, DWN†, DTo; 2012-082), had been banded before fledging, 21 Apr 2011, on Torishima I., Japan.

GREAT-WINGED PETREL *Pterodroma macroptera* (5, 1). One photographed, remarkably, from shore at Pt. La Jolla, La Jolla, SD, 18 Dec 2012 (GN†; 2012-209), was two months later than the previous late summer and fall records; even more astounding was the quality of the photographs (one published in *N. Am. Birds* 67:368). Plumage characters confirm that the bird was of the subspecies *gouldi* (the Gray-faced Petrel, considered by Onley and Scofield (2007) and Howell (2012) to be specifically distinct from the Great-winged); all California records appear to pertain to this taxon. IDENTIFICATION NOT ESTABLISHED: The report of one 11.2 km off Half Moon Bay, SM, 17 Sep 2011 (2011-269), received no support; two observers who saw the bird briefly submitted documentation, but the primary observer (who had considerable previous experience with the species) did not, so the record was inadequately documented.

HAWAIIAN PETREL *Pterodroma sandwichensis* (19, 5). A pattern of regular use of the far offshore waters by this species, as distinguished from the Galapagos Petrel (*P. phaeopygia*), from April to September continues to crystallize as records accumulate. Here we add birds 232 km southwest of Pt. Arguello, SBA, 23 Apr 2012 (GSM†; 2012-076); 62 km southwest of Año Nuevo, SM, 9 May 2012 (PEL; 2012-078); 43 km west-southwest of Pigeon Pt., SM, 25 Aug 2012 (MDt S; CD†, MR†, DSS; 2012-115); 48 km west-southwest of Pillar Pt. Harbor, SM, 8 Sep 2012 (MDt; TG†, AJ, DSS; 2012-122); and over Bodega Canyon, off Bodega Bay, SON, 21 Sep 2012 (TC†; 2012-138). All these records except that for 9 May included photos that eliminated the Galapagos Petrel; the sight record involved a bird close to a large cruise ship, with the head pattern seen well. Increasing coverage well offshore from the stable decks of cruise ships is showing the Hawaiian Petrel to be a regular part of...
our pelagic avifauna. It and the “Galapagos/Hawaiian Petrel” category were removed from the review list at the committee’s 2013 meeting.

*GALAPAGOS/HAWAIIAN PETREL Pterodroma phaeopygia/sandwichensis (29, 3). Sight records in which the Galapagos Petrel could not be eliminated were made 141 km west-southwest of Point Sur, MTY, 28 Apr 2012 (GSM S; 2012-077); 48 km west of Southeast Farallon I., SF, 9 May 2012 (PEL; 2012-079); and 199 km west of the Farallon Is., SF, 24 Aug 2012 (GSM S; 2012-145). As noted above, there is a clear pattern of dispersal of the Hawaiian Petrel to waters off California, whereas the Galapagos Petrel is so far not known to range north of 20° N off Middle America (Howell 2012).

STREAKED SHEARWATER Calonectis leucomelas (18, 0). IDENTIFICATION NOT ESTABLISHED: One seen on the water and briefly in flight in fog 72 km off Pt. Reyes, MRN, 27 Sep 2011 (2011-255), was documented by a single observer. While a majority of committee members supported the identification in the first round, concerns about the brevity of observation and some aspects of the description led to non-acceptance.

CORY’S SHEARWATER Calonectris diomedea (2, 0). IDENTIFICATION NOT ESTABLISHED: If accepted, the report of one from the Newport Beach pier, ORA, 27 May 2012 (2012-089) would have been only the third for the eastern Pacific Ocean. However, the distance of observation (1.5 km) precluded photo-documentation and analysis of some key characters.

RED-TAILED TROPICBIRD Phaethon rubricauda (34, 1). Although no strong winds were associated with the northward passage of the remnants of Tropical Storm Paul into southern California, Magnificent Frigatebirds nonetheless appeared in the storm’s wake. Twenty-four, including an adult male, an adult female, and 22 first-year or second-year birds, were at La Jolla and Coronado, SD, 18 Oct 2012 (JK†; DWA†, AAr†, EGK†, GMcC, JMMc†; 2012-160); the same movement brought a single individual in its first fall to Pt. Dume, Malibu, LA, 18 Oct 2012 (KR†; 2012-161). The La Jolla/Coronado group was the largest ever noted in California, eclipsing a flock of 22 at the north end of the Salton Sea 29 Jul 1979 (Patten et al. 2003).

MASKED BOOBY Sula dactylatra (17, 1). One in its second fall was seen and photographed in flight at the San Lorenzo R. mouth, SCZ, 17 Nov 2012 (JFG†; 2012-187); the “dusky-greenish yellow bill, with no pink or orange hues,” though difficult to discern in the photos, was sufficient to eliminate the Nazca Booby.

MASKED/NAZCA BOOBY Sula dactylatra/granti (12, 1). A subadult seen from Pt. La Jolla, La Jolla, SD, 23 Dec 2012 (BR; PT†, SWa; 2012-221), was clearly of this species pair. Although the bill was described as “pale tangerine” by one observer (implying the Nazca), the bill color was noted by the other observers simply as “pale” and is not apparent in the rather poor photographs. IDENTIFICATION NOT ESTABLISHED: A distant bird scoped from Pt. La Jolla, La Jolla, SD, 9 Nov 2012 (2012-204), was not seen well enough for other black-and-white sulids to be eliminated.

BLUE-FOOTED BOOBY Sula nebouxii (114**, 2). An unseasonal bird was at Carlsbad, SD, 30 Apr 2012 (JMMc†, BMu; 2012-062). One at Obsidian Butte, south
end of the Salton Sea, IMP, 7 Oct 2012 (BJS†; 2012-154), was within the more typical late summer and early fall window of occurrence.

**RED-FOOTED BOOBY** *Sula sula* (19, 1). A first-year or second-year bird was photographed from a whale-watching boat 5 km west of Mission Bay, SD, 23 Sep 2012 (MGa†; 2012-140).

**NORTHERN GANNET** *Morus bassanus* (1, 1). Completely unexpected was an adult found among the massive seabird colonies (primarily of the Common Murre, *Uria aalge*) on Southeast Farallon I., SF, 25 Apr 2012 and seen intermittently to at least October 2014 (PW; BED†, GMcC, TMGf†, LS†, BJS†, SWf†; 2012-058; Figure 1; photo also published in *N. Am. Birds* 66:574 and on the cover of *W. Birds* 44[1]). This individual, the first for the entire Pacific Ocean, was subsequently seen on a rock along the shore of southern Marin Co. in late October 2013, and in the spring of 2014 it took up part-time residence in a cormorant colony at Alcatraz I. within San Francisco Bay. Gibson et al. (2013) discussed sight records northwest of Barrow, Alaska, 16–17 August 2010, and Day et al. (2013) discussed these sightings in the context of changing seabird distributions in that region. Large-scale reductions in arctic pack ice have conceivably introduced a dispersal route for the gannet [and other seabirds? See Able et al. (2014)] from the North Atlantic to the Pacific. Cross-continental vagrancy seems far less likely, with interior records no closer than northern Arkansas (*N. Am. Birds* 59:608).

**NEOTROPIC CORMORANT** *Phalacrocorax brasilianus* (44, 10). Records of this increasing species continue to accumulate in southeastern California, and with a considerable sigh of relief (due to the difficulty of resolving “same bird” issues) the committee removed it from the review list at its 2014 meeting; since the species’ removal, single-day counts at the south end of the Salton Sea in spring 2014 have ranged up to 31 birds! The committee considered one at Ramer L., IMP, 3 Feb–17 Mar 2012 (GMcC; TJ†; 2012-016) to be the same as one of the birds previously accepted under record 2011-048 (Nelson et al. 2013). An adult and a one-year-old bird were at the west end of Young Road on the south shore of the Salton Sea, IMP, 27 Jun–8 Jul 2012 (GMcC; AR†, SBT†, STu†; 2012-099). Two adults and a one-year-old bird were at the north end of Lack Road on the south shore Salton Sea, IMP, 21 Jul–9 Oct 2012 (HK†; KLG†, GMcC, CMcF†, BJS†, ET†, STu†; 2012-110), the latter considered to be the same bird as in record 2012-099. A two-year-old bird was at Fig Lagoon, IMP, 30 Jun–5 Aug 2012 (GMcC; 2012-100). Another two-year-old bird was at the Alamo R. mouth at the south end of the Salton Sea, IMP, 26 Jul–26 Aug 2012 (GMcC; 2012-107). An adult was along Schrimpf Road at the south end of the Salton Sea, IMP, 9 Oct 2012 (GMcC; 2012-157). One at Fig Lagoon, IMP, 13 Sep 2012 (JMMc†; 2012-133), was accepted in its third round despite a single poor photo and brief description. Along the lower Colorado R., single first-spring birds were at Imperial Dam, IMP, 18 Apr 2012 (DVP; 2012-055) and L. Havasu, SBE, 5 Apr 2012 (LH; 2012-097). An adult at Parker Dam, SBE, 12 Dec 2012 (DVP†; 2012-203) was considered to be the same as the one there 3 Dec 2011–21 Jan 2012 (2011-201; Nelson et al. 2013). IDENTIFICATION NOT ESTABLISHED: One at Fig Lagoon, IMP, 28 Oct 2012 (2012-169) was described only briefly.

**TRICOLORED HERON** *Egretta tricolor* (62**, 1). A juvenile at the mouth of Salt Cr., RIV, 5–18 Aug 2012 (CMcG†; TABe; 2012-111), is the 22nd recorded at the Salton Sea since 1990; six of these are from the Riverside Co. portion.

**YELLOW-CROWNED NIGHT-HERON** *Nyctanassa violacea* (66, 11). The committee struggled with a series of records from the San Diego area; because there is now a breeding population here, individuals and record numbers are difficult to track, and records after 2012 are no longer reviewed. Two adults at the Imperial Beach Sports Park, Imperial Beach, SD, 17 Dec 2011–29 Jul 2012 (PEL; GMcC, JPe†; 2011-254),
were noted by Nelson et al. (2013) as being considered individuals accepted as juveniles in previous years from this site (where the species has nested since 2006). At its January 2013 meeting, however, the committee agreed that juveniles are normally chased away from the nest site after fledging and do not return. Reconsidering the record, the CBRC concluded these most likely constituted two new, previously unreviewed individuals. Two nests at this park, one in an ash tree (*Fraxinus* sp.) and one in a pine (*Pinus* sp.), contained three young each in 2012: 6 Jun–15 Jul 2012 (JPe†; GMcC; 2012-086) and 17 Jun–24 Jul 2012 (GMcC; CAM†, JPe†; 2012-095). Two adults, differing slightly in leg color, around the San Diego R. mouth, SD, 29 May–10 Sep 2012 (JPe†; TABIt†, ART; 2012-083), were considered to be the same two as were there 28 Apr–7 Sep 2011 (2011-062) and in prior years (Nelson et al. 2013; photo in *N. Am. Birds* 66:733). An adult at Sea World, San Diego, SD, 9 Jul–5 Sep 2012 (JPe†; 2012-105) was considered the same bird as that seen there in 2009, 2010, and 2011 (2011-100; Nelson et al. 2013). Another at Sea World 2 Dec 2007 (TO; 2007-309), was considered to be the same bird as at nearby Famosa Slough, 7 Aug 2007 (2007-166). Away from the San Diego area population, one in its first fall was at the Bolsa Chica Ecological Reserve, ORA, 11 Nov 2012–20 Jan 2013 (TABe†, RCa†, JLD, ABL†, SMo; 2012-183).

**WHITE IBIS** *Eudocimus albus* (6, 3). An adult at the Baker sewage ponds, SBE, 31 Aug–6 Sep 2012 (JBo†; TABe†, JLD, RHo†, GMcC, SJM†, MSr†; 2012-117; photo in *N. Am. Birds* 67:159) was the first for the Mojave Desert. A similar adult appeared at L. Jocelyn, Carpinteria, SBA, 23 Sep–5 Oct 2012 (EBCS; JLD, GMcC, JMo†, HPR†, DR†, BKSt†; 2012-141). Because both birds were in worn plumage with brown-stained wing coverts and not molting, unusual for adult White Ibises at this time of year, there was considerable discussion as to whether the Baker and Carpinteria records involved the same individual, possibly an escaped captive, but ultimately the majority of the committee rejected these hypotheses. In part on the basis of these new records, the committee reconsidered the record of an adult at Bolinas and San Rafael, MRN, 14 May–9 Sep 1971 (JWn; LCB, EO†; 1981-014), previously not accepted on the grounds of questionable natural occurrence (Morlan 1985); the recent review resulted in a unanimous acceptance. **NATURAL OCCURRENCE QUESTIONABLE:** Also re-reviewed was a record previously not accepted (105-1978; Binford 1983) of a White Ibis in Malibu Canyon, LA, from about one month before 22 Apr 1978 until sometime in May 1978, then at Pt. Mugu/Santa Clara R., VEN, from 6 Jun 1978 until 22 Dec 1979, when collected (LACM #90516). Because the species was known to have been kept in captivity at nearby Busch Gardens in the San Fernando Valley, LA, with some accounts of free-flying individuals, the record did not gain acceptance on re-review even in light of the other accepted coastal records.

**BLACK VULTURE** *Coragyps atratus* (7, 0). One adult near Goleta, SBA, 23 Jul–29 Nov 2012 (WTF†; DMC†, MSm; 2012-106) was judged to be the same as the one in Santa Barbara and Ventura counties since Sep 2009 (2009-156). Similarly, an adult at Lompoc, SBA, 22 Feb 2011 (KHo; 2011-033), was considered the same as 2011-004 at Buellton, 14 Jan 2011, as was one in Vandenberg Village and Lompoc, SBA, 21 Sep-15 Dec 2012 (BKS†; KHo, PK, PSc†; 2012-137). **IDENTIFICATION NOT ESTABLISHED:** One reported at Mission Canyon in Santa Barbara, 16 Feb 2012, and later at Goleta, SBA, 17 Mar 2012 (2012-024), was considered inadequately documented, as was one over the Verdugo Hills, LA, 7 Nov 2012 (2012-179).

**MISSISSIPPI KITE** *Ictinia mississippiensis* (46, 1). A one-year-old bird was in the Tijuana R. Valley, SD, 1–2 Aug 2012 (PM†; JMMc†, GMcC, VM†, STu†; 2012-109; photo in *N. Am. Birds* 66:752). Another one-year-old bird at Mast Park in Santee, SD, 9 Jul 2011 (BJSt†; 2011-275), was initially submitted to www.iNaturalist.org
COMMON BLACK HAWK Buteogallus anthracinus (7, 1). An adult at Parker Dam, SBE, 6 Apr 2012 (TJ†; 2012-047), joins three previously accepted spring records for the deserts of southern California.

*HARRIS’S HAWK Parabuteo unicinctus (67**, 3). Three chicks were produced by the long-staying adults at Jacumba, SD, with the first chick noted on 9 May, all three chicks visible in the nest by 22 May, and all three found newly fledged on 27 Jun 2012 (EGK†; GMcC; 2012-070). IDENTIFICATION NOT ESTABLISHED: One at Indian Wells, RIV, 10 Mar 2012 (2012-035), was described only briefly. NATURAL OCCURRENCE QUESTIONABLE: One at Ft. Rosecrans National Cemetery, Pt. Loma, SD, 29 Oct 2011 (TRoS†; 2011-160), was met with divided opinion, as the coastal locality raised the specter of escape from captivity, and at least two committee members believed that a band was visible on one leg in the photo.

GRAY HAWK Buteo plagiatus (1, 1). A juvenile remained in the vicinity of Santa Claus Lane on the west side of Carpinteria, SBA, 25 Nov 2012–15 Mar 2013 (EBC†; DAB†, Jc†, JLD, JSS†, WT†, NG†, RHo†, OJ†, GMcC, JMo†, LS†, BKS†, CT†, SBT†, MT&D†; 2012-193; Figure 2), establishing the first accepted record for California. A flight photo was published in N. Am. Birds 67:183. Characters distinguishing this species from its sibling species B. nitidus, the Gray-lined Hawk, found from Costa Rica through much of South America, were discussed by Millsap et al. (2011). This individual returned in adult plumage for the winter 2013–14, using many of the same hunting and resting perches. The Gray Hawk breeds in Arizona as far west as Gila Co. (Corman and Wise-Gervais 2005) and Maricopa Co. (http://www.azfl.org/seasonalReports%5C2009_spring.html#SouthCentralSpring2009): recent spring and summer sightings reported to www.eBird.org extend north to Yavapai Co. Populations have increased during the current century with protection and management of riparian habitats (Corman and Wise-Gervais 2005). The species withdraws almost completely from Arizona and Sonora in winter, being present mainly from mid-March to September (Phillips et al. 1964, Russell and Monson 1998). Vagrancy within the U.S. has been limited, but two records for Kansas (a sight record in Geary Co. 15–16 Apr 1990 [N. Am. Birds 44:455] and of one photographed in Sedgwick Co. 20–30 Oct 2005 [N. Am. Birds 60:95]) were accepted by the Kansas Bird Records Committee (http://www.ksbirds.org/ksos/ksos_kbrc.htm). IDENTIFICATION NOT ESTABLISHED: The report of an immature flying over the Marin Headlands, MRN, 10 May 2012 (2012-072) was inadequately documented.

*YELLOW RAIL Coturnicops noveboracensis (85**, 1). One was at Tomales Bay near Inverness, MRN, 23 Dec 2003 (BSh; 2003-206). The CBRC ceased review of records of this species after 2003.

COMMON CRANE Grus grus (2, 1). An adult at Modoc N.W.R., MOD, 27 Dec 2012 (JHK†; 2012-231) was with an adult Sandhill Crane (G. canadensis) and two immature cranes, which some CBRC members thought might represent hybrid offspring. The photos (see N. Am. Birds 67:334) do not appear to show any bands. What was likely the same adult Common Crane and family group was seen at Overton, Nevada, 15 Jan–5 Feb 2013 (N. Am. Birds 67:321). The Modoc record comes closely on the heels of California’s first accepted record (2011-065), of one at L. Earl, DN, 5–8 May 2011 (Nelson et al. 2013).

WILSON’S PLOVER Charadrius wilsonia (21, 1). A one-year-old bird was at Border Field State Park, Imperial Beach, SD, 14 Jun–1 Jul 2012 (MSa†; CAM†, GMcC, JPa†, BJSt†; 2012-093). Thirteen of California’s 21 records are for San Diego Co., and all but one of those are between 24 March and 1 July.
WOOD SANDPIPER *Tringa glareola* (2, 1). A juvenile was near the Santa Margarita R. 2.4 km east of the river's mouth, Camp Pendleton, SD, 24–29 Sep 2012 (BMu; AF†, GMcC, JMMc†; 2012-142; Figure 3; photo also published in *N. Am. Birds* 67:160), establishing California’s second accepted record. The first, of an adult, also on a military base, at China L., KER, 22–23 May 2007 (2007-119; Singer and Terrill 2009), still represents the only spring record for the Pacific states and provinces south of Alaska. Most of the four other records are of juveniles in fall (Howell et al. 2014), like that for Camp Pendleton in 2012.

BAR-TAILED GODWIT *Limosa lapponica* (41, 2). Single juveniles were at Montaña de Oro State Park, SLO, 7 Sep 2012 (KJZ†; 2012-123) and the Santa Clara R. Estuary, VEN, 18 Sep 2012 (DPe†; 2012-216). One member raised the possibility that these two records represented the same individual (the localities are about 200 km apart), but the committee elected to consider them different.

CURLEW SANDPIPER *Calidris ferruginea* (43, 2). A one-year-old bird, lacking any chestnut alternate plumage and molting the secondaries, was at the south end of San Diego Bay, SD, 16 Jun–17 Jul 2012 (PEL; ARA†, CAM†, GMcC, SES, MSr†; 2012-094). An alternate-plumaged adult was at Westside Park, Bodega Bay, SON, 20 Sep 2012 (GBe†; 2012-135). The bird at Bodega Bay occurred at the peak time of fall records of this species, but the one at San Diego Bay was the first recorded in California in June. IDENTIFICATION NOT ESTABLISHED: The report of one on the south shore of the Salton Sea, IMP, 29 Jun 2012 (2012-112) was documented inadequately. Another from the Ventura County Game Preserve, VEN, 6 Apr 2012 (2012-048) ultimately failed 7–2 on the fourth round.

RED-NECKED STINT *Calidris ruficollis* (14, 0). IDENTIFICATION NOT ESTABLISHED: The documentation of a bird on the south jetty of Humboldt Bay, HUM, 1 Sep 2012 (2012-144), was inadequate, though it was described as retaining much alternate plumage. A supposed juvenile Red-necked Stint photographed at the Ventura County Game Preserve, VEN, 29 Aug 2010 (2010-191) was agreed by all to be a relatively bright Semipalmated Sandpiper (*C. pusilla*).

LITTLE STINT *Calidris minuta* (21, 2). Adults retaining alternate plumage were at the Alexandre Dairy near Ft. Dick, DN, 10 Jul 2012 (KMB†; JCS†; 2012-101) and Arcata Marsh, Arcata, HUM, 29–30 Jul 2012 (TK†; CSB, RF; 2012-108). Two-thirds of California’s Little Stints have been recorded since 2006, likely reflecting greater awareness of the species’ status and characters rather than a change in its abundance or distribution.

WHITE-RUMPED SANDPIPER *Calidris fuscicollis* (26, 1). One was at the Bolinas sewage ponds, MRN, 11 Nov 2012 (MDe, RD†, JMi, SBT†; 2012-207). Even at this late date, which exceeds California’s latest by nearly a month, the bird was an adult. Although the juvenile plumage remains unrecorded in the state, two juveniles were photographed at Shafter Lake, northwestern Texas, 16 Oct 2008 (*N. Am. Birds* 63:118), raising the possibility of California records in the future.

COMMON SNIPE *Gallinago gallinago* (1, 0). IDENTIFICATION NOT ESTABLISHED: Snipes at Inverness, MRN, 3 Nov–17 Dec 2011 (2011-207) and Centerville Beach, west of Ferndale, HUM, 16 Jan 2012 (2012-008) were reported as the Common by observers specifically checking concentrations of Wilson’s Snipe’s (*G. delicata*) for apparent Common Snipes. These reports are from the same winter as the one accepted California record (2011-215, 11 Dec 2011; Nelson et al. 2013). However, the inadequacy of the photos (understandable given the difficulty of photographing a snipe in flight) and reliance on fewer diagnostic characters than available on a bird in the hand (as in the accepted record) led to lack of acceptance. One key character, the relative amount of white and black on the underwings, varies considerably in the
Common Snipe (Minias et al. 2014), though there is no indication that Wilson’s shows the extensively white underwings typical of most Common Snipes. The extent and pattern of white on the trailing edge of the secondaries, broader and more “scalloped” on the Common than on Wilson’s, is perhaps the most diagnostic feature. Photos of the birds at Inverness Park appear to show both whitish underwings and a pattern of the secondaries resembling the Common Snipe’s, but the committee believes variation in these features is insufficiently understood for this record to be accepted at this time.

**LONG-BILLED MURRELET** *Brachyramphus perdix* (30, 1). An adult seen and photographed on Humboldt Bay, HUM, 22 Apr 2012 (JKJ†; 2012-060) represents California’s only accepted spring record. Several members commented on the relatively poor quality of the photograph and lack of any accompanying description, while one member did not endorse the record because of possible overlap in appearance with transitional plumages of the Marbled Murrelet (*B. marmoratus*).

**PARAKEET AUKLET** *Aethia psittacula* (293, 207). The CBRC discontinued reviewing records of the Parakeet Auklet after 2012 because of an increase in reports far offshore of this irruptive species. This increase is likely due to more frequent trips to deep waters off northern California rather than to an actual range expansion. A group of four were seen off San Mateo, SM, 10 May 2011 (MH S; 2011-272); up to 200 were seen in deep water off Humboldt and Del Norte counties, 17 Apr 2012 (PEL; GMcC, RM†, BJS†; 2012-054); two were seen 74 km west of Big Lagoon, HUM, 10 May 2012 (PEL; 2012-080); one was seen 43 km west of Cape Mendocino, HUM, 25 Oct 2012 (PEL; 2012-176). One member voted against acceptance because of the brevity of the observation and lack of bill detail seen and described; multiple members also noted the unusual date. IDENTIFICATION NOT ESTABLISHED: One 8 km west of Bodega Bay, SON, 28 Jan 2012 (2012-178) was seen poorly and no details of the head or bill were noted; most members found the description inadequate.

**LITTLE GULL** *Hydrocoloeus minutus* (108, 1). One in its first fall 15 km northwest of Pt. Pinos, MTY, 9 Sep 2012 (MDo†; JHl†, DR†, DSS, MV†; 2012-128), provided Monterey Co. with its first fall record and fifth overall.

**ICELAND GULL** *Larus glaucoides* (15, 4). The Iceland Gull complex continues to plague the committee with difficult records; uncertainties regarding identification criteria and taxonomic status render consistent treatment of Iceland-type gulls difficult at best (CBRC 2007; Pyle et al. 2011a). Nevertheless, the committee endorsed four records in 2012. One in its first winter was at Ft. Baker, Sausalito, MRN/SF, 2–9 Feb 2012 (SCH†; DSS†, LB†, MB†, JMo†; 2012-015). An adult was at the Davis wastewater-treatment plant, YOL, 9–19 Mar 2012 (SCH†; ToE†; 2012-036)—members’ opinions leaned toward the far less expected nominate *glaucoides*, but the committee does not make formal decisions on subspecific taxa. A second-winter individual at Vernalis, SJ, 24 Mar 2012 (DGY†; 2012-096), was accepted after three rounds; members were concerned with the bird’s large size and the possibility it may have been a Glaucous Gull (*L. hyperboreus*). Obviously small Iceland Gulls, likely females, have been more readily endorsed in the past (Nelson et al. 2013); acceptance of larger individuals such as that at Davis, likely males, may increase in the future as the status of the Iceland Gull in California is clarified. A fresh-plumaged first-winter bird was at the mouth of Baldwin Cr., SCZ, 15–16 Nov 2012 (JPG†; 2012-185; photo published in *N. Am. Birds* 67:155). Previously accepted records extend from 4 December to 14 March (Nelson et al. 2013); these new records expand this interval from 15 November through 19 March. IDENTIFICATION NOT ESTABLISHED: A single-observer sight record of a third-winter bird at Jenner, SON, 8 Jan 2012 (2012-011), received limited support. A first-winter bird at Napa Valley College, NAP, 5–6 Feb 2012 (2012-037) may have been a hybrid Glaucous-winged (*L. glaucescens*) × Glaucous Gull or another combination. A second-winter bird photographed at the Yolo...
Co. landfill near Davis, YOL, 1 Mar 2012 (2012-034), was not accepted because of some members’ concerns that wear late in the winter could account for a Thayer’s Gull (L. thayeri) appearing so pale and the bird’s large size, especially its bill. A report of a bird of unknown age from Oceano, SLO, 16 Mar 2012 (2012-038), received no support, as it lacked sufficient detail and any photos.

*LESSER BLACK-BACKED GULL Larus fuscus* (113, 18). The number of records of the Lesser Black-backed Gull has met the committee’s criterion for a species’ removal from the review list—the species has been steadily increasing since California’s first documented record in 1978 (CBRC 2007). The CBRC has discontinued reviewing records after 2012. Listed here are 18 new records and two records of previously accepted individuals continuing. One adult at Salton Sea State Recreation Area, RIV, 8 Dec 2011 (CMcG†; 2011-248) was examined in detail with respect to whether it represented another individual long present at this location; differences in bill coloration showed it to be a new bird. Birds in their third winter or older were at Rock Hill, Salton Sea, IMP, 7 Jan 2012 (CMcG; 2012-003), at the northwest corner of the Salton Sea, RIV, 15 Jan 2012 (RMcK S; 2012-041), and at the San Leandro marina, ALA, 22 Jan 2012 (NA†; 2012-066). A first-winter bird was at Malibu Lagoon, LA, 19 Feb 2012 (TMcG; 2012-044). The leg color of a third- or fourth-winter bird photographed at Oceano County Park, Oceano, SLO, 16 Mar 2012 (TME†; 2012-039), was muted, eliciting inconclusive speculation about a possible origin in Asia or hybridization with one of the large pink-legged gulls. A second-winter individual and an adult were in south San Diego Bay, SD, 21–23 Mar 2012 (MSa†; 2012-042), and 21–24 Mar 2012 (MSa†; GMcC; 2012-043), respectively. A relatively large-billed adult was well photographed at Folsom L., PLA, 28 Mar–3 Apr 2012 (GE†; 2012-046). One in its second winter at the Davis water-treatment plant, YOL, 30 Mar 2012 (JCS†; 2012-245), was accepted on the basis of one poor photograph and no written details; unfortunately, the lack of written details accompanying photographic submissions is a continuing trend in the documentation of rarities; the committee urges observers to include written descriptions in addition to photographs, as such details may be of great use in judging a record’s validity. Individuals in their first spring were at the north end of Poe Road, Salton Sea, IMP, 10–19 Apr 2012 (GMcC; 2012-025), and at Corvina Beach, Salton Sea, RIV, 12 May 2012 (CMcG†; 2012-073); a one-year old bird was at the south end of the Salton Sea, IMP, 13 Jul–21 Sep 2012 (GMcC; HK†; 2012-102). An adult at Obsidian Butte, IMP, 15 Sep–10 Dec 2012 (GMcC; 2012-134), was considered the same as the one there 18 Sep–9 Nov 2011 (2011-133; Nelson et al. 2013). An adult was at Oyster Bay, San Leandro, ALA, 14 Nov 2012 (NA†; 2012-186); another was at the Yolo Co. landfill, YOL, 8 Dec 2012–9 Jan 2013 (SCH†; 2012-199). A third-winter individual was at Morgan Hill, SCL, 22–23 Dec 2012 (SCR†; 2012-222). An adult at the Norco Egg Ranch, Norco, RIV, 26 Dec 2012–9 Mar 2013 (CMcG†; MG†, SRe†; 2012-232), was considered a returning bird, previously recorded 28 Dec 2010–26 Mar 2011 and 19 Nov 2011–13 Jan 2012 (2011-193; Johnson et al. 2010, Nelson et al. 2013); a first-winter bird, also at the Norco Egg Ranch, was present from 27 Dec 2012 through 26 Feb 2013 (DWl†, HK; 2012-233). Finally, an adult was at Folsom L., PLA, 28 Dec 2012 (JLD; BW; 2012-239).

SLATY-BACKED GULL Larus schistisagus (49, 6). Submitted photographs of an adult at Ferry Pt., CC, 11 Feb 2011 (ToE†; 2011-244), lacked an accompanying description and did not show the wings spread, but what could be ascertained in the photographs was ultimately judged sufficient. A total of seven individuals were recorded in 2012, one of which is considered a bird from 2011 returning. An adult at Pacific Commons in Fremont, ALA, 31 Jan 2012 (JTT†; 2012-065), was considered the same as the one present 17–29 Nov 2011 (2011-180; Nelson et al. 2013). A dark-eyed second-winter bird was at the mouth of Pilarcitos Cr., Half Moon Bay, SM, 30
Jan 2012 (AJ†; 2012-012), and what was considered the same individual was later at Don Edwards San Francisco Bay N.W.R., Alviso, SCL, 11–18 Feb 2012 (SCR†; 2012-064); some members were concerned about the darkness of the eyes, but their color appears to fall within the normal range of the species’ age-related change in eye color (A. Jaramillo pers. comm.). Adults were at Ft. Baker, MRN/SF, 7–9 Feb 2012 (ToE†; JMo†, DSS†; 2012-017), at San Gregorio State Beach, SM, 11 Feb 2012 (RTh†; 2012-059), and at Half Moon Bay, SM, 20 Feb 2012 (AJ†; 2012-027). An additional adult was at the mouth of the Russian R., SON, 20–21 Feb 2012 (ToE†; 2012-028), and a second bird at the same location 4 Mar 2012 (ToE†; 2012-033); these represented the first and second records, respectively, for Sonoma Co.

IDENTIFICATION NOT ESTABLISHED: The report of one at the Davis wastewater-treatment plant, YOL (2011-247), 5–21 Feb 2011 was not accepted because of the lack of a pale (or paling) eye on a second-winter individual (but see records 2012-012 and 2012-064), difficulty in assessing the darkness of incoming mantle feathers, and lack of the expected broad white tertial tips. The divergent opinions represented in two rounds of split votes (5–4, 4–5, respectively) illustrate the continuing difficulty in identifying four-year gulls in their first two years of life (Pyle et al. 2011a). The report of a second-winter individual at Half Moon Bay, SM, 23 Feb 2011 (2011-258), was ultimately not accepted because the photographs provided were inadequate to rule out possible hybrids involving the American Herring (L. argentatus smithsonianus) or Vega (L. a. vegae) Gulls. The report of a second-winter bird at Ft. Baker, MRN/SF, 7–9 Feb 2012 (2012-018) was ultimately not accepted because of its retarded plumage, apparently pale mantle feathering, and the possibility of hybridization, though its structure and wing pattern were consistent with the Slaty-backed Gull. The report of a third-winter bird at Drake’s Beach, MRN, 10–11 Feb 2012 (2012-023), was poorly documented. The report of an adult from the Davis wastewater-treatment plant, YOL, 9 Mar 2012 (2012-067), lacked photographs or written details regarding the wing pattern.

SANDWICH TERN Thalasseus sandvicensis (7, 0). IDENTIFICATION NOT ESTABLISHED. An adult Thalasseus in Chula Vista, SD, 12–15 Apr 2012 (2012-050), allowed for careful study and submission of excellent photographs. It had more yellow on the bill than expected of a Sandwich Tern of the expected subspecies T. s. acuflavidus, suggesting mixed parentage, so most members did not accept the record (see Pyle et al. 2011a). Hybridization between acuflavidus and the Elegant Tern (T. elegans) appears to be rare: these species have hybridized in California (Collins 1997), and birds presumed to be hybrids have been reported from the Elegant Tern’s main breeding colony on Isla Rasa in the northern Gulf of California (Velarde and Rojo 2012), two adult Sandwich Terns having been observed in this colony in 1986 and 2008 (Velarde and Tordesillas 2009). The possibility of a Cayenne Tern (T. s. eurygnatha) or a hybrid between the Sandwich and Cayenne terns was also raised; these two populations hybridize in the Caribbean where their breeding ranges overlap (Hayes 2004). If these subspecies of the Sandwich Tern are recognized at the species level, as proposed by Efe et al. (2009), the committee will have to revisit questions regarding hybridization and variation of the Elegant Tern and its close relatives.

COMMON CUCKOO Cuculus canorus (1, 1). A first-fall female Common Cuckoo in Watsonville, SCZ, 28 Sep–2 Oct 2012 (SGe; TABe†, BB†, JLD, TG†, KHa†, MJM†, GMCC, MMe†, DRM†, JMo†, WN†, MRT, DRT, BKST, PSo†, BJST, JCS†, BLST, STu†, JW†, CW†; 2012-147; Figure 4; photos published N. Am. Birds 67:184, and cover of W. Birds 44[2]), not only represented a first state record, it was just the second to be found in the contiguous United States. The Common Cuckoo is remarkably difficult to distinguish from the Oriental Cuckoo (C. optatus); where the two co-occur, many cuckoos are left unidentified to the level of species. Adults of both the Common and Oriental are of either a gray or a rufous morph, with the latter
restricted to females (Beaman and Madge 1998). One key distinction is that “hepatic” (rufous-morph) females and juveniles of the Common Cuckoo typically lack barring on the rump, while that barring is always present in corresponding plumages of the Oriental Cuckoo (Mullarney et al. 1999). The Santa Cruz bird had the white patch on the nape and narrow white dorsal fringes indicating juvenile plumage (Mullarney et al. 1999), and the rufous of newly molted formative scapular feathers identified it as a hepatic female. Thus the Oriental Cuckoo was excluded primarily on the basis of the unbarred rump, in conjunction with barred alula coverts, thin ventral barring, and lack of contrast on the pale, faintly barred underwing (Howell et al. 2014). The Common Cuckoo is a very rare to casual vagrant to islands in the Bering Sea, primarily in spring and early summer; the only fall record is of a juvenile on the Alaska mainland, 9–11 Sep 2008 (Tobish 2009). Farther afield, additional records have come from Martha’s Vineyard, Massachusetts, 3–4 May 1981 (Baicich 2010), Barbados, 5 Nov 1958 (Bond 1993), and Midway Atoll, northwestern Hawaiian Islands, 23 May 1997 (Pyle and Pyle 2009). The much scarcer Oriental Cuckoo has been recorded 14 times on islands off western Alaska and only once on the mainland (Howell et al. 2014). Curiously, in contrast to the clustering of Common Cuckoo sightings in spring, the large majority of Oriental Cuckoo records extend from late June through early October (Howell et al. 2014). The Oriental Cuckoo could occur in California, but occurrences of both species in Alaska have declined since 2000, perhaps implying a decline in the source population in northeastern Asia (P. E. Lehman in litt.).

ELF OWL *Micrathene whitneyi* (5**, 2). A nesting pair was at Corn Spring in eastern Riverside Co., 31 Mar–27 May 2012, a site that had been occupied by one or two birds during the breeding seasons of the preceding three years (DWN‡; MMa†, CMcC‡†; 2012-045; also 2010-050 and 2011-056; Nelson et al. 2013). Along the Colorado River in extreme southeastern Riverside Co., two additional owls were detected 400–500 m apart on 15 Apr 2012 but not on successive surveys of the area (RRa; 2012-252). See Johnson et al. (2012) for more information on the Elf Owl’s recent status in California.

*BARRED OWL* *Strix varia* (8, 0). IDENTIFICATION NOT ESTABLISHED: A bird heard in the Six Rivers N. F., HUM, 14–15 Jul 1976 (1976-502), was likely correctly identified, advancing this species’ appearance in California by five years (CBRC 2007). However, the calls weren’t the classic “who cooks for you?” advertising call and weren’t ascribed to this species until well after the fact, and the possibility of a hybrid with Spotted Owl (*S. occidentalis*) was not excluded. Furthermore, the committee is reluctant to accept a first state record based only on sounds heard by a single observer. The committee reviews records of the Barred Owl, still spreading as a resident in California, through 1989 only.


CRESTED CARACARA *Caracara cheriway* (11, 1). The six following records from 2012 all pertain to the same wandering adult as determined by detailed analyses of feather wear and molt timing (Nelson and Pyle 2013): Ballona Wetlands, LA, 13 Jan 2012 (RPi†; 2012-005); Pt. Piedras Blancas, SLO, 10–25 Feb 2012 (BB†; JD†, CAM; 2012-019); Pt. Sur, MTY, 30 Mar 2012 (SJ†; 2012-069); Mace Blvd., south of Putah Cr., YOL/SOL, 16–17 Apr 2012 (MSC; SCH†, SMA†; 2012-052); Pt. Mugu, VEN, 19 Dec 2011–6 Jan 2012 (FF†; AJS; 2011-239). The committee considered a different adult, first observed chasing Western Gulls (*L. occidentalis*) in the Tijuana R. valley, SD, 2–9 Sep 2012 (TF; EGK†, GMcC, GNT, MSr & CSr†; 2012-118), the same as the one present sporadically from 9 Sep 2006 through 1

GYRFALCON *Falco rusticolus* (12, 1). A first-winter Gyrfalcon was at the San Jacinto W. A., RIV, 15 Jan–9 Mar 2012 (MAC†; DWA†, TAB†, BH†, CAM†, GMcC, CMeC†, LMt†, SJM†, DW†, JT†; 2012-007; Figure 5; photo also published in *N. Am. Birds* 66:344). Amazingly, the same Gyrfalcon intercepted birdwatchers ~300 km to the north at Owens L., INY, 21 Mar 2012 (DH†; JLD†; 2012-056). Analysis of feather wear and plumage details confirmed that these two records involved the same individual. The record for Riverside Co. is the southernmost of this species for California and North America. Captive origin is always a concern with wayward raptors, as discussed in CBRC (2007). IDENTIFICATION NOT ESTABLISHED: The committee judged three sight records from Humboldt Co. inadequate: one from the Arcata Bottoms, HUM, 26 Sep 2011 (2011-268), one from Fay Slough W. A., 19 Mar 2012 (2012-090), and one from the mouth of Redwood Cr. 29 Sep–2 Oct 2011. A September date for the Gyrfalcon is unprecedented in California, and unexpected for a bird in its first fall, as the descriptions suggested. Note, however, that Gyrfalcon records from nearby Oregon begin from late September (Marshall et al. 2003).

YELLOW-BELLED FLYCATCHER *Empidonax flaviventris* (27, 4). A first-fall immature at Southeast Farallon I., SF, 1 Sep 2012 (DMt†; JRT, JW†; 2012-127) established the second-earliest fall date for the species in California. Fully a third of the state’s records have come from this rocky, barren island. Additional first-fall birds at Grasslands Regional Park, YOL, 2–3 Sep 2012 (ToE†; SCH; 2012-129); Nunes Ranch at Pt. Reyes National Seashore, MRN, 6–7 Sep 2012 (RSt; GH, DW†, DW†m; both 2012-121 and 2012-205); and Huntington Beach Central Park, ORA, 15–16 Oct 2012 (ToE†; DAB†, TAB†, BED†, JLD†, BS†; 2012-158), constituted first records for the respective counties. The latter date matches the latest for this species in California. IDENTIFICATION NOT ESTABLISHED: Documentation submitted for *Empidonax* flycatchers seen at Pt. Reyes National Seashore, MRN, 30 Sep 2006 (2006-226) and 4 Oct 2012 (2012-188) and at Desert Center, RIV, 10 Sep 2011 (2011-267) proved inconclusive. See Heindel and Pyle (1999) for useful identification criteria.

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer* (94, 6). An especially early first-fall migrant at Malibu Lagoon, LA, 9 Nov (AB†; 2012-242), was in the midst of its preformative molt. Additional apparent migrants were at Pt. Reyes National Seashore, MRN, 19 Nov 2012 (DSS†; 2012-198) and 6–8 Dec 2012 (AM†, DM†; 2012-237); in Arcata, HUM, 20–24 Nov 2012 (GB†; SF†; 2012-190); and near Hinds Pumping Station, RIV, 17–18 Dec 2012 (JY†; 2012-208). One in Niland, IMP, 6 Jan 2012 (GMC; 2012-002), was likely wintering. The first Dusky-capped Flycatcher known to return to California in successive winters (see Figure 8, Pike and Compton 2010), was back to La Mirada Cr. Park, LA, for the sixth consecutive year, 13 Dec 2012–20 Mar 2013, (SRe†; 2012-227; 2008-040, 2008-187, 2009-222, 2011-037, and 2011-233; Nelson et al. 2013). Another returned for its second winter, 18 Nov 2012–27 Mar 2013, to Veterans’ Memorial Park in Bell Gardens, LA (RB†; KT†, AW†; 2012-213; 2011-010; Nelson et al. 2013).

GREAT CRESTED FLYCATCHER *Myiarchus crinitus* (57, 2). A first-fall immature in Birchim Canyon, 16 km north of Bishop, INY, 6 Sep 2012 (DPr, JP†; 2012-201), was exceptionally early; another was at Natural Bridges State Beach, SCZ, 16–21
Sep 2012 (STu†; CST†; JBL†‡; SGe†; JLR†; JCS†; SBT†; 2012-132). The latter had almost completed replacing its primaries during its preformative molt, which typically takes place in the winter range (P. Pyle pers. comm.). IDENTIFICATION NOT ESTABLISHED: The report of one along the Pajaro R. in Watsonville, SCZ/MTY, 20 Sep 2012 (2012-139), garnered no support on the second round, as no calls were heard to help bolster the distant, equivocal photographs.

THICK-BILLED KINGBIRD **Tyrannus crassirostris** (22, 2). One in Otay Valley at the mouth of Poggi Canyon, Chula Vista, SD, 14 Oct 2012–14 Apr 2013 (GMcC, MSr†; 2012-163), was back for at least its third winter (2010-176 and 2011-184; Nelson et al. 2013). A first-year bird wintered in San Dieguito Valley 4 km east of Del Mar, SD 22 Dec 2012–26 Mar 2013 (PU; DB†; SBr†; GMeC, CSm†; 2012-220), while another first-year individual at El Dorado Park in Long Beach, LA, 19–25 Oct 2012, was evidently a migrant (DAB†, MMe†, KR†; 2012-164).

WHITE-EYED VIREO **Vireo griseus** (74, 5). A spring vagrant was banded at Audubon Starr Ranch, ORA, 29 May 2012 (CM, TSh†; 2012-087). Additional birds were in El Segundo, LA, 10–12 May 2012 (RBa†; FG†, ABL†, JRa†, DS†; 2012-071; photo published N. Am. Birds 66:557); Harbor Regional Park, LA, 12–15 May 2012 (JLS†; ABo†; 2012-087); and Galileo Hill Park, KER, 31 May–1 Jun 2012 (SLS; BK, KK†; 2012-085). One at Ft. Rosecrans National Cemetery on Pt. Loma, SD, 19 July–6 Oct 2012 (GN†; JLD, EGK†, GMeC, KR†, STu†; 2012-104), was one of very few White-eyed Vireos recorded summering in California. Since 2008, however, it is noteworthy that there have been more records of summering individuals (3) than of fall vagrants (2).

YELLOW-THROATED VIREO **Vireo flavifrons** (119, 1). The record of one at Inverness, MRN, 30 May 1987 (JA; 1987-501), had initially been assigned the number 1988-114, but the physical record had been lost. The committee reviews records of this species through 2007 only.

BLUE-HEADED VIREO **Vireo solitarius** (73, 4). San Diego Co. hosted fall migrants near Famosa Slough in San Diego, 24 Oct 2011 (PEL; 2011-153) and Lake O‘Neill, Camp Pendleton, 11 Sep 2012 (JMMc†; 2012-131). Another was in willows along Pecho Road near Los Osos, SLO, 20–21 Oct 2012 (JSR; ARA†, BB†, TME; 2012-166). A record of what was originally thought to be a bright Cassin’s Vireo (**V. cassinii**) wintering along the Wilmington Drain, Wilmington, LA, 26 Dec 2011 (DS†; 2011-273), was submitted following the acceptance of a Blue-headed Vireo at that location the following winter, 13 Jan–4 Mar 2013 (2013-006); it was a first-year bird in 2011 and an adult in 2013, and the committee considered it the same individual.

IDENTIFICATION NOT ESTABLISHED: The committee’s decisions not to accept records from Eureka, HUM, 23 Sep 2012 (2012-251), Harkins Slough, Watsonville, SCZ, 12 Oct 2012 (2012-167), and Bishop, INY, 15 Dec 2012 (2012-244), reflect its cautious approach with this difficult taxon. See Nelson et al. (2013) for additional information on the evolving criteria for identifying the Blue-headed Vireo.

YELLOW-GREEN VIREO **Vireo flavoviridis** (108, 5). Specimens preserved from San Diego, SD, received from wildlife rehabilitators, were one in North Park, 16 Sep 1996 (SDNHM #50241; 1996-179), and one near Tecolote Canyon in Clairemont, 3 Oct 2012 (SDNHM #53708; 2012-215). Also in fall 2012 were one on Pt. Loma, SD, 26–27 Sep 2012 (SESS; EGK†, GN†; 2012-146), and, in Ventura Co., one at Camarillo, 13 Oct 2012 (SBT†; 2012-165), and one near Oxnard, 24–28 Oct 2012 (TABe†, JC†, OJ, MMe†; 2012-168).

BLUE JAY **Cyanocitta cristata** (16, 1). One along Redwood Cr. near Arcata, 11 Jul 2012, was the sixth recorded in Humboldt Co., on a mid-summer date unprecedented for California (KL†; 2012-103). Previous records had extended from 7 Oct to 25
Figure 1. A first for California and the entire Pacific Ocean, this Northern Gannet (Morus bassanus) spent much of its time within a large colony of Common Murres (Uria aalge) on Southeast Farallon Island after its discovery on 25 April 2012. This photo was taken 24 June 2012 (2012-058).

*Photo by Todd McGrath*

Figure 2. California’s first accepted Gray Hawk (Buteo plagiatus) wintered near Carpinteria, Santa Barbara Co., 25 November 2012–15 March 2013 (2012-193). This photo, taken 25 December 2012, shows the considerable extension of the tail beyond the primary tips and extensively white cheeks, distinguishing it from the superficially similar juvenile Broad-winged Hawk (B. platypterus).

*Photo by Ronald Holland*
May. Washington has a mid-August record (Wahl et al. 2005), and the species has nested as close as northeastern Oregon (Marshall et al. 2003).

CAVE SWALLOW *Petrochelidon fulva* (9, 4). Two photographed at the southeast end of the Salton Sea, IMP, 18 Dec 2012 (AJS†; 2012-210), were later joined by two others, 12 Mar–6 Apr 2013 (GMcC; TABet†, ECh†, KLG, MGr†, RBMc†, JMo†; 2013-040). One found 5 km away on 30 Mar 2012 was considered part of this same wintering group (KLG†; 2013-061). IDENTIFICATION NOT ESTABLISHED: A worn one-year-old bird photographed in Mountain View, SCL, 4 Aug 2011 (2011-113), prompted much debate before ultimately failing to gain acceptance on its fourth round. The described “pumpkin” coloration of the forehead and rump was more appropriate for the Cave Swallow than for the similar Cliff Swallow (*P. pyrrhonota*), but this was not evident in the lone photograph provided to the committee. Most intriguing was the presence of newly molted inner primaries, as juveniles of neither species should be molting flight feathers in early August (Pyle 1997). By contrast, one-year-old Cave Swallows could be molting those feathers in late summer, whereas one-year old Cliff Swallows are not currently known to do so (Pyle 1997). Committee members Johnson and Pyle argued persuasively, however, that the outermost visible primary was likely a retained juvenile feather, a remnant of a previous incomplete preformative molt. Thus the worn condition of this one-year-old bird could be explained by its being a Cliff Swallow showing delayed plumage maturation and undergoing an early second prebasic molt. The Cave Swallow remains unrecorded in northern California.

WINTER WREN *Troglodytes hiemalis* (12, 4). One with grayish coloration from chin to breast wintering at Huntington Beach Central Park, 30 Oct–30 Dec 2007 (JEP†; CAM; 2007-310), was the first recorded in Orange Co.; its calls were variously compared to those of the Red Crossbill (*Loxia curvirostra*) and Song Sparrow (*Melospiza melodia*). Additional pale-throated birds at Putah Cr., YOL, 20 Nov 2012–20 Jan 2013 (JLD; RF†, SCH‡, EP‡; 2012-192), and Pine Gulch Cr., MRN, 12 Nov 2012 (EEn‡; 2012-189), similarly gave the Song Sparrow-like calls distinguishing the Winter Wren from its sister species, the Pacific Wren (*T. pacificus*), and also provided first records for the respective counties. A more controversial bird along Kinevan Rd. at San Jose Creek, near San Marcos Pass, SBA, 14–29 Nov 2011 (ARA†; DMC, TME; 2011-188), went four rounds before acceptance. The photos supported the identification as a Winter Wren, but the vocalizations were simply stated to be dissimilar to those of Wilson’s Warbler (*Cardellina pusilla*) and, thus, those of the Pacific Wren. The committee encourages the audio recording of all potential Winter Wrens, particularly as our understanding of the relative importance of various phenotypic traits distinguishing these two species continues to evolve. IDENTIFICATION NOT ESTABLISHED: The report of one in San Francisco, SF, 1 Jan 2012 (2011-235), went four rounds without gaining the necessary majority for acceptance. While the described calls sounded appropriate for the species, no recordings were obtained. Furthermore, the report contained no description of the bird itself, which could be seen only partially in the lone photo that was procured.

ARCTIC WARBLER *Phylloscopus borealis* (8, 1). One captured and banded on Southeast Farallon I., SF, 28 Sep 2012 (DMx†; KNN†, EMA†, JRT; 2012-149), was the first to be recorded in California since 2007. To date, all records are for the month of September. The three-way split of this species (Chesser et al. 2014), with *P. borealis* breeding in Alaska but the Kamchatka Leaf Warbler (*P. examinandus*) having occurred on the Aleutian Is., may lead the CBRC to reexamine the accepted records. The small size of the Southeast Farallon bird suggested to the banders that it represented the subspecies breeding in Alaska, *P. b. kennicottii*, but the committee made no formal decision beyond the Arctic Warbler, *sensu lato*.

NORTHERN WHEATEAR *Oenanthe oenanthe* (13, 0). IDENTIFICATION NOT
ESTABLISHED: One reported from India Basin Park in San Francisco, SF, 28 Oct 2011 (2011-163), was incompletely and briefly seen at a distance of 200–300 m. While most committee members believed that a Northern Wheatear was seen, some key details, such as tail-pumping, were not noted by the observer, who had no prior experience with the species.

**VEERY Catharus fuscescens** (14, 0). IDENTIFICATION NOT ESTABLISHED: The report of one near Davis, YOL, 4 Jun 2012 (2012-088), went three rounds before failing to gain acceptance. While the observer was experienced and much of the description sounded good for the Veery, the bird was observed for less than 30 seconds, no diagnostic vocalization was heard, pale gray on the flanks was not noted, and no photo was obtained. Catharus thrushes are notoriously difficult to identify, and the committee maintains a high standard for records within this genus. Only 42% (14 of 33) of submitted reports of the Veery have been accepted, among the lowest of species on the review list. Furthermore, of the four records that have been accepted over the past decade, three were of birds either captured or preserved as a specimen, and the last was heard singing in the Sierra Nevada.

**GRAY-CHEEKED THRUSH** Catharus minimus (23, 1). One in its first fall was netted and measured on Southeast Farallon I., SF, 4 Oct 2012 (DMx†; KNN†, JRT; 2012-153). All three Gray-cheeked Thrushes recorded in California in the past 15 years have been on this island, which accounts for fully 65% (15 of 23) of all California records of this species.

**RUFOUS-BACKED ROBIN** Turdus rufopalliatus (18, 1). Like nearly all of California’s other Rufous-backed Robins, this first-fall male was found at a desert oasis, in this case Chiriaco Summit, RIV, 29 Oct–9 Dec 2012 (AAn†, TABe†, JLD, LS†, DVP†; 2012-172).

**CURVE-BILLED THRASHER** Toxostoma curvirostre (30, 2). A first-spring male of the western subspecies palmeri near Bishop, 11 Jun–27 Sep 2012, was a first for Inyo Co. and established only the second record of a Curve-billed Thrasher summering in the state (RS; SC†, JLD†, JH†, TH, KNN†, DPr†, JPr†, KS†, SLS†, JCS†; 2012-091). Especially intriguing was an apparently paired bird west of the McCoy Mts. ~40 km west-northwest of Blythe, RIV, 19–27 Apr 2012 (CMcC†; 2012-051), but unfortunately the second bird was not seen well enough for the species to be confirmed.

**WHITE WAGTAIL** Motacilla alba (28, 1). One in its first fall was at Cabrillo Beach in San Pedro, LA, 8–18 Dec 2012 (BA; JLD, JSF†, KLG†, MGr†, RHo†, DMg†, JRa†, KR†, LS†, CT†; 2012-197; this issue’s front cover). While the subspecific identification of first-fall White Wagtails is notoriously difficult, and complicated by interbreeding (Pyle 1997, Alström and Mild 2003), the clean gray rump, extensive dark centers to the median and greater secondary coverts, and distinct dark bar at the base of the secondaries indicated it to be M. a. ocularis (Alström and Mild 2003). Surprisingly, this is the first definitive record of this Alaska-breeding subspecies for California since 1996, and only the second since 1989 (CBRC 2007). The late fall date is typical of the race, as all fall birds identified as ocularis in the state have been found after 4 Oct. The converse is true of M. a. lugens, the Black-backed Wagtail, as nearly all fall migrants of it have been detected before 8 Oct (CBRC 2007). IDENTIFICATION NOT ESTABLISHED: A short report of one near Mendocino, MEN, 6 Oct 1995 (1995-145), contained details that were consistent with the claimed species but was written from memory 17 years after the observation.

**SMITH’S LONGSPUR** Calcarius pictus (10, 2). A male at Bear R. Ridge near Ferndale, 19–20 Apr 2012 (SEM†, KR†, AS†; 2012-053; Figure 6), and an adult male at Fay Slough near Eureka, 9 Sep 2012 (PR, MST†; 2012-124), were the first of this species to be seen in Humboldt Co. More importantly, the former was the first ever
Figure 3. This Wood Sandpiper (*Tringa glareola*), California’s second, spent 24–29 September 2012 at a sewage pond near the mouth of the Santa Margarita R., Camp Pendleton, San Diego Co. (2012-142). In this photo, taken 26 September, the completely white rump and coarse whitish and rufous upperpart spotting distinguish it from the Solitary Sandpiper (*T. solitaria*) just below it.

*Photo by Andrew Fisher*

Figure 4. Albeit not a candidate for framing, this photo taken 29 September 2012 of a Common Cuckoo (*Cuculus canorus*) in Watsonville, Santa Cruz Co. (2012-147), shows thin, evenly spaced barring throughout the underparts, including across a uniformly pale underwing. The remarkably similar Oriental Cuckoo (*C. optatus*) has broad and dark ventral barring and a white stripe contrastingly bordered by dark across the median underwing, a feature completely lacking in this bird.

*Photo by B. J. Stacey*
Figure 5. This second-year Gyrfalcon (*Falco rusticolus*), seen here finishing off an American Coot (*Fulica americana*) at the San Jacinto Wildlife Area, Riverside Co., 15 January–9 March 2012 (2012-007), was also recorded ~300 km away at Owens L., Inyo Co., 21 March 2012 (2012-056), and represents the southernmost record in North America.

*Photo by Mark A. Chappell*

Figure 6. This striking male Smith’s Longspur (*Calcarius pictus*) photographed on the first day of its 19–20 April 2012 layover at Bear River Ridge represents the first record of that species for Humboldt County (2012-053) and the first for California in spring.

*Photo by Alex Simon*
to be found in California in spring and in such striking breeding plumage. Arizona’s only record of Smith’s Longspur was on a similar date, but that bird, collected in the White Mts. 24 Apr 1953, was in worn basic plumage (Phillips et al. 1964).

SNOW BUNTING Plectrophenax nivalis (126, 2). First-winter females were at the Eel R. W. A., HUM, 1 Jan 2012 (KMB†; 2012-004), and at Tolowa Dunes State Park, DN, 16 Jan 2012 (TK†; 2012-010). IDENTIFICATION NOT ESTABLISHED: All committee members believed that a bird observed at Abbott’s Lagoon on Pt. Reyes National Seashore, MRN, 6 Nov 2011 (2011-222) was very likely a Snow Bunting but agreed that the sparse details fell short of meriting acceptance.

WORM-EATING WARBLER Helmitheros vermivorum (124, 4). A first-spring vagrant was in Bolinas, MRN, 10 Jun 2012 (KF†; 2012-092), a fall vagrant was in Pescadero, SM, 18–26 Oct 2012 (MK; JRy†; 2012-181), and a wintering bird was at Shag Park in Arcata, HUM, 26 Oct 2012–11 Jan 2013 (RF; TK†; 2012-226). Also accepted was an older record of one at Rodeo Lagoon, MRN, 12 Sep 1979 (BSh; 1979-501), submitted to www.eBird.org but never previously reviewed by the committee.

LOUISIANA WATERTHRUSH Parkesia motacilla (18, 2). One at California City, KER, 3–8 Sep 2012 (TEW; TAbE†, KHL, BSt†, STS‡; 2012-120), was the first to be recorded in California since 2004. An older record of one “found dead” at Cottonwood Springs in Joshua Tree N. P., RIV, 8 May 1960 (WFVZ #43171; 2011-116), went three rounds before acceptance. The specimen, in the Donald Bleitz collection housed at the Western Foundation of Vertebrate Zoology, is clearly a Louisiana Waterthrush. However, Bleitz was known to band and “experimentally” release birds that had been transported to him from around the world, complicating the issue of the specimen’s provenance. Following a tortuous investigation, the CBRC ascertained that an associate of Bleitz had banded multiple site-appropriate birds at Cottonwood Springs around that time and that the specimen had been obtained on site. This record now shortens the interval between the first state record (in 1908) and the second to 52 years, from the previous 77.

GOLDEN-WINGED WARBLER Vermivora chrysoptera (75, 0). IDENTIFICATION NOT ESTABLISHED: A report of one at Oceano Lagoon, Pismo State Beach, SLO, 17 Sep 2012 (2012-143), contained details such as “broad yellow wing patches” that strongly suggested the claimed species. The bird was seen incompletely, however, and the record ultimately failed to gain acceptance after four rounds.

BLUE-WINGED WARBLER Vermivora cyanoptera (47, 2). A singing male was at Cottonwood Cr. near Oasis, MNO, 27 May 2012 (PJM†; AD; 2012-246), and another male was near Covington Park, Morongo Valley, SBE, 4 Jun 2012 (RCr†; 2012-116).

CONNECTICUT WARBLER Oporornis agilis (119, 4). First-fall immatures were at Prisoner’s Harbor on Santa Cruz I., SBA, 14 Sep 2012 (NL; 2012-223), the north spit of Humboldt Bay near Fairhaven, HUM, 25 Sep 2012 (TLS; AD; 2012-228), and at Pt. Reyes National Seashore, MRN, 28 Sep–1 Oct 2012 (MBa†; CW†, RLB†, KSc, JCS†, JWt†; 2012-148). A record of one seen briefly at dusk on Southeast Farallon I., SF, 1 Oct 2006 (RF; 2007-040; 2007-308), went four rounds before acceptance, largely because of ambiguities in the report regarding the bird’s described “walking” versus “hopping,” a key point of distinction from the similar Mourning Warbler (Geothlypis philadelphia).

MOURNING WARBLER Geothlypis philadelphia (143, 2). A vocalizing female was at California City, KER, 30 May 2012 (SBT†; 2012-241), while one in its first fall was at Mad R. Beach Co. Park, HUM, 3 Sep 2012 (GBL S; TK†, KRF; 2012-119). IDENTIFICATION NOT ESTABLISHED: A report from Arcata Marsh, HUM, 9 Sep 2012 (2012-130), suggested the Mourning Warbler, but the observer was not
experienced with this difficult-to-identify species and was not completely certain of the identification; it failed to pass after three rounds.

CAPE MAY WARBLER *Setophaga tigrina* (27**, 7). A first-spring male was in Santa Cruz, SCZ, 12–15 Apr 2012 (SGe†; 2012-081). An adult male was at Southeast Farallon I., SF, 7–8 Sep 2012 (DMx†; JRT; 2012-126), the 72nd of this species to appear on the island (J. Tietz in litt.). Additional records of first-fall birds were of single individuals near the Golden Gate bridge, SF, 18 Sep 2012 (ME; 2012-136); Goleta, SBA, 3 Oct 2012 (KA†; 2012-223); and the Carrizo Plain, SLO, 4 Nov 2012 (DT†; MT†; 2012-177), and of two different individuals in Bodega Bay, SON, 26 Sep 2012 (STr†; 2012-151), and 30 Sep 2012 (SCa†; 2012-150). IDENTIFICATION NOT ESTABLISHED: One at O’Neill Forebay, MER, 27 Sep 2012 (2012-152), was only sparingly described and received no support. The brief description of another bird in Goleta, SBA, 15 Sep 2012 (2012-219), suggested a male Cape May Warbler, but members were concerned by the presence of white “wing bars” rather than the more expected white patches on the median coverts.

*PINE WARBLER Setophaga pinus* (114, 11). All 21 California records of this species from 2010 to 2012 were from the southern half of the state, including one of two first-fall birds discovered in the same tree in Fountain Valley, ORA, 27 Nov 2012–6 Jan 2013 (JEP; 2012-224) and 27 Nov 2012–21 Jan 2013 (JEP; KSp, TAb, TFH†; 2012-240). New birds for the winter period were in Montecito, SBA, 10 Jan 2012 (OJ; 2012-009); Coronado, SD, 25 Nov 2012–10 Apr 2013 (EC; JK†, PEL, GMcC, JMMc†, Ms†, SBT†; 2012-195); Yorba Linda, ORA, 1 Nov 2012–27 Feb 2013 (TFH†; 2012-248); Del Mar, SD, 10 Dec 2012 (PEL; 2012-202); and Earvin Magic Johnson Recreation Area, Los Angeles, LA, 9 Dec 2012–31 March 2013 (TAb, RBa†; both 2012-214 and 2013-046). Adult males returning for their third winters were at Hansen Dam Park in Lake View Terrace, LA, 28 Oct 2012–31 Mar 2013 (KLG†; KRT; 2012-191; also 2010-159 and 2011-237; Nelson et al. 2013) and Palos Verdes Estates, LA, 23 Dec 2012 (JEP†; 2012-225; also 2011-025 and 2011-236; Nelson et al. 2013). First-fall females at La Mirada Park, La Mirada, LA, 24–25 Oct 2012 (JRo; 2012-170); Pt. Loma, SD, 30 Oct–4 Nov 2012 (ARA†; 2012-173); and Goleta, SBA, 4 Nov 2012 (NL; 2012-180), were evidently migrants. Another migrating first-fall female near Oxnard, 11 Oct 2012 (DAB†; 2012-156), was a long-awaited first record for Ventura Co. The committee removed the Pine Warbler from the review list at the 2014 meeting and now reviews only records through 2013.

GRACE’S WARBLER *Setophaga graciae* (65, 4). Individuals at Ft. Rosecrans National Cemetery on Pt. Loma, SD, 3 Sep 2012 (AJS; 2012-243) and Montaña de Oro State Park, SLO, 29–30 Sep 2012 (JSR; 2012-230) were evidently migrants. Newly discovered wintering birds were at Camino Real Park in Ventura, VEN, 10 Dec 2012–20 Jan 2013 (IT; JCT; JSF†, PEL, GMcC, SBT, DVP†; 2012-212) and Spring Valley, SD, 24 Dec 2012–17 Mar 2013 (DWA†; PEL; 2012-229), while returning birds included one back for its fifth winter in Goleta, SBA, 28 Oct 2012–21 Feb 2013 (DMc†, DMx†, HPR†, MSm; 2012-218), and another returning to Greenwood Cemetery in San Diego, SD, 31 Oct 2012–10 Apr 2013 (CA†, GMcC, MSa†, SBT†; 2012-174).

RED-FACED WARBLER *Cardellina rubrifrons* (23, 1). A well-described bird was at Horse Heaven Campground in the Laguna Mts., SD, 9 Aug 2012 (SRO; 2012-114), also the area of California’s last Red-faced Warbler, 16 Sep 2007 (Singer and Terrill 2009).

EASTERN TOWHEE (*Pipilo erythrophthalmus*) (0, 0). IDENTIFICATION NOT ESTABLISHED: An intriguing report of one at Venice L., west of Stockton, SJ, 18 Nov 2011 (2011-266), received no support, despite many members believing that the claimed species could have been involved. While much of the description matched
Figure 7. This first-fall Varied Bunting (*Passerina versicolor*) at Horsethief Springs in the Kingston Mts., 10–12 Oct 2012 (2012-155), is the first recorded in San Bernardino Co. and only the second in California in nearly a century. Although the presence of obscure wingbars is often cited as a trait of the Varied Bunting (e.g., Beadle and Rising 2000), it is in fact typical for this species to exhibit pale wingbars at least in fresh plumage (S.N.G. Howell pers. comm.). In this photo, taken 11 October 2012, note the pale contrasting tips of the median secondary coverts, most of which are hidden by the scapular feathers.

*Photo by Thomas A. Benson*

Figure 8. The Scaly-breasted Munia (*Lonchura punctulata*, also known as the Nutmeg Mannikin) is now well established over much of the coastal slope of southern California, and the committee determined that the species met all criteria for addition to the California list as an introduced species. Shown here are 28 specimens from a series of 42 at the Natural History Museum of Los Angeles County and collected in Los Angeles and Orange counties between 1995 and 2014.

*Photo by Kimball L. Garrett*
a female Eastern Towhee and not any race of the Spotted Towhee (*P. maculatus*), the committee was most concerned that the distinctive white patch at the base of the outer primaries was not observed. In addition, several members cited the possibility of hybridization with another species of towhee. New Mexico has accumulated 16 records of the Eastern Towhee but also has three well-documented records of hybrid Eastern × Spotted Towhees (S. O. Williams). Furthermore, the committee is reluctant to accept a first state record by a single observer in the absence of a photograph. We expect that the Eastern Towhee will eventually be documented adequately in California, but it has been over a decade since the last of Arizona’s two winter records of this species (Rosenberg et al. 2007).

FIELD SPARROW *Spizella pusilla* (12, 4). One visiting a feeder in San Francisco, SF, 28 Dec 2012–10 Feb 2013 (KMcK†; ME†, JMo†; 2012-234), exhibited the pale gray underparts consistent with the Great Plains race *S. p. arenacea*, as have all other Field Sparrows recorded in California. Another relatively drab representative of this race was at the Kenneth Hahn State Recreation Area, Baldwin Hills, 19 Apr–9 May 2012 (AB†, EB†; KLG, ABL, JCS†; 2012-057; photo published *N. Am. Birds* 66:574), providing Los Angeles Co. with its first record. The absence of prior spring records for California, as well as the length of the stay, suggested that the bird might have been wintering in a less-visited portion of this well-birded park. A migrant at Nunes Ranch on Pt. Reyes National Seashore, 3–5 Nov 2012 (LB†, DRM†, JMo†, SWo†; 2012-175), provided a first record for Marin Co. Another at China L., KER, 14–15 Oct 2012 (DVB†; SGr; 2012-159), was likely as early as one could expect a fall migrant in the state, given that the species’ peak migration does not begin until mid-October (Pyle et al. 2011a).

LITTLE BUNTING *Emberiza pusilla* (3, 1). One was on Southeast Farallon I., SF, 14 Nov 2012 (JRT; LMu; 2012-184). Although the bird was seen rather briefly and not photographed, the white eye ring, chestnut face with a dark frame that fell short of reaching the small, conical bill, and white outer rectrices, along with the sharp “tsip” vocalizations, convinced the committee that the Little Bunting and not the Reed Bunting (*E. schoeniclus*), Chestnut-eared Bunting (*E. fucata*), Rustic Bunting (*E. rustica*), or Lapland Longspur (*Calcarius lapponicus*) had been observed. The now three records of the Little Bunting in California span the period 27 Sep–14 Nov. An additional fall record along the Pacific coast comes from the Vizcaino Peninsula in Baja California Sur, 8 Oct 2008 (Radamaker and Powell 2010), while the first winter record for North America was recently established in northeastern Oregon, 28 Jan–25 Mar 2013 (Contreras and Tumer 2013).

PYRRHULOXIA *Cardinalis sinuatus* (28, 1). A male was in a wash vegetated with ironwood (*Olneya tesota*) and blue palo verde (*Parkinsonia florida*) at the north end of the McCoy Mts., RIV, 28 Apr 2012 (CMcC; 2012-061).

VARIED BUNTING *Passerina versicolor* (4, 1). A first-fall immature at Horsethief Springs in the Kingston Mts., 10–12 Oct 2012 (DAG†; TABe†, JLD, SJM†, BS†, JCS†; 2012-155; Figure 7; photo published *N. Am. Birds* 67:185), represents the first record of this species in San Bernardino Co. and only the fourth for California. Separation from the very similar Indigo Bunting (*P. cyanea*) was centered on the clearly decurved culmen, the absence of streaking across the breast, the uniform buff coloration over the entire underparts, and the indistinct edgings to the tertials and greater secondary coverts. In addition, it was evident in photographs that the (outermost) ninth primary was shorter than the fifth primary, as is characteristic of the Varied, while the opposite is true for the Indigo (Pyle 1997). California’s first two records of the Varied were of adults collected 8 and 9 Feb 1914 near Blythe, RIV, from a remarkable flock of 15–20 birds. The only other record is of an adult male at Mesquite Spring, Death Valley N. P., INY, 18–21 Nov 1977 (Luther et al. 1979).
Thus the bird in the Kingston Mts. was only the second Varied Bunting to appear in the state in nearly a century, and the first that was not an adult.

**RUSTY BLACKBIRD** *Euphagus carolinus* (29**, 5). A first-winter female was at Legg L. in El Monte, LA, 3 Jan 2012 (ML†; ABL†; 2012-001). Others were discovered at fabled, offshore migrant traps, with two birds at Lemon Tank on San Clemente I., LA, 13–15 Nov 2012 (JTS†; 2012-182), and a first-fall female at Southeast Farallon I., SF, 14–18 Nov 2012 (LMu†; JRT†; 2012-206). Another first-fall immature was far inland at China L., KER, 20–22 Nov 2012 (SL†; 2012-211).

**COMMON GRACKLE** *Quiscalus quiscula* (90, 3). A male at Bob’s Cr. Ranch, 19 km southeast of Pittsville, 4–14 May 2012 (KPA†; 2012-075), was the first to be recorded in Lassen Co. A record of a spring vagrant male along Soquel Cr. in Capitola, SCZ, 2 May 2011 (DLS; 2011-099) went three rounds before acceptance, as the bird was observed mainly in flight and only briefly perched atop a redwood tree. A first-winter male was in Bishop, INY, 19 Feb–3 Apr 2012 (CY†; JLD†, KNN, NJO, DP†, JP†, BS†, SL†; 2012-026).

**COMMON REDPOLL** *Acanthis flammea* (91, 10). A first-winter female was in McArthur, SHA, 17 Dec 2011–14 Jan 2012 (OJ†; JRT†; 2011-218), while a first-winter male in Julian, SD, 4–19 Feb 2012, was one of the most southerly of this species yet recorded (MG†; PEL, CAM†, GMcC, CMG†, VM†, SJM†, MS†; 2012-014; photo published *N. Am. Birds* 66:376). However, a first-spring female on San Clemente I., LA, 3–4 May 2012 (MS†; JST†; 2012-068), was perhaps arriving from points even farther to the south. Two more first-winter females were at Winema Lodge near Tulelake, SIS, 10 Feb–5 Mar 2012 (BP†; DN, FO, LP†, JRu, BLS†; 2012-022), while an adult male was in Paradise Estates, MNO, 21–22 Jan 2012 (DH†; 2012-031). Additional first-winter birds were in Taylorsville, PLU, 6–25 Feb 2012 (SE; CD†; 2012-020); Woodland, YOL, 22–25 Feb 2012 (JS†; JCS†; 2012-029); Santa Cruz, SCZ, 24–26 Feb 2012 (SM†; DLS; 2012-030); and Westwood, LAS, 9 Apr 2012 (SM†; 2012-200). IDENTIFICATION NOT ESTABLISHED: The report of one at Mammoth L., MNO, 7 Feb 2012 (2012-040), was likely correct but too light on details, even for a year of irruption.

**POPULATIONS ACCEPTED**

In addition to evaluating and archiving records of birds that rarely occur in California, the committee also maintains a California bird list, which includes introduced species considered to be established in the state. For a species to be added to the list, the identification must be established and the population in the state must be considered “viable.” The committee’s criteria for viability are (1) that the species has bred in the state for 15 consecutive years, (2) that the population is increasing or stabilized after an initial period of increase, (3) that the species occupies enough geographically contiguous suitable habitat that the population is unlikely to diminish significantly, and (4) that the occupied environment is ecologically similar enough to the species’ native habitat, or to that of other successful introductions, that permanent establishment seems likely. Populations maintained primarily by continued releases or requiring intensive management are not considered viable.

*SCALY-BREASTED MUNIA* *Lonchura punctulata*. The CBRC’s Introduced Birds Subcommittee (K.L. Garrett, J. Morlan, J. E. Pike) gathered evidence that naturalized populations of this species had met the criteria for addition to the California list; the full committee accepted their proposal (2013-085), and the species has since been added to the American Birding Association’s checklist as well (Pranty and Floyd 2013).
Scaly-breasted Munias have been reported in the wild in California since at least the mid- to late 1980s; breeding was not documented until 1997, although the species was clearly naturalized here before that. It ranges from southwestern San Diego County to coastal San Luis Obispo County, with the largest numbers in the coastal lowlands of Orange and Los Angeles counties, especially along rivers. Small populations have also been noted in the south San Francisco Bay area. A series of specimens (42 from southern California populations at LACM alone; Figure 8) document that the established subspecies is the nominate subspecies of much of the Indian subcontinent and Sri Lanka; it is characterized by clean black-on-white scaling on the underparts, a black bill, and yellow-tinged uppertail coverts (Restall 1997). A distinctly different subspecies from southeast Asia, *L. p. topela*, has long been established on the Hawaiian Islands (Pyle and Pyle 2009). This species has generally been called the Nutmeg Mannikin in the North American literature, but the A.O.U. adopted the more widely used English name in its 55th supplement (Chesser et al. 2014).

**CORRIGENDA**

The following corrections should be made to the CBRC’s previous report (Nelson et al. 2013): California’s latest record of the Blue Jay should be changed from 8 May 2012 to 25 May 2005 (Iliff et al. 2007); the record number (2010-046) was omitted from the 26–27 May 2010 report of a Great Crested Flycatcher in Olivenhain, SD; the county of the Short-tailed Albatross (2011-265) 65 km off Pigeon Pt. should be changed from SCZ to SM; the total number of records of the Neotropic Cormorant should be 34, not 33; the two adult Yellow-crowned Night-Herons at Imperial Beach, SD, 7 Dec 2011–29 Jul 2012 (2011-254) were presumed to be birds returning to a frequently used nest site but were inadvertently counted in the final tally, which should be changed from 7 to 5.

The following correction is noted for the 36th report (Johnson et al. 2012): the total number of records for Neotropic Cormorant should be 26, not 25.

**DATA SOLICITATION**


**ACKNOWLEDGMENTS**

The committee thanks the following persons for advice on records summarized in this report: Steve N. G. Howell for information on the Varied Bunting; Sandy Williams and Kurt Radamaker for information on Eastern Towhee records; Louis Bevier for review of a Winter Wren record; Paul Lehman for comments on the Common Cuckoo; Alan Contreras for comments on the status of the Common Redpoll in Oregon; Alvaro Jaramillo for comments on the Slaty-backed Gull; Philip Unitt for information on Yellow-green Vireo specimens; Allen Fish for assistance on the Gray Hawk; Ron LeValley for comments on the Short-tailed Albatross. Collection staffs at the Western Foundation of Vertebrate Zoology (WFVZ), California Academy of Sciences (CAS), Museum of Vertebrate Zoology, San Diego Natural History Museum (SDNHM), and Natural History Museum of Los Angeles County (LACM) helped the committee in various ways, and we thank them for their aid. We extend special thanks to James R. Tietz for updating the table of records published in Rare Birds of California and
to Joseph Morlan for maintaining the corrigenda to Rare Birds of California and for developing and updating the data query, all of which are available on the CBRC’s website, http://californiabirds.org. The Western Foundation of Vertebrate Zoology in Camarillo and H. T. Harvey and Associates in Los Gatos graciously hosted the two previous committee meetings. The following past and present CBRC members provided valuable comments on drafts of the manuscript: Oscar Johnson, Peter Pyle, Steve Rottenborn, James R. Tietz, Daniel S. Singer, Joe Morlan, and Guy McCaskie. This report benefited considerably from reviews and comments by Lauren Harter and Sherman Suter.

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EFFECTS OF NATURAL HABITAT ON PEST
CONTROL IN CALIFORNIA VINEYARDS

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ABSTRACT: Ecosystem services provided by wildlife can offer powerful incentives
for conservation, particularly if species can be linked to natural habitat. We examined
the hypothesis that natural habitats adjacent to vineyards provide a source of insectivo-
rous birds by testing the prediction that predation rates should be higher close to oak
woodland than in the interior of a vineyard. We simulated an insect outbreak in four
small vineyards all adjacent to oak woodland. There was no evidence that predation was
higher along edges of vineyards than in the interior. We did find that birds responded
quickly to a simulated outbreak of insect larvae, with predation rates during the late sum-
mer reaching 90%. Motion-sensing cameras revealed that the most common predator
of the larvae was the Western Bluebird (Sialia mexicana). These results suggest that
vineyard managers may take advantage of biological pest control offered by songbirds
and perhaps increase control by actively managing for the birds, a potentially beneficial
scenario for both vineyard managers and bird conservation.

One of the major factors contributing to habitat loss is the expansion of
agriculture (Tilman et al. 2001), and such habitat loss is currently one of the
most pressing issues for wildlife (Johnson 2005). If wildlife can be shown to
provide ecosystem services and those species can be linked to natural habitats,
that connection may increase the incentive to conserve habitat. In California,
songbirds can offer wine-grape growers pest-control services (Jedlicka et al.
2011), providing an economic incentive to preserve and expand the oak
woodlands surrounding vineyards. Numerous studies have shown that birds
can provide various levels of pest control in various agricultural settings (e.g.,
Mols and Visser 2002, Kellermann et al. 2008, Van Bael et al. 2008), but
rapeseed and coffee are the only crops for which a decrease in pest damage
has been quantified in relation to natural habitat (Thies and Tscharntke 1999,
Chaplin-Kramer et al. 2011, Karp et al. 2013). More research is needed to
clarify how avian predation of agricultural pests may be linked to habitats sur-
rounding farms. Previous studies have shown that installation of nest boxes in
vineyards can attract Western Bluebirds (Sialia mexicana; Fiehler et al. 2006)
and enhance their control of pests (Jedlicka et al. 2011). Artificial provision of
nesting sites, however, does not provide incentive for habitat conservation
that may benefit other species as well.

In 2010, Sonoma County had 23,090 ha devoted to wine grapes, second
only in area within California to San Joaquin County; Mendocino County
supported 6977 ha, ranking ninth in the state (http://www.nass.usda.gov/
Statistics_by_State/California/Publications/Grape_Acreage/index.asp).
The continued conversion of oak woodland to vineyards contributes to habi-
tat loss and displacement of wildlife in this region (Merenlander 2000). At
least one study, however, has shown that the nest success of many native birds
is higher in oak woodlands directly adjacent to vineyards, possibly because of a
reduced diversity of nest predators exerting less predation pressure, suggesting
that the oak woodland remaining within a matrix of vineyards may be of high
EFFECTS OF HABITAT ON PEST CONTROL IN CALIFORNIA VINEYARDS

value to breeding birds (Reynolds et al. 2006) and serve as sources of birds in a landscape dominated by agriculture. We examined the hypothesis that natural habitats adjacent to vineyards provide a source of insectivorous birds by testing the prediction that rates of predation on insects should be higher close to oak habitat than in the interior of a vineyard.

METHODS

Our study took place from 29 May to 15 July 2011 in four vineyards in northern California: Haywood Vineyards, Sonoma (38° 21’ N, 122° 26’ W, 36 ha), Bedrock Vineyard, Sonoma (38° 20’ N, 122° 30’ W, 49 ha; Figure 1), Old Hill Vineyard, Glen Ellen (38° 21’ N, 122° 30’ W, 12 ha), and Fetzer’s Sundial Vineyard, Hopland (38° 59’ N, 123° 6’ W, 30 ha). Each vineyard was part of a matrix of natural habitat and land developed with homes, roads, and other man-made features, but adjacent to all was natural oak woodland dominated by Coast Live Oak (Quercus agrifolia), Bay Laurel (Umbellularia californica), Western Poison Oak (Toxicodendron diversilobum), and non-native annual grasses (Mayer and Laudenslayer 1988). Using aerial imagery in ArcMap (version 10.0, Environmental Systems Research Institute, Inc., Redlands, CA), we estimated the extent of natural habitat and vineyard or otherwise developed land in an area of 1 km² surrounding the center of each of our study sites. The extent of developed and natural habitat was, respectively, 24 and 43 ha at Haywood, 46 and 17 ha at Bedrock, 42 and 20 ha at Old Hill, and 34 and 25 ha at Sundial. The grape vines were all grown on trellises.

Figure 1. Aerial image of the Bedrock Vineyard with study design illustrated, Sonoma County, California, 2011. White bars represent transects of 100 m.
and were between 1.3 and 3 m tall, in rows spaced 1 m apart. Grape varieties
grown included red varietals, chardonnays, field blends, barbera, petite sirah,
merlot, and cabernet franc; during the study all grapes were in the stages of
flowering or green-bud growth.

We assessed predation of arthropods by birds in vineyards by using Meal-
worm Beetle (Tenebrio molitor) larvae to simulate an outbreak. We pinned
the larvae to cardboard squares staked to the ground along transects (sensu
Jedlicka et al. 2011). The mealworms represented caterpillars, as at least five
species of Lepidoptera are major grapevine pests and four are minor pests
(Flaherty et al. 1992). Recently the European Grapevine Moth (Lobesia botra-
na), a potentially devastating pest of grapevines, has been detected in parts
of California (http://www.aphis.usda.gov/plant_health/plant_pest_info/
eg_moth/index.shtml). These larvae hatch from eggs laid on the leaves and
do damage to the plant from May through August (http://www.ipm.ucdavis.
edu/EXOTIC/eurograpevinemoth.html#LIFE). Although mealworms are
coleopteran larvae, they are similar in size and shape to lepidopteran larvae.
They are also easily obtained, agriculturally benign, and hardy, making them
ideal candidates for experiments with sentinel pests.

Our experiments and surveys at each vineyard took place on two consecu-
tive days from May through July to correspond with birds’ breeding season,
the grape- growing season, and the larval stage of lepidopteran pests. We
sampled all four farms between 29 May and 20 June, then again in July at
two of the vineyards, Bedrock and Old Hill, 40 and 25 days after the first
sample, respectively; time constraints prevented additional sampling at all four
vineyards. At each farm we established four to six 100-m transects, depend-
ing on vineyard size ($\bar{x} = 15.3$ ha), that were at least 30 m apart along vine
rows perpendicular to oak habitat (see Figure 1). No transect was more
than one half the total length of the vineyard, so at least 100 m of vineyard
extended beyond the end of each transect. Oak patches were on average
60 m wide perpendicular to the edge of vineyard (range 29–119 m). From
07:00 to 07:30 on experiment days, we placed brown cardboard squares
with five larvae each at 10-m intervals along each transect from 0 to 100 m.
After 6 hours (13:00–13:30), we rechecked the squares and categorized each
as depredated, if one or more larvae were missing, as not depredated if not.
During the second sampling period we placed five motion-sensing cameras
(Primos TruthCam 35) on random transects to document which species were
consuming the larvae.

Prior to each experiment, we did an area survey (Ralph et al. 1993) to gener-
ate a rough index of relative abundance and composition of the bird population.
These surveys began at 07:00 the day before an experiment, lasted 30 min,
and covered the border between the oak habitat and the vineyard where the
experiment was set up the following day. To prevent any confounding effects
of the surveys on the experiment and vice versa, we recorded numbers of all
species heard and seen each day preceding an experiment. On the basis of
general diet and foraging behavior (Ehrlich et al. 1988), we identified which of
the species observed is a potential predator of insect pests in vineyards, and
we tallied the number of individuals of those species.

To avoid the possible confounding effects of pesticides, we restricted our
experiment to vineyards where insecticides were not sprayed and no fungicides
or herbicides had been sprayed in the 24 hours preceding the experiment. We avoided rainy days, and days when farm equipment or other people were working in the vineyards. All research was done with approval of Humboldt State University’s Institutional Animal Care and Use Committee (HSU 10/11.W.69-A).

Statistical Analysis

In most cases (86% of 232) either all five or no mealworms were removed from a station, so we analyzed predation as a binary variable where 1 = predation and 0 = no predation. To examine the effect of distance to natural habitat on predation rate, we ran mixed-effects linear models with a binary response distribution (routine lme4 in program R 3.0.1) with transect number nested within vineyard (site) as a random effect and distance to oak-patch edge as the fixed effect. We used a chi-squared test to determine whether, at the vineyards sampled twice, predation rates in the two samples differed significantly, and ran the mixed-effects models separately for the first and second samples. We assessed significance by comparing the AIC_c scores of models with (hypothesized model) and without (null model) distance as a fixed effect.

RESULTS

The predation rates during the two periods of sampling differed ($\chi^2 = 17.01$, $P = 0.00004$), being 21% higher in the second period than in the first, reaching a maximum of 90% (Table 1), although species composition and abundance changed little. There was no evidence that distance to oak-patch edge contributed to the fit of the model predicting removal of larvae. In the first sampling period the null model (without distance) had an AIC_c score insignificantly lower (364.43) and model weight higher (0.65) than the model with distance (AIC_c = 365.67, weight = 0.35). Likewise, in the second period the null model had an AIC_c score insignificantly lower (206.13) and model weight higher (0.72) than the model with distance (AIC_c = 208.05; weight = 0.28). Coefficients for the Bedrock Vineyard were higher by 3.005 to 3.646 (standard error 0.644–0.670) than those for the other three sites, which were all nearly identical to each other, indicating that the probability of predation was higher at Bedrock than at the other three vineyards. The number of birds counted

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Depredated</th>
<th>Not depredated</th>
<th>% Depredated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haywood</td>
<td>29 May</td>
<td>17</td>
<td>27</td>
<td>39</td>
</tr>
<tr>
<td>Bedrock</td>
<td>2 June</td>
<td>53</td>
<td>3</td>
<td>95</td>
</tr>
<tr>
<td>Sundial</td>
<td>18 June</td>
<td>21</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td>Old Hill</td>
<td>20 June</td>
<td>31</td>
<td>35</td>
<td>47</td>
</tr>
<tr>
<td>Bedrock</td>
<td>13 July</td>
<td>55</td>
<td>1</td>
<td>98</td>
</tr>
<tr>
<td>Old Hill</td>
<td>15 July</td>
<td>55</td>
<td>11</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>122</td>
<td></td>
<td>66</td>
</tr>
</tbody>
</table>

Table 1 Prevalence of Predation of Mealworms Supplied in Four Vineyards in Sonoma and Mendocino Counties, California, 2011
during the area surveys and potential predators of the larvae varied from 14 to 46 per vineyard (Table 2). The cameras installed at Bedrock and Old Hill revealed the Western Bluebird (both sexes, adults and juveniles) to be the most frequent predator eating the larvae (Table 2), as well as one Dark-eyed Junco (*Junco hyemalis*) and two Western Scrub-Jays (*Aphelocoma californica*). In many cases the camera was too slow to reveal the animal responsible for predation (predator left the field of view before video recorded), but the speed at which the sensors worked (~2 sec) suggests that birds are the most likely candidate, though we cannot rule out the Western Fence Lizard (*Sceloporus occidentalis*), present in all of the vineyards, as were ants, wasps, and a variety of other predatory insects.

### Table 2  Numbers of Potential Predators of Caterpillars Detected during Area Surveys along the Edges of Four Vineyards in Sonoma and Mendocino Counties, California, 2011

<table>
<thead>
<tr>
<th>Species</th>
<th>Haywood (29 May)</th>
<th>Bedrock (2 June)</th>
<th>Sundial (18 June)</th>
<th>Old Hill (20 June)</th>
<th>Bedrock (13 July)</th>
<th>Old Hill (15 July)</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Quail <em>Callipepla californica</em></td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Northern Flicker <em>Colaptes auratus</em></td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Steller’s Jay <em>Cyanocitta stelleri</em></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Western Scrub-Jay <em>Aphelocoma californica</em></td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>American Crow <em>Corvus brachyrhynchos</em></td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Western Bluebird <em>Sialia mexicana</em></td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>American Robin <em>Turdus migratorius</em></td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>European Starling <em>Sturnus vulgaris</em></td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Spotted Towhee <em>Pipilo maculatus</em></td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>California Towhee <em>Melozone crissalis</em></td>
<td>10</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Chipping Sparrow <em>Spizella passerina</em></td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Song Sparrow <em>Melospiza melodia</em></td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Dark-eyed Junco <em>Junco hyemalis</em></td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Brown-headed Cowbird <em>Molothrus ater</em></td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>House Finch <em>Haemorhous mexicanus</em></td>
<td>17</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>22</td>
<td>45</td>
<td>23</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Mean</td>
<td>3.1</td>
<td>1.5</td>
<td>3.0</td>
<td>1.5</td>
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DISCUSSION

We found no evidence that rates of predation were higher along edges of vineyards adjacent to natural habitat than farther from those edges. The vineyards we studied were small (mean 31.75 ha, range 12–49 ha), irregularly shaped, and embedded in heterogeneous landscapes, with maximum distances to adjacent habitat 30 to 300 m. It is possible that the effects of distance on predation would be evident at significantly larger distances in larger, more homogeneous, vineyards. It is possible that birds on the edges developed a search image for the mealworms or cardboard squares and followed the transects to the interior. Kellermann et al. (2008) demonstrated that birds reduce pest damage to coffee plants but were unable to confirm that natural habitat was correlated with the pest reduction, most likely because of birds’ mobility and the patchiness of the plantations studied, a situation similar to the vineyards we studied. Baumgartner (1999) investigated birds’ predation of codling moths (Cydia pomonella) in apple orchards and found it to be significant. They also found a higher diversity of birds in orchards near native habitat. Vineyards are essentially a shrub layer, and in our study area the natural surrounding habitats, being oak woodlands, are dominated by trees (Mayer and Laudenslayer 1988). Therefore, unlike orchards or shaded coffee plantations surrounded by forests, the use of vineyards by native birds may be limited by the local species’ preferences for foraging in or under a canopy. Thus maintaining a heterogeneous landscape may promote a more diverse suite of species, which can provide agroecosystems with the resilience (Tscharntke et al. 2005) to recover from a pest outbreak.

We found that predation rates were significantly higher in mid-July than in May and June. In other California vineyards, Jedlicka et al. (2011) found that the abundance of birds more than doubled late in the breeding season, when fledglings are foraging alongside their parents. In our study the fledging of juveniles, which we video-documented foraging on larvae, may also explain the increased predation rates.

We found that the probability a mealworm would be taken was higher at Bedrock Vineyard than at the other three sites. The area surveys did not suggest a greater abundance of birds at Bedrock, suggesting bird density was not responsible for its high predation rate. Although the area surveys may not have reflected variation in abundance accurately, this vineyard maintained its vines at a height of 3 m rather than the standard 1.3 m, so it is possible that the different structure of the vines contributed to the difference in predation rate. Further investigation to identify specific characteristics of a vineyard and its surrounding habitat that enhance predation of pests would be valuable to vineyard managers. Reynolds et al. (2009) suggested that the natural heterogeneity of oak woodland may preadapt its native birds to certain levels of fragmentation. Quantifying threshold sizes of fragments within a matrix of vineyards may support a basis for preventing loss of important habitat patches that can support native bird communities, as well as for guidelines for restoring habitat useful to both birds and agriculture.

To make the service provided by wildlife into an incentive for conservation, one must be able to link those services to a direct human benefit. Further study could quantify the dollar value of pest removal to clarify for vineyard managers the financial benefit they would gain in crop yield saved from insect
damage. Johnson et al. (2010) and Kellerman et al. (2008) estimated these savings to coffee growers, which in combination with outreach has resulted in farm-management recommendations that increase the quality of coffee farms for wildlife (Johnson pers. obs.).

Although we were not able to show that natural oak habitat provides a diversity of avian predators, we did corroborate that the Western Bluebird is an effective predator of arthropod larvae in vineyards. Jedlicka et al. (2011) found that providing nest boxes in vineyards increases the bluebird’s numbers and that predation rates in vineyards with nest boxes are higher than in those without. The video cameras we deployed showed that the bluebird was the main predator of the larvae. The provision of nest boxes in vineyards increases the sizes of bluebirds’ clutches, though it is unclear if there is a corresponding increase in fledging success or survival (Fiehler et al. 2006). Jedlicka et al. (2014) showed that the species composition of birds using nearby natural habitats was greater and significantly different from that found in vineyards, and the establishment of nest boxes within vineyards did not alter species composition.

Although our study examined the benefits of insect-eating songbirds, frugivorous songbirds can be pests in vineyards (Tracey and Saunders 2010). According to Taber and Martin (1998), the main bird species that do economic damage to grapes are the European Starling (Sturnus vulgaris) and House Finch (Haemorhous mexicanus), commonly excluded with netting during véraison. Thus, although the Western Bluebird may do some minor damage, it is not the species that concerns growers most. Kross et al. (2012) showed that in New Zealand the introduction of the New Zealand Falcon (Falco novaeseelandiae) can help reduce pest birds and limit crop damage. Future work should investigate the trade-off of raptors reducing frugivorous and insectivorous songbirds in vineyards. Although our study was short and its sample was relatively small, it suggests birds provide significant pest-control services that merit further investigation.

ACKNOWLEDGMENTS

We thank Diane Kenworthy, Will Bucklin, Peter Haywood, and David Koball for allowing us to carry out our study on their vineyards. Leha Carpenter and Randy Quan provided housing for the duration of the experiments; extra special thanks to them. Thanks to Yoon Kim for assisting in statistical analyses, to Elizabeth Elkinton, Leha Carpenter, and Allie Patrick for providing feedback on content, and to Yesenia DeLeon, Reggie Blackwell, Pamela Ward, and Kaitlyn Hernandez for help with field work. Thanks also to Anthony Desch and Julie Jedlicka.

LITERATURE CITED

EFFECTS OF HABITAT ON PEST CONTROL IN CALIFORNIA VINEYARDS


Accepted 25 August 2014
ABSTRACT: The Purple Finch (Haemorhous purpureus) is most often recognized as comprising two distinct subspecies: purpureus, breeding and wintering through most of Canada and the eastern United States, and californicus, reported to be largely resident along the Pacific coast, from British Columbia to southern California. Although the migratory purpureus is the subspecies expected as a vagrant in Alaska and the interior West, the identity of the subspecies occurring in these regions has been poorly documented. Here we document the first records of purpureus for California and assess the subspecies of the Purple Finch from photographs and specimens throughout western North America. Nominate purpureus occurs regularly in the western Great Plains states and very sparsely farther west. H. p. californicus may be more prone to vagrancy than previously suspected, as we document the first records for Alaska, Colorado, and New Mexico.

The Purple Finch (Haemorhous purpureus) is most often recognized as comprising two subspecies (Wootton 1996, Pyle 1997). Nominate H. p. purpureus breeds across the boreal forest from southeastern Yukon Territory and northern British Columbia to Newfoundland and south through the northeastern United States and along the Appalachian Mountains to West Virginia (AOU 1957, 1998, Wootton 1996). In winter, purpureus is regularly found east of the Great Plains (approximately east of the 100th meridian), from southern Manitoba and Newfoundland south to central Texas, the coast of the Gulf of Mexico, and northern Florida (AOU 1957, Wootton 1996, AOU 1998, www.eBird.org). Along the Pacific coast, H. p. californicus is reported to be less migratory, although recovered banded birds have moved up to nearly 1500 km (Duvall 1945). It breeds primarily along the coast and in montane regions on the western slopes of the Cascades and the Sierra Nevada from west-central British Columbia to southern California, possibly northwestern Baja California, and migrates to lower elevations from much of this range, at times wintering to southeastern California and Arizona (Duvall 1945, AOU 1957, Wootton 1996, Patten et al. 2003, Sibley 2011). Although the breeding ranges of californicus and purpureus meet in an area bounded by the Coast and Rocky mountains in British Columbia, the frequency of contact and the extent of intergradation between these two subspecies is unknown (Sibley 2011). Three other described subspecies ap-

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pear to be based on clinal variation and are not generally accepted, including two named from the West: *H. p. rubidus* (treated here as a synonym of *californicus*) and *H. p. taverneri* (treated here as a synonym of nominate *purpureus*) (Duvall 1945, Howell et al. 1968, Wootton 1996, Pyle 1997). Here we document the first records of the nominate subspecies of the Purple Finch in California and discuss its occurrence in western North America.

SUBSPECIFIC IDENTIFICATION

Criteria distinguishing the two subspecies in the field are covered in detail by Ridgway (1901), Duvall (1945), Phillips et al. (1964), Kaufman (1990) Pyle (1997), and Sibley (2011, 2014), but a number of the most important characters are worth reiterating. Females and first-cycle males, which are similar in plumage, are the most straightforward, with distinguishing features visible from all angles, whereas adult males require dorsal views. Overall, the female-like plumage of *purpureus* is more boldly patterned than that of *californicus*, with more contrasting and sharply defined dark streaking and paler or whiter background coloration. This includes a bolder and cleaner white face; white underparts with shorter, sparser, crisper dark streaking; browner (less olive) upperparts and secondaries; more distinct dark and light back streaking; white-tipped greater coverts; a paler rump; and usually unmarked undertail coverts (Pyle 1997, Sibley 2011, 2014). Adult males of *purpureus* differ from those of *californicus* more subtly, although many of the same upperpart features apply, most notably the more distinct dark and light back streaking; a paler, more contrasting rump; and pale-tipped greater coverts (Sibley 2011). Underpart and head-on differences are rather limited for adult males, but smudgy brown flank streaking is characteristic of *californicus* (Sibley 2011).

OCCURRENCE OF *H. P. PURPUREUS* IN CALIFORNIA

The first documented record for nominate *purpureus* in California is of an adult female collected on San Miguel Island, Santa Barbara Co., 11 May 1976 (Santa Barbara Museum of Natural History [SBMNH] 3506)—the only record of the Purple Finch for that island. In February 2009, Pyle confirmed the subspecific identification of SBMNH 3506 and compared it with 10 specimens each of adult female *purpureus* and of *californicus* at the U.S. National Museum of Natural History (USNM), Washington, D.C. (Table 1). Although all measurements of these subspecies overlap, relative tail length (wing minus tail) and wing formula (p9 – p6) are most useful for distinguishing them (Pyle 1997); SBMNH 3506 has a wing minus tail length that indicates *purpureus*, but it is intermediate in wing formula and shows a longer bill than most *purpureus*. Photographs of the specimen alongside both *purpureus* and *californicus*, however, clearly show it to match *purpureus* in plumage (Figure 1).

Since that specimen was collected, three other Purple Finches of the nominate subspecies have been recorded in California, two sight records and one documented with photographs. Dunn found the second *purpureus* for California, another in female plumage, which lingered 18–21 November 1987 at Furnace Creek Ranch, Inyo Co. (McCaskie 1988). Brady discovered
Figure 1. Female Purple Finch specimens USNM 572739 (left; purpureus, Etna, New York, 29 April 1964), SBMNH 3506 (center; purpureus, San Miguel Island, California, 11 May 1976), and USNM 257248 (right; californicus Placerita Canyon, California, 23 April 1991), showing dorsal (A) and ventral (B) aspects.

Photos by Peter Pyle
Figure 2. First-cycle *purpureus* Purple Finch on Southeast Farallon Island, California, 23 October 2013. The bold and cleanly white face pattern; white underparts with short, sparse, and crisp streaking; white wingbars; and unstreaked white undertail coverts all help to distinguish this bird from *californicus*.

*Photo by Cameron Rutt*

Figure 3. First-cycle *californicus* Purple Finch in Ketchikan, Alaska, 30 December 2012. The bird’s streaked white facial stripes, heavy streaking below that becomes long continuous flank streaking, streaked undertail coverts, olive-edged primaries, and a lack of white wingbars all help to distinguish it from *purpureus*.

*Photo by Steve Heinl*
of *californicus*. Additionally, it was verified visually by the aforementioned plumage criteria (Figure 2).

**OCCURRENCE OF VAGRANT PURPLE FINCHES IN THE WEST**

Outside of breeding ranges, Purple Finches are casual in interior western North America (AOU 1998), although the species’ status varies on a state-by-state basis (Table 2). Although almost all individuals can, with good views, be identified to subspecies in the field (Sibley 2011), relatively few extralimital records have been reported to subspecies. The majority of vagrant Purple Finches are female-type birds, with most records in the fall, although sightings from the West also take place in winter and spring. We aged or attempted to age birds in photographs as first cycle or adult by using molt patterns and the condition of the wing coverts, outer primaries, and rectrices, following Pyle (1997).

It was difficult to pinpoint records of nominate *purpureus* in Oregon and Washington, where *californicus* is a common resident. Marshall et al. (2003) made no mention of *purpureus* for Oregon. In southeastern Oregon, outside of the normal distribution of *californicus*, Purple Finches have been recorded on at least six occasions (Littlefield 1991), with at least one record, a specimen of an adult male, representing *californicus* (USNM 478849), according to the specimen label and photographs of the specimen. At least three unconfirmed reports of *purpureus* exist for Oregon (D. Robinson, J. Gilligan pers. comm.), but we have not examined any documented records for the state. In Washington, one record of *purpureus*, from Conconully, Okanogan Co., on 19 February 2009, has been accepted by the Washington

<table>
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<th>State</th>
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*Unknown number of records for states where Purple Finch is either not on the review list (Alaska) or was only recently reinstated (Arizona).*

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Bird Records Committee (M. Bartels pers. comm.), and an additional report by Charlie Wright from Bradley Lake, Pierce Co., on 20 November 2012 (eBird) bears written details sufficient for inclusion in this summary.

In Alaska, outside the breeding season, the species is a rare, irregular visitor in the southeastern portion of the state, (Gibson and Kessel 1992, Heinl and Piston 2009). Farther west, it is exceedingly rare in south-coastal (at least two individuals of purpureus photographed; A. Lang pers. comm.), central, western (at least two records), and northern Alaska (one record of purpureus) (Brinkley 2009, Figure 5; Gibson and Kessel 1992; Tobish 2009; T. Tobish pers. comm.). There are also four reports from St. Lawrence Island in the Bering Sea (P. E. Lehman pers. comm.). All photographs submitted to eBird (n = 5) (Figure 3) were taken in southeastern Alaska and represent californicus. In July 2014, Pyle compared the seven Alaska specimens at the University of Alaska Museum (UAM) with series at the Museum of Vertebrate Zoology, Berkeley, California (MVZ). Two adult specimens, a male (UAM 5002) and a female (UAM 5003), are californicus, while another adult male (UAM 5004) is possibly an intergrade tending toward californicus (Figure 4). All three birds were collected at Ketchikan on 6 March 1984. On this basis, we document californicus as a subspecies new to Alaska (Gibson and Kessel 1997; D. D. Gibson pers. comm.). Additionally, a first-cycle Purple Finch photographed on St. Lawrence Island on 7 September 2004 appears to be californicus (Figure 5; B. L. Sullivan pers. comm.). The remaining four Alaska specimens are all purpureus: three from southeastern Alaska and, notably, an adult male collected 5 June 1984 at Savoonga, St. Lawrence Island (Figure 4; UAM 5559). One of the other sightings there also pertains to purpureus, a bird photographed at Gambell on 22 October 2011 (Figure 6; P. E. Lehman pers. comm.).

In Idaho, eight Purple Finch records have been accepted by the Idaho Bird Records Committee (http://www.idahobirds.net/ibrc/reviewspecies/grosbeak_finch.html#pufi) from fall through spring, with most records from fall. Two of these, with photos linked via eBird, are of purpureus; the remaining six are of indeterminate subspecies. Similarly, there are four accepted records of the Purple Finch in Nevada. One from Reno (3 November 2012) represents purpureus, whereas the remaining three, all photographed along the western border of the state, represent californicus (Nevada Bird Records Committee, http://gbbo.org/nbrc/FullReportByTaxa.htm). A female-plumaged Purple Finch photographed by Richard Aracil at Miller’s Rest Stop, Esmeralda Co., 18–19 September 2014 (eBird) is also californicus. To the east, Utah had no confirmed records (Behle et al. 1985) prior to 7 September 2007, when its lone accepted record from Lytle Ranch, Washington Co., was not confirmed to subspecies (Utah Bird Records Committee, http://www.utahbirds.org/RecCom/2007/2007_38Summary.htm).

The Purple Finch is an uncommon migrant and winter resident in Montana with over 100 sightings, primarily east of the continental divide (J. Marks unpubl. data). Two specimens in the University of Montana Zoological Museum and five photographs, from both sides of the continental divide, all suggest that these birds are primarily nominate purpureus (Figure 7). In Wyoming, the Purple Finch is considerably scarcer, although probably regular in the
northeast, where most of the state’s 12 accepted records are located; none has been critically identified to subspecies (Faulkner 2010), but the pattern there and in Montana indicates these birds are very likely *purpureus*. In Colorado, the Purple Finch is occasional from fall through spring, chiefly in the eastern foothills of the Rocky Mountains and on the eastern plains (Andrews and Righter 1992, eBird). Forty-four records comprising 84 individuals have been accepted by the Colorado Bird Records Committee (D. Faulkner pers. comm.). Many of these occurred during a winter invasion in 2007–2008 (D. Faulkner pers. comm.), when as many as 29 birds were reported at once from the eastern plains (eBird). Significantly, among Colorado’s many Purple Finch records, there is a single documented sighting of *californicus* from the southeastern corner of the state, the easternmost known record of that subspecies. This adult female was photographed in Lamar, Powers Co., on 7 December 2004 (Figure 8; T. Leukering pers. comm.). West of the Front Range, the species is accidental, with only two accepted records (Andrews

Figure 4. Alaska Purple Finch specimens, all adult males in typical plumage. From left to right: UAM 5559 (*purpureus*), 5 June 1984, St. Lawrence Island; UAM 5825 (*purpureus*), 28 April 1991, Juneau; UAM 5004 (possibly an intergrade between *purpureus* and *californicus*, tending toward the latter), 6 March 1984, Ketchikan; UAM 5002 (*californicus*), 6 March 1984, Ketchikan. Specimens UAM 5002 and 5003, also collected 6 March 1984, represent the first documented records of *californicus* for Alaska.

*Photo by Peter Pyle*
Figure 5. First-cycle *californicus* at Gambell, St. Lawrence Island, Alaska, 7 September 2004. Although this bird exhibits rather pale back streaking and whitish wingbars, features more commonly associated with *purpureus*, the olive tinge to the secondaries and, especially, the drab, dark face pattern, almost wholly lacking white in the supercilium and malar, indicate *californicus*.  
*Photo by Brian Sullivan*

Figure 6. A rather ambiguous first-cycle Purple Finch at Gambell, Alaska, 22 October 2011, one of four Purple Finches recorded from St. Lawrence Island (two *purpureus*, one *californicus*, and one unidentified to subspecies). This one shows the white wingbars, sparse streaking below, and lack of olive tones throughout the upperparts characteristic of *purpureus*.  
*Photo by John Vanderpoel*
and Righter 1992, eBird); photographs show both to be of *purpureus* (R. Hopper pers. comm.). Conversely, in Arizona, records and specimens indicate that *californicus* predominates (Phillips et al. 1964, Monson and Phillips 1981); excepting one specimen, all Arizona Purple Finches are presumed to be this subspecies (Rosenberg et al. 1991). The single exception is a first-cycle female *purpureus* collected 6 January 1956 northeast of Tucson (Delaware Museum of Natural History 27492; Phillips et al. 1964, Monson and Phillips 1981, Rosenberg et al. 1991). Purple Finches are irregular fall and winter visitors primarily to southeastern Arizona (eBird), with most records during invasion years, which also bring unusual numbers of Lawrence’s Goldfinches (*Spinus lawrencei*) to the state (Phillips et al. 1964, Rosenberg 1991). In New Mexico, the Purple Finch is rare and irregular from spring through fall, with 34 records, >75% from the Rio Grande valley eastward (S. O. Williams pers. comm.). Of the 11 photos and specimens we examined, at least eight were of *purpureus*; however, one of the photographed birds appears to represent *californicus*: an adult male from Glenwood, Catron Co. (western New Mexico), in March of 1991 (Figure 9). Additionally, one of the three specimens at the Museum of Southwestern Biology (MSB), Albuquerque, is *californicus*: an adult male (MSB 8487) collected 2 January 1958 near Silver City, Grant Co. (southwestern New Mexico).

**CONCLUSION**

Most records of vagrant Purple Finches in interior western North America, documented by either photograph or specimen, prove to be of *purpureus*, although *californicus* appears to be regular in neighboring states, just outside of its expected range, including extreme southeastern Alaska, western Nevada, and Arizona. Outside of these regions, we found evidence for four vagrants of *californicus*: at Gambell, St. Lawrence Island, Alaska; Lamar, Colorado; Glenwood, New Mexico; and Silver City, New Mexico. Thus *californicus* may be more prone to vagrancy than previously thought, and observers in interior western states should be aware of the possibility of additional records.

Elsewhere in the interior West and Alaska including, notably, St. Lawrence Island, the majority of available records identified to subspecies represent *purpureus*. Outside of the breeding range in western North America, *purpureus* is recorded most frequently in the western Great Plains states (Montana and Colorado), but it becomes sparser farther west, with 14 records from Idaho, Nevada, and Utah, and only seven among Arizona, Washington, Oregon, and California. Birders throughout the West should attempt subspecific identification when possible, including critical assessments of birds showing characters of *purpureus* within the range of *californicus*.

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Figure 7. First-cycle purpureus Purple Finch at Fort Peck, Valley Co., Montana, 2 February 2008. In most of the interior West and on the western Great Plains, purpureus is the more likely subspecies.

Photo by John Carlson

Figure 8. Adult female californicus (right) in Lamar, Colorado, 7 December 2004, photographed alongside a Chipping Sparrow (Spizella passerina; left). The bird’s overall gray-brown coloration, entirely lacking white, suggests californicus. This identification is confirmed by the heavily streaked drab face, thick, blurry flank streaking, dull wingbars, and a lack of white back streaking.

Photo by Tony Leukering
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Figure 9. Outside of Arizona and southeast Alaska, vagrants of *californicus* are very rare. Adult male *californicus*, Glenwood, New Mexico, March 1991, representing, along with a specimen collected in Silver City, two of only three documented *californicus* east of Arizona. Distinguished from *purpureus* primarily by the lack of pale tipping to the greater coverts and perhaps by the suggestion of smudgy dark streaking on the lower flanks.

*Photo by Sharon Nelson*


*Accepted 17 September 2014*
ABSTRACT: The Black-backed Woodpecker (Picoides arcticus) is strongly associated with recently burned forest, which makes it vulnerable to salvage logging or other post-fire forest management that removes snags. As part of a larger radio-telemetry study of the species’ resource use and habitat selection in a burned forest in California, we located radio-tagged Black-backed Woodpeckers at night to find and describe their roost sites. We found 14 unique roost locations during night-time searches for five individual birds. Description of the micro-site on the tree that the bird used was impossible at five roosts where we could not visually locate the bird in the dark. At the nine roosts confirmed visually, none of the birds roosted in excavated cavities. Rather, they roosted in sheltered spaces within burned-out hollows of trunks (5 instances), in the crook of a forked trunk (1 instance), wedged between adjacent trunks of two closely spaced trees (1 instance), in a deep, natural bark furrow (1 instance), and clinging to a trunk directly above a horizontal branch (1 instance). Eleven of the 14 roosts (79%) were in dead trees. Our results suggest that in burned forests the Black-backed Woodpecker may benefit if, during salvage logging, emphasis is placed on retaining snags with burned-out hollows, forked trunks, or other relatively unusual structures that may create crevices or other opportunities for shelter.

The Black-backed Woodpecker (Picoides arcticus) is strongly associated with recently burned forest, which makes it vulnerable to salvage logging or other post-fire forest management that removes snags (Bond et al. 2012). In California, the U.S. Forest Service has designated the Black-backed Woodpecker a “management indicator species” for burned forest across ten national forests (U.S. Forest Service 2007). At this writing, the U.S. Fish and Wildlife Service is also evaluating the California segment of the species for candidacy as threatened or endangered under the federal Endangered Species Act. Recent research into the Black-backed Woodpecker’s occupancy patterns (Saracco et al. 2011), habitat selection for nesting (Seavy et al. 2012) and foraging (Hanson and North 2008), and home-range size and characteristics (Tingley et al. 2014) in burned forests of California have provided a wealth of information that land managers can use to consider habitat needs of the species when managing burned forests.

Night-time roost sites could be a habitat element limiting the suitability of otherwise appropriate burned forest as habitat for Black-backed Woodpeckers. Understanding the specific characteristics of sites the species selects for roosting could lead to more informed snag-retention guidelines to help ensure that retained habitat is as suitable for Black-backed Woodpeckers as possible.
Although many woodpeckers create their own roost sites by excavating cavities in live or dead trees (Winkler et al. 1995), the limited evidence available indicates this is not the case for the Black-backed Woodpecker, at least during the nesting season. Goggans et al. (1988) reported characteristics of roosts used by four radio-tagged Black-backed Woodpeckers breeding in unburned Oregon forests with a high rate of tree mortality induced by bark beetles. Of 20 roost sites found, none were in excavated cavities. Rather, the birds roosted in a variety of micro-sites, including trunk scars and concave western gall rust (*Endocronartium harknessii*) cankers, primarily on live trees. However, no information is available about the Black-backed Woodpecker’s roost-site selection in burned forests. As part of a larger radio-telemetry study of the species’ resource use and habitat selection in a burned forest in California (Tingley et al. 2014), we located radio-tagged Black-backed Woodpeckers at night to find and describe their roost sites.

**METHODS**

During the breeding season of 2013, we studied Black-backed Woodpeckers occupying the area burned by the Wheeler fire (alternatively referred to as the Antelope Complex fire) in the Plumas National Forest (Figure 1) in the northern Sierra Nevada, California. The Wheeler fire burned in 2007, affecting 9265 ha of mostly Sierran mixed conifer forest (California Department of Fish and Game 2005) on Forest Service land. Forest Service mapping based on Landsat Thematic Mapper data before and after the fire classified the burning of 52.6% of the area inside the fire perimeter as high severity, 28.3% as moderate severity, 13.4% as low severity, and 5.7% as unchanged. There was little post-fire logging on Forest Service land within our study area, but a few private inholdings within and adjacent to the study area were clear-cut after the fire, and post-fire wood-cutting for firewood by the public was pervasive along roads through much of the study area on Forest Service land. Much of the study area encompassed large, continuous stands of moderately or severely burned forest. The burned area extends from 1417 to 2138 m above sea level.

In late April of 2013, we began searching for Black-backed Woodpeckers at the study site, using a combination of broadcast surveys (loosely following the survey methods described in Saracco et al. 2011) and passive observation. Once we located birds, we caught them in mist nets and attached model BD-2 radio transmitters supplied by Holohil Systems, Ltd., to the dorsal surface of one of the inner rectrices. Transmitters were custom-modified by the manufacturer with a hole drilled into the large end, through which we could feed monofilament. Transmitters, including batteries, weighed approximately 2.0 g. We used ethyl cyanoacrylate (available commercially as Superglue) to glue transmitters to a feather shaft and then further attached them with two loops of monofilament tied around the feather shaft.

Some of the woodpeckers we radio-tagged occupied home ranges in very steep terrain or in areas otherwise difficult or unsafe to traverse at night. To identify roost sites, we therefore selected five focal individuals from a subset of the larger group of woodpeckers we radio-tagged, on the basis of their feasibility of being radio-tracked at night, given the accessibility and terrain of their home ranges.
We attempted to locate the focal birds about every ten days, or opportunistically when our crew was able to visit the study site at night. In the Black-backed Woodpecker, males roost primarily in the nest cavity until late in the nestling period (Short 1974). After confirming this by finding one of our radio-tagged males roosting in the nest with nestlings, we searched for roosts of males only after their nestlings had fledged. We looked for roosts of radio-tagged females both before and after nestlings fledged.

Working in pairs or small groups, our crew used the homing method (Mech 1983, White and Garrott 1990) to find roosting birds at night. Searching
Figure 2. Examples of locations of night-time roosts in burned-out hollows of trunks (A and B), in the crook of a forked trunk (C), and obscured within thick live foliage indicated by the oval (D).
began only after at least three stars were visible in the night sky, usually near the tagged bird’s nest. Locating roosts generally required between 15 and 90 minutes of homing. In many cases we were able to visually confirm the roosting bird’s location with a flashlight, but sometimes the birds were obscured by vegetation or were otherwise impossible to see. We recorded the roost’s coordinates and marked the site with flagging, then returned during daylight to record the roost’s substrate and details of the surrounding habitat.

RESULTS

We found 14 unique roost locations (other than nests) during 20 nighttime searches for the five birds (Table 1). In six cases (30%), we found birds roosting at sites where we had found them roosting on previous nights. In all cases, we ascertained the tree in which the bird was roosting by radio-tracking, but description of the micro-site on the tree that the bird used was impossible at five roosts (36%) where observers could not visually locate the bird in the dark. At the nine roosts (64%) that were confirmed visually, none of the birds roosted in excavated cavities. Rather, we found them roosting in sheltered spaces within burned-out hollows of trunks (5 instances; Figure 2), in the crook of a forked trunk (1 instance; Figure 2), wedged between

Table 1 Characteristics of Black-backed Woodpecker Roost Sites Found in the Area Burned in the Wheeler Fire

<table>
<thead>
<tr>
<th>Bird</th>
<th>Roost micro-site</th>
<th>Tree species</th>
<th>Live or Dead</th>
<th>Fire severity&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Dates used&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>BX-13</td>
<td>Forked trunk</td>
<td>Yellow Pine</td>
<td>Dead</td>
<td>H</td>
<td>10 Jun</td>
</tr>
<tr>
<td>BX-13</td>
<td>Burned-out hollow in trunk</td>
<td>Fir</td>
<td>Dead</td>
<td>M</td>
<td>18 Jun</td>
</tr>
<tr>
<td>BX-13</td>
<td>Unseen</td>
<td>White Fir</td>
<td>Dead</td>
<td>H</td>
<td>26 Jun</td>
</tr>
<tr>
<td>BX-13</td>
<td>Deep bark furrow</td>
<td>Incense Cedar</td>
<td>Dead</td>
<td>M</td>
<td>3, 10, 18 Jul</td>
</tr>
<tr>
<td>CR-13</td>
<td>On trunk above a branch</td>
<td>White Fir</td>
<td>Dead</td>
<td>H</td>
<td>11 Jun</td>
</tr>
<tr>
<td>CR-13</td>
<td>Burned-out hollow in trunk</td>
<td>Fir</td>
<td>Dead</td>
<td>H</td>
<td>21, 26 Jun, 3, 10, 18 Jul</td>
</tr>
<tr>
<td>EM-13</td>
<td>Wedged between two trunks</td>
<td>Oak</td>
<td>Dead</td>
<td>M</td>
<td>30 Apr</td>
</tr>
<tr>
<td>RR-13</td>
<td>Burned-out hollow in trunk</td>
<td>Yellow Pine</td>
<td>Dead</td>
<td>H</td>
<td>8, 26 Jun</td>
</tr>
<tr>
<td>RR-13</td>
<td>Unseen</td>
<td>Jeffrey Pine</td>
<td>Live</td>
<td>M</td>
<td>19 Jun</td>
</tr>
<tr>
<td>RR-13</td>
<td>Burned out hollow in trunk</td>
<td>Fir</td>
<td>Dead</td>
<td>H</td>
<td>10 Jul</td>
</tr>
<tr>
<td>RR-13</td>
<td>Burned out hollow in trunk</td>
<td>Fir</td>
<td>Dead</td>
<td>H</td>
<td>18 Jul</td>
</tr>
<tr>
<td>SD-13</td>
<td>Unseen</td>
<td>Ponderosa Pine</td>
<td>Live</td>
<td>M</td>
<td>14 May</td>
</tr>
<tr>
<td>SD-13</td>
<td>Unseen</td>
<td>Yellow Pine</td>
<td>Dead</td>
<td>M</td>
<td>21 Jun</td>
</tr>
<tr>
<td>SD-13</td>
<td>Unseen</td>
<td>Yellow Pine</td>
<td>Live</td>
<td>M</td>
<td>26 Jun</td>
</tr>
</tbody>
</table>

<sup>a</sup>Severity of the fire as unburned, low, moderate (M), or high (H) within 50 m of the roost, as assessed in the field.

<sup>b</sup>All dates were during 2013. Bold type, the bird’s young had not yet fledged from the nest; regular type, the bird’s young had already fledged.
adjacent trunks of two closely spaced trees (1 instance), in a deep, natural bark furrow (1 instance), and clinging to a trunk directly above a horizontal branch (1 instance). At the five locations where the roosting bird was not located visually, inspection of the roost tree during the day did not reveal any excavated cavities that could have been used for roosting.

The 14 roosts varied greatly (Figure 3) in distance from the roosting bird’s nest, with an average distance of 428 m (SD = 241 m). We recorded both the minimum (110 m) and maximum (874 m) distance from the nest tree when the roosting bird still had nestlings in its nest. All 14 of the roost sites were within stands that had burned at moderate or high severity (Table 1). Three of the 14 roost sites were in live trees, whereas the remaining 11 (79%) were in fire-killed snags (Table 1). Tree species used for roosting included Ponderosa (*Pinus ponderosa*) and Jeffrey Pine (*P. jeffreyi*), White Fir (*Abies concolor*), unidentified fir (which could be White Fir or Red Fir [*A. magnifica*]), and unidentified oak (Table 1). The trees averaged 37.0 (SD = 16.1) cm in diameter at breast height (dbh) and 12.3 (SD = 5.5) m tall (Figure 3). Most of the roost sites had few or no live trees within 10 m of the roost tree (range 0–17 live trees with dbh >10 cm), whereas the abundance of dead trees within the 10-m radius varied greatly (Figure 3; range 1–89 dead trees with dbh >10 cm).

**DISCUSSION**

Our study provides the first information on the Black-backed Woodpecker’s roost sites in burned forest. In unburned forest with a high proportion
of trees killed by bark beetles, Goggans et al. (1989) reported Black-backed Woodpeckers roosting primarily in live trees (87% of sites), whereas 79% of our observations (11 of 14) were of birds roosting in dead trees. Neither study, however, found woodpeckers roosting in excavated cavities (except within the nest during incubation and brooding). Rather, at least during the nesting season, Black-backed Woodpeckers roost in semi-sheltered, unexcavated micro-sites, such as burned-out hollows in fire-killed trees, tight spaces between forked trunks, and, in at least one instance in our study, a portion of a trunk covered with dense, live foliage. In several cases, the creation of burned-out hollows in fir trunks used for roosting appeared to have been facilitated by previous nonlethal attacks by the Fir Engraver Beetle (*Scolytus ventralis*), a bark beetle that attacks stressed fir trees (D. Cluck, U.S. Forest Service Forest Health Protection program, pers. comm.). Unlike those of many other bark beetles, attacks of the Fir Engraver Beetle may kill only a patch of tissue on the bole (Berryman and Ferrell 1988). Particularly at drier sites, trees may be slow to compartmentalize wounds, leaving dry sapwood exposed and allowing decay-promoting fungi to enter. Several of the hollows we observed appeared to have been created where old partially exposed wounds from beetle attack allowed fire to burn into the bole.

Several of our findings pertaining to roost sites may have implications for retention of burned forest intended to benefit Black-backed Woodpeckers. After the Wheeler fire, Black-backed Woodpeckers roosted in relatively large trees (mean dbh = 37 cm), implying that retained forest stands with larger trees are more likely to provide adequate opportunities for roosting. All 14 of the roost sites we found were in stands that had burned at moderate or high severity, even though some of the birds had extensive lightly burned areas (and in the case of one individual, unburned areas) available within their home ranges.

In California, Black-backed Woodpeckers’ home ranges can be quite large, encompassing hundreds of hectares (Tingley et al. 2014). We found Black-backed Woodpeckers—including individuals still tending nests from which the young had not yet fledged—roosting between 110 and 874 m (mean = 428 m) from their nest. The relatively long distances we found between nests and roost sites underscore the need for land managers to adopt a landscape perspective with respect to the Black-backed Woodpecker and retain large blocks of burned forest (Bond et al. 2012).

Perhaps most importantly, fire-killed trees with burned-out hollows, forked trunks, or other relatively unusual structures were most consistently selected for roosting. Forest-management guidelines often emphasize the importance of retaining “defect” trees during selective logging of unburned forest (Mazurek and Zielinski 2004, North et al. 2009) because such trees may be especially valuable to wildlife and are currently scarce in Sierra Nevada forests (McKelvey and Johnson 1992). Our results suggest that in burned forests Black-backed Woodpeckers may likewise benefit from retention of “defect” snags—snags with burned-out hollows, forked trunks, or other unusual structures that may create crevices or other opportunities for shelter—during salvage logging. Additional research is needed to determine which other species of wildlife might also benefit from such efforts.
ACKNOWLEDGMENTS

We thank Danny Cluck for examining roost sites and identifying signs of attack by Fir Engraver Beetles, and our 2013 field crew for their efforts to locate Black-backed Woodpeckers at night: Jerry Cole, Claire Johnson, Matthew Lerow, Cedar Mathers-Winn, Anastasia Rahlin, Kristen Strohm (crew leader), and Melissa Witte. Chad Hanson and Nathaniel Seavy provided helpful comments on an earlier draft of the manuscript. This project was funded by the Pacific Southwest Region of the U.S. Forest Service and was conducted by The Institute for Bird Populations’ Sierra Nevada Bird Observatory. This is contribution 482 of The Institute for Bird Populations.

LITERATURE CITED


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CHARACTERISTICS OF SITES OF WESTERN BLUEBIRD NESTS IN MANAGED PONDEROSA PINE FORESTS OF WASHINGTON

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ABSTRACT: I compared characteristics of sites of Western Bluebird (Sialia mexicana) nests in natural tree cavities in burned and unburned logged ponderosa pine (Pinus ponderosa) forests along the east slope of the Cascade Range of Washington, 2003–2008 and 2010. Tree density and percent debris cover (litter and large woody debris) were greater at nest sites in unburned stands because fire kills live trees and consumes woody debris, and they were the only characteristics in which nest sites in burned and unburned forests differed. In burned stands cavities were oriented primarily east, whereas in unburned stands they were oriented randomly. East-facing cavities may be thermally advantageous early in the day, keeping eggs warmer when the incubating female is away foraging. Most snags containing bluebird nest cavities (73%) were advanced in decay and had broken tops. Of the cavities whose original excavator was known, 27% were excavated by the Hairy Woodpecker (Picoides villosus), 12% by the White-headed Woodpecker (P. albolarvatus), and 5% by the Northern Flicker (Colaptes auratus). Only one nest was located in a non-excavated cavity. Of the 38 second nests, 76% were in the same cavity as the first, even though 38% of these first attempts were unsuccessful, suggesting that suitable cavities are limiting. My results suggest that bluebirds use similar nest sites in burned and unburned ponderosa pine stands and that abandoned woodpecker cavities are critical to the Western Bluebird in these managed forests.

Birds that nest in cavities they do not excavate face unique challenges during the nesting season because they rely on cavities excavated by primary excavators such as woodpeckers or on natural cavities (e.g., hollows from broken branches, rocky cliffs, and holes in exposed banks along streams) (Aitken and Martin 2007). Because of this, the abundance of such secondary cavity-nesters may be constrained by the often limited availability of adequate cavities (Zarnowitz and Manuwal 1985, Holt and Martin 1997). Conservation of secondary cavity-nesters requires an understanding of the characteristics of their nest sites because forest managers can create these habitat features.

The Western Bluebird (Sialia mexicana), a secondary cavity-nester, breeds in semi-open forests, forest edges, and burned forests (Guinan et al. 2008). Over much of its range, the Western Bluebird is associated during the breeding season with forests dominated by ponderosa pine (Pinus ponderosa) (Germaine and Germaine 2002, Arsenault 2004, Kozma and Kroll 2010). Since European settlement, ponderosa pine forests have changed considerably through decades of fire suppression and logging focused on the selective removal of large-diameter trees (Arno 1996, Hessburg et al. 2005). As a result, today’s forests have high densities of small-diameter trees and low densities of large-diameter trees and snags (Keeling et al. 2006, Kozma 2011). To reduce the potential of forest-consuming fires and outbreaks of insect pests, land-management agencies and commercial foresters may thin the trees and burn the understory (Wightman and Germaine 2006) to restore ponderosa pine forests to a condition that is park-like and
dominated by large-diameter trees (Converse et al. 2006). It will take many years for these forests to reach this condition, however, and it is unclear the effect these interim forests will have on cavity-nesting birds (Germaine and Germaine 2002). To address this concern, in 2003 I began studying the reproductive ecology of Western Bluebirds using tree cavities in managed ponderosa pine forests of the eastern Cascade Range in Washington (Kozma and Kroll 2010). My objectives were to (1) describe and compare the characteristics of nest trees or snags and other fine-scale habitat features associated with Western Bluebird nest sites in burned and unburned forests and (2) to determine the proportion of excavated and non-excavated cavities in which bluebirds nest.

STUDY AREA AND METHODS

My study took place along the eastern slope of the Cascade Range in southern Kittitas, Yakima, and Klickitat counties, Washington, from 2003 to 2008 and in 2010 (for a map of the study area, see Figure 1 in Kozma and Kroll 2010). The eastern Cascades have a complex topography (Everett et al. 2000) and hot, dry summers; >80% of the annual precipitation falls during winter (Wright and Agee 2004). The study area ranges in elevation from 560 to 1180 m, encompassing parts of the Okanogan-Wenatchee National Forest and lands owned by the Washington Department of Natural Resources, Western Pacific Timber Company, and one private landowner. This study was part of a larger one investigating the reproductive ecology of primary cavity-nesters (Kozma and Kroll 2012), in which each forest stand contained a breeding pair of White-headed Woodpeckers (Picoides albobarvatus). I selected these stands opportunistically on the basis of reviews of areas proposed for logging where I encountered White-headed Woodpeckers and by reviewing a database of historical sightings maintained by the Washington Department of Fish and Wildlife (Buchanan et al. 2003). Stands comprised ~660 ha of ponderosa pine or mixed-conifer forests, and no part of the study area was harvested, burned or salvage-logged during the study. The overstory of the study area contained a mix of tree species dominated by ponderosa pine (percentage of ponderosa pine ranged from 33 to 100% and was >75% in most stands; Kozma 2011). Douglas-fir (Pseudotsuga menziesii), western larch (Larix occidentalis), and grand fir (Abies grandis) occurred in smaller numbers, depending upon the site’s history, elevation, and aspect. The understory was dominated by antelope bitterbrush (Purshia tridentata), wax currant (Ribes cereum), snowbrush ceanothus (Ceanothus velutinus), snowberry (Symphoricarpos albus), and shinyleaf spirea (Spiraea betulifolia var. lucida). The study area contained 18 forest stands where timber had been harvested within the past 25 years. Nine of these stands burned 1–9 years before my study and had some degree of salvage logging ranging from occasional removal of dead trees for firewood to commercial harvest with mechanized equipment. The remaining nine stands were unburned and were managed for trees of uneven ages by thinning or shelterwood harvest.

I searched for Western Bluebird nests from mid-April to mid-June, 2003 to 2008. In 2010, I recorded Western Bluebird nests found incidentally while
I was monitoring woodpecker nests. Because of time constraints, I searched a subset of the 18 stands in each year, and stands that I monitored within a given year I searched at least once every 7–10 days. I located nests by checking cavities in which I knew bluebirds to have nested in previous years and by following adults carrying nesting material or food to new or previously unknown cavities. To confirm that a cavity contained an active nest (i.e., at least one egg was laid), I inspected cavities with a Tree Top Peeper IV, a portable telescoping probe and video camera (Kozma and Kroll 2010). If cavities were higher than 11 m, I confirmed nesting by behaviors such as the female entering for an extended period and adults carrying food to the cavity or removing fecal material. If I observed an active bluebird nest in the same cavity after the initial attempt ended, I assumed that cavity was being reused by the same pair of bluebirds (Stanback and Rockwell 2003).

I sampled the vegetation around each nest cavity after the bluebirds were no longer using it. At each nest tree or snag (“nest substrate”), I recorded the following variables: species of the substrate, degree of decay (scale 1–4; Table 1), height (m), diameter at breast height (dbh; cm), cavity height (m), slope (%), canopy cover (%), shrub height (m), and the original excavator of the cavity, if known. I measured shrub, cavity, and nest-substrate height with the telescoping nest-inspection pole (graded in m and cm) or with a clinometer for cavities and nest substrates higher than 11 m (Kozma 2012). I calculated a cavity’s relative height by dividing the cavity’s height by the nest substrate’s height (Siegfried et al. 2010). I used a spherical crown densiometer at the base of the nest substrate to estimate canopy cover in the four cardinal directions, then averaged the four estimates (Farnsworth and Simons 1999). I was able to determine the original excavator of 57 cavities because I also monitored nests of primary excavators in the same study area and I marked all nest substrates with a numbered aluminum tag (Kozma 2012).

I sampled habitat in circles of radii of 2, 5, and 11.3 m centered on each nest substrate (modified from James and Shugart 1970 and Martin et al. 1997). Within the 2-m circle, I estimated the percent cover of herbaceous plants (forbs and grasses) and debris (large woody debris and litter). In the

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Stage of Decay of Trees and Snags in Which Western BluebirdsNested in Managed Ponderosa Pine Forests, Eastern Cascade Range, Washington, 2003–2008 and 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proportion</strong></td>
<td><strong>Type 1</strong></td>
</tr>
<tr>
<td>Ponderosa pine</td>
<td>0.04</td>
</tr>
<tr>
<td>Douglas-fir</td>
<td>0.00</td>
</tr>
<tr>
<td>Western larch</td>
<td>0.01</td>
</tr>
<tr>
<td>Grand fir</td>
<td>0.00</td>
</tr>
<tr>
<td>Willow (<em>Salix sp.</em>)</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>0.05</td>
</tr>
</tbody>
</table>

*Type 1, live tree with a dead top or other defect; type 2, recently dead tree with brown foliage; type 3, snag with moderate decay, foliage and small branches missing, top intact; type 4, snag in advanced decay with broken top and most branches gone (Kozma 2009).
5-m circle I visually estimated the percent cover of each shrub species. In the 11.3-m circle (0.04 ha) I counted trees and snags in three categories of dbh (25.4–50.8 cm, 50.8–76.2 cm, and ≥76.2 cm).

Because in some years samples were small, for analyses I pooled all years’ nests. If bluebirds reused a cavity in a subsequent year, I randomly chose one attempt and used the sampling of vegetation during that attempt in the analyses. I categorized dbh as all trees ≥25.4 cm, all snags ≥25.4 cm, and all trees and snags combined (Kozma and Kroll 2010). I used a chi-squared test for goodness of fit to determine if the category of decay of nest substrate differed from that expected by chance. In my comparisons of vegetation variables in burned and unburned stands, no overlap of 95% confidence intervals suggested a statistically significant difference (Kozma...
I used Rayleigh’s test to determine if the orientation of cavities in burned and unburned stands clustered around a mean (Zar 1974). For all statistical tests I set $\alpha = 0.05$.

RESULTS

I monitored 182 nest attempts, of which I am presenting the results of vegetation sampled at 123 nest sites (83 in burned and 40 in unburned stands) because of multiple attempts in the same cavity. Ponderosa pine contained 82% of cavities used by bluebirds, followed by Douglas-fir (11%; Table 1). The degree of decay of nest substrates was distributed nonrandomly ($\chi^2 = 89.5, df = 3, P < 0.01$), with the greatest proportion of bluebird cavities located in snags in the most advanced stage of decay (Table 1). Of the 57 cavities whose original excavator I knew, 33 were excavated by Hairy Woodpeckers (*Picoides villosus*), 15 by White-headed Woodpeckers, 6 by
Northern Flickers (*Colaptes auratus*), 2 by Black-backed Woodpeckers (*P. arcticus*), and 1 by a Williamson’s Sapsucker (*Sphyrapicus thyroideus*). An additional 53 cavities had entrances of a diameter nearly identical to that of a cavity excavated by *Picoides* and smaller than that of one excavated by a flicker, but I did not identify the species. Only one nest was located in a natural, unexcavated cavity. Of the 38 second nests attempted by the same pair of bluebirds, 29 (76%) were in the same cavity as the first attempt even though 11 (38%) of these first attempts were unsuccessful.

Debris cover and tree density were greater at bluebird nests in unburned than in burned stands (Figure 1), but no other vegetation variables I measured differed (Figure 1). Likewise, the mean relative cavity height in burned stands (0.54; 95% CI: 0.47, 0.60) was similar to that in unburned stands (0.55, 95% CI: 0.45, 0.65). In burned stands the mean orientation of cavities was 121°, and values were significantly clumped around the mean (n = 83, r = 0.195, z = 3.167, 0.05 > P > 0.02). In unburned stands, the mean orientation was 247°, but the distribution did not differ from random (n = 39, r = 0.206, z = 1.651, 0.20 > P > 0.10).

**DISCUSSION**

The majority of Western Bluebird nests were in ponderosa pine snags, which is not surprising given that ponderosa pine was the dominant tree in the study area (Kozma 2011). Bluebirds nested almost exclusively in cavities excavated by woodpeckers. The availability of non-excavated, natural cavities may be limited in my study area by the lack of old-growth deciduous trees of large diameter (dbh >50 cm; Kozma 2011), which are more likely to have natural cavities, although I did not sample the availability of excavated to unexcavated cavities. Studies finding a greater proportion of use of non-excavated cavities have generally been done in more mature forests (Bai et al. 2003, Wesołowski 2007); older trees are more likely than younger trees to contain non-excavated cavities in the form of broken or hollow branches and crevices behind loose bark.

Bluebirds most frequently used cavities in snags far along in decay. This likely reflects the selection of such snags by the Hairy and White-headed woodpeckers, whose cavities bluebirds used most often, because these two woodpeckers excavate most of their cavities in snags with advanced decay (Kozma 2012). Even though Northern Flicker cavities are abundant in my study area (114 flicker nests monitored from 2003 to 2010; Kozma 2012), bluebirds rarely nested in them. This was unexpected because other species nest in flicker cavities extensively (Martin and Eadie 1999, Gentry and Vierling 2008). Cavities with smaller entrances (e.g., those excavated by *Picoides* woodpeckers) may be more attractive to bluebirds because they are more easily defended, may reduce the number of potential predators able to enter the cavity, and are better at maintaining the cavity’s internal temperature (Rhodes et al. 2009). Indeed, Arsenault (2004) and Saab et al. (2009) found that Western Bluebirds nest most frequently in cavities smaller than those excavated by flickers. Furthermore, Arsenault (2004) concluded that cavity size was the most important characteristic distinguishing nest sites of four different cavity-nesters.
For second nests, Western Bluebirds frequently reused cavities, even if the first nest was unsuccessful. This was also unexpected because the Eastern Bluebird (Sialia sialis) is more likely to change sites if the previous attempt failed (Gowaty and Plissner 1997). Bluebirds that reuse a cavity within the same season risk exposing their second brood to an increase in ectoparasites (Stanback and Rockwell 2003). In addition, an increase of predation on these second nests can be expected, especially if the first nest was preyed upon (Sonerud 1985). Although I did not measure the availability of cavities, in my study area, which is composed primarily of managed forests, bluebirds may be faced with a scarcity of suitable cavities (Aitken et al. 2002). As a result, alternate cavities may be occupied, suboptimal, outside of the territory, or of unknown quality (Harvey et al. 1979, Stanback and Rockwell 2003). If bluebirds are unable to find suitable alternate cavities, they may be forced to reuse cavities (Stanback and Dervan 2001).

In only two vegetation variables, debris cover and tree density, did bluebird nest sites in burned and unburned forest differ. Both of these variables were lower in burned areas because fire kills live trees and removes downed logs and other debris from the ground and because during salvage logging some live trees whose crown is scorched and so not expected to live are removed. In burned forest, bluebirds preferred cavities facing east. In burned stands, which are more open than unburned stands, east-facing cavities may have a thermal advantage because they can be warmer than cavities oriented in other directions (Hooge et al. 1999). East-facing cavities may warm up faster in the morning, allowing the eggs to stay warmer when the incubating female leaves the nest to forage (males do not incubate). Arsenault (2004) also found that Western Bluebirds used east-facing cavities more and north-facing cavities less than expected from the orientation of unused cavities. Other secondary cavity-users such as the American Kestrel (Falco sparverius) and Tree Swallow (Tachycineta bicolor) also prefer natural cavities or nest boxes oriented east (Raphael 1985, Ardia et al. 2006). Primary excavators often selectively excavate cavities facing east as well, although it is unclear if they are selecting this orientation because of its thermal advantages or are taking advantage of the occurrence of heartrot (Saab et al. 2004). In my study area, Hairy and White-headed woodpecker cavities in burned areas had a mean orientation of 154° and were not randomly distributed ($n = 79, r = 0.253$, $Z = 5.06, 0.01 > P > 0.005$), while the orientation of cavities excavated by these two woodpeckers in unburned areas was randomly distributed ($n = 87, r = 0.126$, $Z = 1.38, 0.50 > P > 0.20$). Therefore, bluebirds nesting in burned areas may also be selecting cavities with an east aspect because they are the most readily available.

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DOCUMENTING WESTERN BURROWING OWL REPRODUCTION AND ACTIVITY PATTERNS WITH MOTION-ACTIVATED CAMERAS

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ABSTRACT: We used motion-activated cameras to monitor the reproduction and patterns of activity of the Burrowing Owl (Athene cunicularia) above ground at 45 burrows in south-central Nevada during the breeding seasons of 1999, 2000, 2001, and 2005. The 37 broods, encompassing 180 young, raised over the four years represented an average of 4.9 young per successful breeding pair. Young and adult owls were detected at the burrow entrance at all times of the day and night, but adults were detected more frequently during afternoon/early evening than were young. Motion-activated cameras require less effort to implement than other techniques. Limitations include photographing only a small percentage of owl activity at the burrow; not detecting the actual number of eggs, young, or number fledged; and not being able to track individual owls over time. Further work is also necessary to compare the accuracy of productivity estimates generated from motion-activated cameras with other techniques.

The Western Burrowing Owl (Athene cunicularia hypugaea) is considered a national Bird of conservation concern by the U.S. Fish and Wildlife Service (http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf) because of declining populations in many parts of its range. Quantifying aspects of reproduction such as number of successful breeding pairs and number of young per successful pair is important to assessing the population’s status and trend. Knowledge of the species’ activity patterns should be a basis for a sampling protocol and a better understanding of its ecology. Techniques for documenting Burrowing Owl reproduction include counting the number of young outside burrows (Thomsen 1971, Martin 1973, Conway and Simon 2003, Gorman et al. 2003), direct capture (Plumpton and Lutz 1994), video surveillance (Gorman et al. 2003), or observing the birds inside artificial nest burrows (Henny and Blus 1981, Botelho and Arrowood 1998, Belthoff and Smith 2000, Gorman et al. 2003, Todd et al. 2003). Determining activity patterns is usually done by direct observation (Grant 1965, Coulombe 1971, Thomsen 1971), but other techniques such as event recorders (Marti 1974) and radiotelemetry (Haug and Oliphant 1990) have also been used.

These techniques have multiple limitations. Counts at burrows require several visits to ensure detection of all young at a burrow (Henny and Blus 1981, Gleason and Johnson 1985, Gorman et al. 2003). Capturing owls is invasive and capturing all the young may require multiple visits. Video surveillance requires specialized equipment and is time-consuming. Observation inside artificial nest burrows is labor-intensive, and in areas where burrows are not limiting the owls may not occupy them. Documenting activity patterns entails numerous hours of observation by both day and night.

Motion-activated cameras can be set up to take pictures and monitor animal activity for relatively long periods (not continuously) with minimal effort. They have been used to inventory a wide variety of animals in multiple...
BURROWING OWL REPRODUCTION AND ACTIVITY PATTERNS

habitats in California (Kucera and Barrett 1993), to identify ground-nest predators (Hernandez et al. 1997), and to monitor burrow use by the Gopher Tortoise (*Gopherus polyphemus*) (Alexy et al. 2003), but they have not been used to study the Burrowing Owl. Because Burrowing Owls live in burrows, frequently enter and exit their burrows, and spend much time around their burrow entrance, the use of motion-activated cameras may be a cost-effective technique to document the species’ reproduction and activity patterns. The objectives of our study were to (1) evaluate the use of motion-activated cameras to document Burrowing Owl reproduction and activity patterns, (2) quantify the number of successful pairs and number of young per pair, and (3) describe the owls’ activity patterns.

METHODS

Study Area

The Nevada National Security Site (NNSS), formerly known as the Nevada Test Site (e.g., Hayward et al. 1963, Castetter and Hill 1979, Boone et al. 1999) is administered by the U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office (NNSA/NFO). The NNSS encompasses approximately 3561 km² in south-central Nevada (Nye County), approximately 105 km northwest of Las Vegas. Despite drastic changes (i.e., craters, denuding of vegetation) to localized areas of the NNSS from testing of nuclear weapons for more than 40 years, biological resources over much of the NNSS remain relatively pristine because only an estimated 7% of the site has been disturbed (U.S. Department of Energy, Nevada Operations Office [USDOE] 1996).

The southern two-thirds of the NNSS is dominated by three large valleys or basins: Yucca, Frenchman, and Jackass flats. Mountain ridges and hills rise above sloping alluvial fans to enclose these basins. Pahute and Rainier mesas and Timber and Shoshone mountains occupy the northern, northwestern, and west-central sections of the NNSS. The site ranges in elevation from <1000 m above sea level on Frenchman and Jackass flats to about 2340 m on Rainier Mesa.

The NNSS has a climate characteristic of high deserts with little precipitation, hot summers, mild winters, and wide diurnal ranges in temperature. Monthly average temperatures range from 7 °C in January to 32 °C in July. The average annual precipitation ranges from 15 cm at the lower elevations to 23 cm at the higher elevations (USDOE 1996). Most of the precipitation falls from December to March in the form of rain or snow; lesser amounts of rain usually fall during July and August. From 1960 to 2005, October to March precipitation as measured on Yucca Flat averaged 10.2 cm, but during our study it varied widely (1998–99, 2.3 cm; 1999–2000, 12.9 cm; 2000–01, 10.1 cm; 2004–05, 22.9 cm).

The NNSS straddles the transition between the Great Basin Desert and the Mojave Desert as defined by Jaeger (1957). Within the site, the vegetation of the Great Basin Desert region is dominated by sagebrush (*Artemisia* spp.), Singleleaf Pinyon (*Pinus monophylla*), and Utah Juniper (*Juniperus osteosperma*), the Mojave Desert region by Creosotebush
Camera Setup and Reproduction

We monitored known owl burrows monthly from February to August 1999–2001 and in April, May, and July 2005 to determine if they were active. We considered a burrow active if we found pellets or scat fresh since our previous visit or if we saw an owl at it. We removed pellets or scat during each visit to facilitate identification of fresh sign on the subsequent visit. We included 2005 in the study primarily to compare reproductive success during a very wet year (twice the average) to reproductive success during years with average or below average precipitation and excluded 2005 data from the activity-pattern analysis. At each active burrow we set up a Trail-Master camera system (TM1500 active infrared trail monitor, Goodson & Associates, Inc., Lenexa, KS). The cameras were deployed from 3 June to 9 September 1999, 22 February to 10 August 2000, 25 April to 20 August 2001, and 31 May to 10 August 2005.

Each system (Figure 1) consisted of an infrared transmitter (A), a receiver (B), a weather-resistant 35-mm camera with a protective shelter and mounted to a fence post (C), and a cable connecting the camera to the receiver (D). The beam of infrared light emitted by the transmitter was aimed at a window on the side of the receiver. The transmitter and receiver were set up within 15 cm of the burrow entrance so that the beam projected across the entrance. Each time an owl or other animal interrupted the beam, the receiver recorded the date and time. Depending upon how the camera system was programmed, each interruption could also trigger the camera to take a picture. We set 0.5 sec as the shortest interruption of the beam the receiver would register and 30 min as the minimum interval between photographs. Thus only events at least 30 min apart were photographed. The camera was mounted on a fence post 4 to 6 m from the burrow entrance and aimed at the burrow entrance. Photographs were recorded on 200-speed, 36-exposure Kodak Royal Gold color film. Cameras were equipped with an automatic flash for night pictures.

Once the camera system was in place, we tested the system by manually interrupting the beam of light with a hand or other object and confirming that the camera took a picture. During initial setup at each burrow we recorded the location, date, time, starting picture number, and starting event number. If, when we retrieved the system, the number of pictures taken was ≤10 we left the film in the camera for use at the next site. Thus the maximum number of pictures taken at any one burrow ranged from 25 to 35. The length of time the camera could take pictures at each burrow ranged from a minimum of 12.5 hours (25 pictures taken every half hour) to the entire duration of the setup. Thus for photographs the “sampling effort” was not standard across burrows, being affected by the entry/exit behavior and number of owls at each burrow. Because of the memory-storage limitations of the receiver the maximum number of events that could be recorded was about 1100.

Camera systems were moved to new burrows usually every two to three days. We used a portable data recorder to upload data from the receivers in
the field and later downloaded them to a desktop computer. The cameras were set up to print the date and time on the picture, and the times on both the camera and TM1500 receiver were synchronized. The film was processed commercially, and we hand-labeled each picture with the date, time, location, and which individuals were in the picture. From these pictures we determined the numbers of adults and young, but we did not attempt to age the young. We defined a pair as successful if we detected one or more young at their burrow, as nonproductive if we detected no young. We also recorded species other than the Burrowing Owl.

Activity Patterns

To investigate daily activity patterns defined as presence of owls on the burrow apron and entry into or exiting from the burrow entrance, we examined the photographs and associated event data for 1999–2001. Our objectives for the analysis of activity patterns were to determine (1) times when owls were present around their burrow entrance, (2) differences in activity patterns between young and adults, and (3) the best times to count the maximum number of young per nest burrow.

To upload all data from the receivers (date, time, event number, photograph number) to a computer, we used StatPack software (Goodson & Associates, Inc., Lenexa, KS). We described the content of each photograph, categorizing the photo by whether it included (1) adult owl(s), (2) young owl(s), and (3) the maximum number of young owls at that burrow. These data were imported into a Microsoft Excel spreadsheet, in which we plotted the number of photographs containing the various contents listed above for each hour of the day. We assigned each photograph a whole-hour value; for example, a photograph taken between 02:00 and 02:59 was assigned the whole-hour value of 02:00. We used a chi-squared analysis of each category to assess whether activity patterns differed from that expected if activity were random. We then modeled the counts as Poisson random variables and used harmonic analysis to identify peaks in activity.

RESULTS

A total of 2828 photographs were taken from 1999 to 2001. Of these, 2225 (79%) contained pictures of owls, 406 (14%) contained pictures of animals other than owls, and 197 (7%) detected no animals. Over the four breeding seasons, we detected 37 successful breeding pairs and 180 young with an average of 4.9 young per successful pair (Table 1). We also documented ten pairs with no young, one in 1999, two in 2000, three in 2001, and four in 2005. Including these ten lowers the average to 3.8 young per pair. Over all years combined, breeding was successful at 20 of the 45 sites (44%) sampled. We sampled burrows photographically from one to seven times (generally two to four) per year, depending on how long a burrow remained active. Of the 406 photographs of animals other than owls, 22 (5.5%) were of Burrowing Owl predators, including seven photos of the Kit Fox (*Vulpes macrotis*), six of the Badger (*Taxidea taxus*), three of the Coyote (*Canis latrans*), one of a Bobcat (*Lynx rufus*), three of the Common Raven (*Corvus corax*), one of a Greater Roadrunner (*Geococcyx*
californianus), and one of an unknown raptor. The remaining photographs were of rabbits, rodents, and passerines. The rate of predator visitation we detected was low, but our technique was not able to detect predators such as snakes. No instances of predation were photographed.

Adult owls were detected on their burrow’s apron during all hours of the day and night (Figure 2) and the result of the chi-squared test was significant ($\chi^2 = 80, P < 0.001$). Harmonic analysis revealed two peaks of activity, one in the morning between 07:00 and 08:00 and another in the late afternoon between 16:00 and 17:00 (Figure 2). Young owls were also detected on their burrow’s apron during all hours of the day and night (Figure 3), and the result of the chi-squared test for them was also significant ($\chi^2 = 131$,

Table 1  Productivity of Burrowing Owls as Detected by Motion-Activated Camera at the Nevada National Security Site

<table>
<thead>
<tr>
<th>Year</th>
<th>Sites sampled</th>
<th>Breeding pairs</th>
<th>Young owls</th>
<th>Young per pair</th>
<th>Range</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>18</td>
<td>7</td>
<td>24</td>
<td>3.4</td>
<td>1–6</td>
<td>1.6</td>
</tr>
<tr>
<td>2000</td>
<td>24</td>
<td>8</td>
<td>43</td>
<td>5.4</td>
<td>3–8</td>
<td>1.6</td>
</tr>
<tr>
<td>2001</td>
<td>23</td>
<td>11</td>
<td>55</td>
<td>5.0</td>
<td>1–8</td>
<td>2.1</td>
</tr>
<tr>
<td>2005</td>
<td>18</td>
<td>11</td>
<td>58</td>
<td>5.3</td>
<td>3–8</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>45$^a$</td>
<td>37</td>
<td>180</td>
<td>4.0</td>
<td>1–8</td>
<td>1.9</td>
</tr>
</tbody>
</table>

$^a$Number of unique sites; some sites were sampled in multiple years.
Again, the harmonic analysis showed two peaks of activity, one in the morning between 07:00 and 08:00 and another in the evening between 18:00 and 19:00 (Figure 3). The maximum number of young owls per nest burrow was documented during most but not all hours of the day and night (Figure 4), and the result of the chi-squared test of this variable was again significant ($\chi^2 = 94, P < 0.001$). Like that for detection of any young,
harmonic analysis of records of the maximum number of young showed two peaks, between 07:00 and 08:00 and between 18:00 and 19:00 (Figure 4).

DISCUSSION

Motion-activated cameras set up at burrows documented the Burrowing Owl’s reproduction and activity patterns. The actual number of young fledged at each burrow monitored was not known, so it is not possible to determine how accurate this technique was in revealing all young at a burrow. Future study should compare counts of young with motion-activated cameras to the known number of young in artificial nest boxes as exemplified by Gorman et al. (2003). Only two to four visits to a burrow (one to three camera setups plus one visit to determine if the burrow is active) are required to document young at an active burrow, which is one to three fewer visits than recommended by Gorman et al. (2003). With a film camera, up to 35 observations can be recorded over an 18-hour period (photographs taken every half hour, including at night). Digital cameras can now be used to capture several hundred photographs per setup at an increased frequency (e.g., one every minute) if desired, increasing the number of photographs available for refining activity patterns, including timing of prey delivery and feeding. Infrared light sources could also be used instead of camera flash to minimize disturbance to owls at night. Additionally, cheaper video cameras are now available and could be used to document activity patterns and behavior.

The average numbers of young per successful pair and per pair (including nonproductive pairs), 4.9 and 3.8, respectively, were within the range of values previously reported from the western United States (Thomsen

Figure 4. Number of photos when the maximum number of young Burrowing Owls per nest burrow was detected by time of day at the Nevada National Security Site, 1999–2001 (n = 110). Curve represents results of harmonic analysis.
Because we sampled throughout the breeding season and didn’t track survival of chicks, we do not know how many of the young detected photographically actually fledged. Thus our values are most likely inflated. Timing of camera setups should be standardized at specific times through the breeding season for the number fledged per pair to be determined. The number of young per successful breeding pair varied by year (Table 1), but the differences were not statistically significantly ($F = 1.86, df = 3, P = 0.156$). Precipitation from October to March prior to the breeding season was well below average during 1998–1999 and average to more than double the average during the remaining years. Precipitation during this period is positively correlated with the abundance of desert vertebrates (Beatley 1969, Munger et al. 1983, Nagy 1988, Saethre 1994, Sowell and Boone 1996) and may partially explain the low number of young per breeding pair during 1999. The correlation between owl productivity and precipitation warrants further study.

The owls we studied were active during all hours of the day and night with peaks of activity in the morning and evening. Although the harmonic analysis showed the morning peak for both adults and young to be between 07:00 and 08:00, another spike of activity occurred between 05:00 and 06:00. In Colorado, Marti (1974) also found the Burrowing Owl to be active in every hour of the day and night with activity distributed trimodally. The peaks of activity he reported differed somewhat from ours and included one of about five hours centered around sunrise, one of two hours just before midday, and another five-hour period centered around sunset. In Minnesota, Grant (1965) concluded that activity was concentrated in early morning and late evening, with little activity during the day. In California, Thomsen (1971) reported that between 12:00 and 16:00 owls were little in evidence but came out to the burrow apron in late afternoon.

Although we detected both young and adult owls at the burrow entrance at all times throughout the day and night, adult owls were detected more frequently than young during the afternoon and early evening. In California, Coulombe (1971) reported that young owls were frequently outside during the morning and afternoon but rarely during midday.

The best times to detect the maximum number of young owls at nest burrows were from 05:00 to 10:00 and from 18:00 to 21:00, so visual surveys at these times should maximize the probability of detecting the greatest number of young at the NNSS.

During our study, the date of the start of camera monitoring varied considerably from year to year: 3 June 1999, 22 February 2000, 25 April, 2001, and 31 May 2005. However, the earliest dates that young were detected were 26 June 1999, 18 May 2000, 31 May 2001, and 2 June 2005, and the vast majority of young were detected during June and July (Hall et al. 2003). Although some nonproductive pairs may have been missed, it is unlikely that any young were missed. Similarly, in southwestern Idaho Belthoff et al. (1995) reported that the first young owls appeared above ground on 20 May 1994, and they concluded that most young were hatched between mid-May and early June. In south-central Idaho, Rich (1986) observed young
near natal burrows as early as 10 June and as late as 17 September. From
the size and plumage of the young in the photographs, we believe that re-
production in 1999 was delayed in comparison to that in 2000, 2001, and
2005. The delay was possibly caused by the late arrival of precipitation (5
cm in late April), which is necessary for stimulating plant growth and rodent
reproduction (Beatley 1969). Results from Burrowing Owl trapping at the
NNSS in 2007 (a very dry year) also indicated delayed reproduction (National
Security Technologies 2008). In Arizona trapping showed late breeding and
many failures in 2007 also (Vicki Garcia pers. comm.). In contrast, in Canada
Wellicome (2005) found that Burrowing Owls do not adjust their egg laying
on the basis of food supply. Perhaps in desert ecosystems Burrowing Owls
have adapted a more conservative approach to reproduction in response
to a more variable prey base due to limited, sporadic moisture. More study
across geographic regions is required to determine if this is true. On the
basis of our data, we recommend that researchers using motion-activated
cameras in similar habitats set up cameras from mid-May through mid- to
late August to document owl reproduction.

We encountered two problems while using the TM1500 system. The most
common problem was owls and other birds perching on the camera shelter
and tipping the camera so it was no longer focused on the burrow entrance.
To fix this problem we taped the camera shelter to the fence post with duct
tape. Another problem was rodents or other animals chewing through the
cable that connected the camera to the receiver. This was remedied by bury-
ing the cable 2.5 to 5 cm under ground and using duct tape to cover the
first 30–60 cm of the cable next to the fence post. It is advisable to have
two or three extra cables on hand.

Only about half of the active burrows surveyed were productive. At some
sites, photographs documented a pair of adults but no young. We considered
these pairs nonproductive. Reasons for pairs being nonproductive could have
been failure to breed or failure of the nest from factors such as nonviable eggs
or predation. Also, sometimes photographs disclosed older juveniles later
in the season at sites where photographs from previous months’ sampling
had not revealed any young. We did not consider these sites nest burrows,
inferring that the owls had relocated to these burrows later in the season. At
some sites, one adult owl and no young were detected in the photographs.
At many active burrows, no owls were photographed, suggesting only short-
term occupancy of these burrows (e.g., owls migrating through the area or
searching for a suitable burrow). The use of motion-activated cameras did
not appear to cause Burrowing Owls to abandon their burrows.

Using motion-activated cameras to document successful owl reproduction
and activity patterns requires fewer visits to burrows than do direct observa-
tions, is less invasive than capturing the birds, is less time-consuming and
less expensive than video surveillance, and requires much less time and effort
than direct observations. This technique requires less labor than installation
of artificial burrows, and natural burrows may have a higher chance of being
occupied than artificial burrows, especially in areas where burrows are not lim-
iting. Limitations of motion-activated cameras with film include photograph-
ing only a small percentage of owl activity at the burrow; not detecting the
actual number of eggs, young, or number fledged; and not being able to track
individual owls over time. Using digital cameras to take photographs more frequently would help overcome the first limitation but would also increase the processing time. Future studies should examine how accurate motion-activated cameras are in quantifying the number of young in comparison to the known number of young in artificial nest boxes or observed directly in natural burrows. Studies investigating factors that influence reproduction, including precipitation, predation, and disease, are also needed.

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LITERATURE CITED

BURROWING OWL REPRODUCTION AND ACTIVITY PATTERNS


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NOTES

PRESENCE OF THE NEOTROPIC CORMORANT IN CHIHUAHUA, MEXICO

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The Neotropic Cormorant (Phalacrocorax brasilianus) is widely distributed from Tierra de Fuego to the southern United States (Coldren et al. 1998). Recently, its breeding range in the United States has expanded (Pranty et al. 2010). In mainland Mexico, this species has been recorded as a regular breeding resident in several states (Friedmann et al. 1950, Howell and Webb 1995, Gómez de Silva 1998, Erickson et al. 2013). In this note, we report what is apparently the first record of Neotropic Cormorant for Chihuahua.

As part of a bird-monitoring project at El Vado de Meoqui in east-central Chihuahua, a migratory bird corridor decreed as a Ramsar site in 2012, Mondaca observed and photographed an adult Neotropic Cormorant on the banks of the San Pedro River on 29 January 2012 (28° 15’ 42.37” N, 105° 28’ 51.02” W) in Meoqui municipality, approximately 70 km south of Chihuahua city. Field identification was based on the tail longer than that of a Double-crested Cormorant (P. auritus), whitish border to gular skin, absence of any yellow skin in the supraloral area, facial and gular area brownish yellow, plumage blackish overall (Figure 1). The photo was deposited at the Laboratorio de Ecología y Biodiversidad Animal (LEBA), Instituto de Ciencias Biomédicas, Ciudad Juárez, Chihuahua.

Figure 1. Neotropic Cormorant (Phalacrocorax brasilianus) on banks of San Pedro River, Meoqui municipality, Chihuahua, Mexico, on 29 January 2012.

Photo by Fernando Mondaca-Fernández
From a review of published literature (Howell and Webb 1995, Navarro and Peterson 2007) and online resources for bird distribution (databases of Ornis, www. ornis2.ornisnet.org, and eBird, www.ebird.org), the species has apparently not been recorded previously in Chihuahua. Perhaps this record represents a vagrant, but it also might reflect a recent colonization of areas with environmental conditions similar to those in the species’ typical habitat (Ehrlich et al. 1988). We cannot rule out that this species is probably being overlooked in Chihuahua because of a lack of birders and field ornithologists, so it may have been present but gone undetected in the state in previous years.

Possibly, the Neotropic Cormorant also occurs at reservoirs or urban parks in northern Chihuahua (e.g., Juárez or Guadalupe municipalities), given their proximity to recorded localities in the Trans-Pecos region of Texas, where Peterson and Zimmer (1998) considered it an “uncommon permanent resident.” Elsewhere in Texas, Lockwood and Freeman (2014) considered it to be an uncommon to common resident throughout the coastal prairies and south to the lower Rio Grande Valley, with previous summer records at inland locations scattered through eastern Texas. In addition, this species has been recorded regularly in southwestern New Mexico (Williams 2013a, b, 2014).

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LITERATURE CITED


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THANKS TO WESTERN BIRDS’ REVIEWERS AND ASSOCIATE EDITORS

Peer review is a critical step in the publication of a scientific journal. I thank the following people for their generosity in taking the time to provide this essential service sustaining the scientific quality of Western Birds for volume 45:


As always, I must thank our hard-working our associate editors, Kenneth P. Able, Louis R. Bevier, Daniel S. Cooper, Doug Faulkner, Thomas Gardali, Daniel D. Gibson, Robert E. Gill, Paul Lehman, Ron LeValley, and Dan Reinking, plus featured-photo editor John Sterling, all of whom also serve also as reviewers. Western Birds is not possible without their dedication. I am particularly happy to welcome Dan Cooper and Louis Bevier as additional associate editors in 2014 and to thank Dan Gibson, Ginger Johnson, Peter LaTourrette, and Tim Brittain for doing so much to help produce Western Birds.

Philip Unitt

Wing your way to....

Billings, Montana
10–14 June 2015

The 40th annual conference of Western Field Ornithologists will take us to Montana for the first time. Field trips will visit a variety of habitats from the high mountains (Black Rosy-Finch) to the grasslands (Sprague’s Pipit). We’ll see courting McCown’s and Chestnut-collared Longspurs in their finest plumage, Upland Sandpipers, and Lark Buntings. History buffs will delight in viewing the Little Bighorn Battlefield where Custer saw his last Sharp-tailed Grouse.

There will be workshops on the field identification of sparrows (Jon Dunn) and flycatchers (Dan Casey), natural history of owls (Denver Holt), bird-sound identification (Nathan Pieplow), and more. Friday and Saturday afternoon science sessions will update you on the most current avian research from the region, and the Saturday evening banquet will feature a keynote address by Stephen Dinsmore on the Mountain Plover. Ed Harper and Nathan Pieplow will again offer their ever-popular sessions on bird ID by sight and sound.

Registration for the conference will open in February 2015 with the exact date to be announced via a future WFO News e-mail. If you are NOT currently on our electronic mailing list, please send an e-mail to erpfromca@aol.com, include your full name and city and state of residence, and we’ll put you on. WFO members are able to register for our conferences at a reduced rate and have early access to registration. If you are not currently a WFO member, you can join at westernfieldornithologists.org/join.php.
Inland Records of the Black Skimmer in the Western United States

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In the western United States west of the 100th meridian, the Black Skimmer (Rynchops niger) was first recorded in coastal southern California on 8 September 1962 (Audubon Field Notes 17:69) and first recorded inland, at the Salton Sea in southeastern California, on 3 July 1968 (McCaskie and Suffel 1971). After breeding began at the Salton Sea in 1972 (McCaskie et al. 1974), the Black Skimmer rapidly expanded its distribution in California, with an estimated breeding population of 1200 pairs in 1995 (Collins and Garrett 1996) and 1400–1500 pairs in 2005 (Molina 2008) in breeding colonies at the Salton Sea and scattered coastal localities as far north as south San Francisco Bay (Collins and Garrett 1996, Molina 1996, 2008). Skimmers occasionally wander along the coast north of San Francisco to Bodega Bay in Sonoma County (Bolander and Parmeter 2000), rarely farther north. In Humboldt County, a pair was seen at Eureka from 17 to 23 August 2004 (N. Am. Birds [NAB] 59:144) and one was at McKinleyville on 19 July 2005 (NAB 59:651). Another turned up at Crescent City, Del Norte County, on 13 July 2007 (NAB 61:638). A skimmer subsequently seen at Pistol River in Curry County, Oregon, on 26 January 2008 (NAB 62:294, Irons 2008), represents the northernmost record in western North America.

Although two subspecies of the Black Skimmer nest primarily near fresh water along rivers in the interior of South America, the nominate race of North America is almost exclusively a coastal breeder, yet individuals often stray inland (Gochfeld and Burger 1994). Following its recent range expansion in California, the skimmer has subsequently wandered with increasing frequency to inland localities scattered across California and four other western states. In this note I report the northernmost inland record of Black Skimmer in the western United States, at Clear Lake in northern California, and review the species’ occurrence inland in the western United States, from the published literature and recent reports to www.eBird.org (Figure 1). I obtained approximate elevations for each locality from Google Earth.

Record from Clear Lake, California

Given the skimmer’s extreme rarity north of Bodega Bay, California, with only four coastal records and no inland records, the appearance of one inland, 59 km from the coast, on Clear Lake (elev. 405 m), Lake County, California, was unexpected. At 07:21 on 3 July 2013, Allen Moreno, Bryan McIntosh, and I were searching for grebe nests from a canoe when I spotted an adult Black Skimmer flying toward us, from southeast to southwest, at Rumsey Slough, just south of Lakeport. We watched it for about 1 minute as it flew past us and then vanished when it veered northward over the tules toward Lakeport. It reappeared twice, at 07:37 and again at 07:47, each time flying past us from southeast to northwest as we paddled near Konocti Vista Casino; somehow it circled past us twice without being detected. We heard its nasal grunt several times but never saw it skimming for fish. I managed to obtain several photos (see this issue’s back cover). Throughout the day and during the next few days we and other frustrated local birders searched for it in vain from various vantage points around the lake. We also failed to relocate it from a motorboat during a census of waterbirds around the perimeter of the lake on 12 July. At a latitude of 38° 20′ 53.15″ N, this observation represents the northernmost inland record in the western United States.
Because all but a few dozen of California’s skimmers nest in colonies at the Salton Sea and in coastal southern California, most of the inland records are from those areas. Skimmers routinely wander short distances inland up coastal floodplains near sea level but rarely stray inland to higher elevations. Some of the more significant inland records from southern California away from the Salton Sea begin with a juvenile at San Jacinto Wildlife Area (elev. 435 m) and Lake Elsinore (elev. 378 m), Riverside County, 28 August–4 September 1978 (Am. Birds [AB] 33:214, Garrett and Dunn 1981). Subsequent records include two at Palo Verde (elev. 71 m), Imperial County, 30 July 1982 (AB 36:1016, K. V. Rosenberg et al. 1991); two at China Lake Naval Weapons Center (elev. 671 m; highest inland record for California), Kern County, 28 July 1990 (AB 44:1187); two at Twentynine Palms, San Bernardino County, 21 August 1994 (Natl. Audubon Soc. Field Notes [NASFN] 49:101); many records at Prado Reservoir and Prado Basin (elev. 142–158 m), between Chino and Corona, San Bernardino and Riverside counties, beginning with one 24–25 July 1997 (NASFN 51:1054), reaching up to eight from 21 May to 18 July 2011 (NAB 65:688), and including a winter record of two, 2–3 January 2012 (Tom Benson and Howard King; eBird); up to four at Mystic Lake (elev. 432 m), Riverside County, 25 October–29 November 1998 (McCaskie 1999) and another there on 4 August 2000 (NAB 55:103); two at Lake Cachuma (elev. 234 m), Santa Barbara County, 13 January 2001, and single individuals there on 6 December 2002, 11 September 2005, and 15 August 2010 (Lehman 2012); one at the San Jacinto Wildlife Area, 21 June–9 July 2011 (NAB 65:688); one at Lake Balboa (elev. 216 m), Los Angeles County, 9–10 August 2011 (Daniel Tinoco; eBird); two at the Santa Maria wastewater-treatment plant (elev. 47 m), Santa Barbara County, 17 August 2012 (Maggie Smith; eBird); one at Lindo Lake (elev. 122 m), San
Diego County, 23 June 2013 (Tom Frankenberger and B. J. Stacey; eBird); and one at Lake Elsinore, 5–11 August 2013 (Charity Hagen and Julie Szabo; eBird).

In the Central Valley, a pair nested successfully, producing a single fledgling, at the Tulare Lake Drainage District’s South Evaporation Basin (elev. 61 m), Kings County, and were also seen at nearby Tulare Lake (elev. 56 m), Kern County, from 19 July to 12 October 1986 (AB 40:1251, 1256, 41:139). Subsequent records from the same area in Kings County are of four on 8 July 1993 (AB 47:1147) and one on 22 and 23 July 2013 (Mark Stacy; eBird).

Farther north, a few skimmers have been observed flying over coastal hills in the Monterey Bay area, including one over Capitola (elev. >10 m), Santa Cruz County, on 27 April and two more on 12 May 1998 (NAB 53:326). In the south San Francisco Bay area, where nesting began in 1994 (Layne et al. 1996), skimmers have been observed flying over coastal hills including one over El Granada (elev. >10 m), San Mateo County, on 17 July 1998 (NASFN 52:500), and a flock of eight over the intersection of Page Road and I-280 (elev. 79 m) in Palo Alto, Santa Cruz County, 12 November 2013 (Jennifer Rycenga; eBird). In the north San Francisco Bay area, there have been a few inland records along coastal floodplains within a few m of sea level, including two at Shollenberger Park, Petaluma, Sonoma County, 25 July 2010 (Steve van der Veen; eBird), and one along the Marsh Creek Trail, Oakley, Contra Costa County, 11 August 2011 (Richard Harris; eBird).

**INLAND RECORDS FROM OTHER WESTERN STATES**

The Black Skimmer has been recorded twice in Colorado at latitudes slightly lower than the Clear Lake record from California. The first was an adult at Jett Reservoir (elev. 1198 m), Eads, Kiowa County, 19–21 July 2001 (NAB 55:461, Leukering and Semo 2004). Another adult was at Pastorius Reservoir (elev. 2095 m), La Plata County, 29 April 2004 (NAB 58:406, Semo 2006).

In Nevada, two were photographed at the Henderson Bird Viewing Preserve (elev. 488 m), Henderson, Clark County, 18–28 August 1997 (NAB 52:98, Baepler et al. 1999).

Arizona has ten records accepted and one pending. Accepted records are (1) one at two different localities north of Yuma (including Martinez Lake, elev. 56 m), Yuma County, 12 June 1977 (AB 31:1172, K. V. Rosenberg et al. 1991, G. H. Rosenberg and Witzeman 1998); (2) one at Lake Havasu (elev. 138 m), Mohave County, 1–4 September 1977 (AB 32:241, K. V. Rosenberg et al. 1991, G. H. Rosenberg and Witzeman 1998); (3) two at Willcox (elev. 1271 m), Cochise County, 4 August 1984 (AB 39:87, G. H. Rosenberg and Witzeman 1998); (4) one at Painted Rock Dam (elev. 184 m), Maricopa County, 14 July 1993 (AB 47:1134, G. H. Rosenberg and Witzeman 1998); (5) another at Willcox, 4 August 1994 (G. H. Rosenberg and Witzeman 1998); (6) a juvenile at Chandler (elev. 383 m), Maricopa County, 14–15 October 2000 (NAB 55:84, G. H. Rosenberg et al. 2007); (7) an adult at Lakeside Park (elev. 823 m), Tucson, Pima County, 9 May 2002 (NAB 56:338, G. H. Rosenberg et al. 2007); (8) an immature at Gillespie Dam (elev. 229 m), Maricopa County, 16–19 September 2005 (NAB 60:117, G. H. Rosenberg et al. 2011); (9) three at Bill Williams delta (elev. 138 m), Mohave County, 24–28 Oct 2009 (NAB 64:126, Rosenberg et al. 2011); and (10) one at Lake Havasu (elev. 138 m), Mohave County, 28 May 2010 (NAB 64:475). A record of one at Parker (elev. 104 m), on 4 June 2011 (NAB 65:668), is pending.

New Mexico has six records, summarized by Williams and Howe (2008): (1) an immature at Lake McMillan (elev. 1000 m), Eddy County, 5–7 August 1964; (2) an adult at Elephant Butte Lake (elev. 1355 m), Sierra County, 1 May 1993; (3) an adult at Morgan Lake (elev. 1623 m), San Juan County, 15 May 1996; (4) an adult at Bitter Lake National Wildlife Refuge (elev. 1067 m), Chaves County, 10–11 2001; (5) an immature specimen salvaged at Stein’s Pass (elev. 1286 m), Hidalgo County, 18
October 2005 (Museum of Southwestern Biology, University of New Mexico, 25152); and (6) an adult at Heron Lake (elev. 2192 m), Rio Arriba County, 12 May 2007.

DISCUSSION

The widely scattered records in the interior of the western United States indicate that skimmers occasionally wander far from their breeding colonies along the California coast, Salton Sea, and Gulf of Mexico, crossing deserts and high mountain passes, and may occur nearly anywhere. The record most distant from a known breeding colony is for Jett Reservoir near Eads, Kiowa County, Colorado (Leukering and Semo 2004), approximately 1210 km from Galveston Bay, Texas, along the Gulf of Mexico, and approximately 1290 km from the Salton Sea, California. The highest altitudinal record is from Heron Lake, Rio Arriba County, New Mexico, at an elevation of 2192 m (Williams and Howe 2008). In other regions of the species’ range, skimmers also wander far inland and at elevations as high as 2200 m in Mexico (Williams 1982), 2600 m in Colombia (Sergio Chaparro Herrera pers. comm.), 2700 m in Chile (Barabara Knapton; eBird), 3710 m in Bolivia (Parker and Rowlett 1984, presumably the source of 3900 m reported in Fjeldså and Krabbe 1990), and 4086 m in Peru (Colin Bushell pers. comm.).

The numerous inland records in southern California indicate that skimmers routinely cross between the coast and the Salton Sea. Most inland skimmers in the western United States probably originate from breeding colonies in California, yet some, especially those in Colorado and New Mexico, may originate from coastal nesting colonies along the Gulf of Mexico, which are nearly equidistant from the Salton Sea. The Gulf of Mexico is presumably the source of Black Skimmers occurring farther east in Kansas (one record; Mengel 1970), Oklahoma (three records; Newell 1968, Ray 1972, Oliphant 1991), and Texas (several inland records in western and northern Texas; Lockwood and Freeman 2004). Remarkably two skimmers banded as chicks by K. C. Molina at the Salton Sea, California, on 19 August 2005, were recovered inland; the band of one was read at Gillespie Dam, Maricopa County, central Arizona, approximately 265 km east of where it hatched, 16–19 September 2005 (NAB 60:117, G. H. Rosenberg et al. 2011), and the other was salvaged as a specimen from Steins Pass, Hidalgo County, southwestern New Mexico, approximately 630 km east-southeast of where it hatched, 18 October 2005 (Williams and Howe 2008). Clearly much remains to be learned about the dispersal of skimmers from their breeding colonies.

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Photo by © Joseph Leibrecht of New Braunfels, Texas:
Black-backed Woodpecker (*Picoides arcticus*)
Lassen National Forest, Shasta County, California, 4 June 2011.
The Black-backed Woodpecker is well known for its use of burned forest, but, like those of many species, its needs for roost sites are poorly known. By means of radio telemetry, Rodney Siegel, Robert L. Wilkerson, Morgan W. Tingley, and Christine A. Howell located 14 roost sites, finding none of them were in cavities the birds excavated themselves (see pp. 296–303). Rather, burned-out hollows or other natural shelters in trees served as roost sites.