WESTERN BIRDS

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Western Specialty:
Black Swift

Photo by © Sue Hirshman of Montrose, Colorado:
Black Swift (*Cypseloides niger*)
Box Canyon, Ouray, Colorado, 31 July 2013

One of North America's most difficult birds to study, the Black Swift has long kept many secrets. Among these are the extent of the species' sexual dimorphism and how its plumage may change over time. In this issue of *Western Birds*, Carolyn Gunn, Kevin J. Aagaard, Kim M. Potter, and Jason P. Beason report the answers to these questions on the basis of recapturing adults at their nest sites over a period of 14 years and sexing them by genetic testing. The sexes differ most strongly in the depth of the tail fork (deeper in males, shallower in females): only a few males have tails as little forked as those of females. On average, females also have significantly more white tipping than do males on the feathers of the abdomen and undertail coverts. On none of the birds recaptured by Gunn et al. did any of the variables measured change significantly from one year to the next.

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Front cover photo by © Greg Scyphers of Sparks, Nevada: Thick-billed Warbler (variously classified as *Acrocephalus*, *Iduna*, *Phragamaticola*, or *Arundinax aedon*), Gambell, St. Lawrence Island, Alaska, 8–13 September 2017. This represents the first record for North America of a species that ranges northeast in Asia to the Amur River basin.

Back cover "Featured Photos" by Adam Grimm of Burbank, South Dakota: melanistic Horned Grebe (*Podiceps auritus*), paired with a normally colored mate, at Canvasback Lake, Yukon Flats National Wildlife Refuge, Alaska, 30 May 2017.

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.

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FOURTH REPORT OF THE ALASKA CHECKLIST COMMITTEE, 2013–2017

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ABSTRACT: The fourth report of the Alaska Checklist Committee outlines 22 species and two subspecies added to the Checklist of Alaska Birds during the five years 2013–2017, resulting in a net total of 521 species and 119 additional subspecies of birds recognized as occurring or having occurred naturally in Alaska through 2017.

During the period 2013–2017, 22 species and two subspecies were added to the Checklist of Alaska Birds, resulting in a total of 521 species and 119 additional subspecies recognized by the Alaska Checklist Committee (AKCLC) at the beginning of 2018 as occurring or having occurred naturally in Alaska. Organized in 2000, the committee comprises six voting members (above) and a nonvoting secretary (Withrow). We post a new edition of the Checklist of Alaska Birds early in each new year at the University of Alaska Museum's website, where the 24th edition (dated 1 January 2018) can be found at <www.universityofalaskamuseumbirds/products/checklist/pdf>. The current Checklist of Alaska Birds is founded on the "Inventory of the species and subspecies of Alaska birds" (Gibson and Kessel 1997) and incorporates additions, deletions, status changes, taxonomic and nomenclatural changes, etc., reflected in earlier AKCLC reports (Gibson et al. 2003, 2008, 2013), in the second edition of the "Inventory" (Gibson and Withrow 2015), and on information we report here for the first time.

Because preserved examples (archived voucher specimens) of avian species and subspecies make available manifold data that can only be conjectured from representations (photos, videos, etc.), we include here details of first Alaska specimens of species or subspecies already on the Alaska list—archived specimens brought to our attention, re-evaluated, or obtained during this period of coverage. For all taxa discussed here we include author, year of publication, type locality {in braces}, and overview of breeding range. Authorities for outlines of nesting range include Vaurie (1959, 1965), American Ornithologists' Union (AOU 1998 and supplements through [Chesser et al.] 2017), Dickinson and Remsen (2013), and Dickinson and Christidis (2014). Subspecies in brackets are inferences based on characteristics of plumage, phenology, and/or geographic range; subspecies not represented by an archived Alaska specimen; and/or specimens that we are unable to identify with certainty to subspecies. All photos cited in text are on file with the AKCLC and/or the Macaulay Library (ML; www.macaulaylibrary.org) at Cornell University. Citations to the journals *Birding* (B), *North American Birds* (NAB), and *Western Birds* (WB) are abbreviated. We abbreviate references to five of the six biogeographic regions of Alaska (Gibson and Withrow 2015): *northern* (N), *western* (W), *southwestern* (SW), *south-central* (S-C), and *southeastern* (SE); *interior* Alaska is written out. Maintained separately, the list of species "unsubstantiated" in Alaska currently comprises 21 species (including two species pairs) for which we have on file detailed sight reports but no specimen or definitively identifiable photo or audio recording.

ADDITIONS TO THE ALASKA LIST AND FIRST ALASKA SPECIMEN RECORDS

Podiceps nigricollis C. L. Brehm, 1831 {Germany}. Eared Grebe. Breeds Eurasia, Africa, and North America (sw and s-c Canada to s-c Mexico)—in three subspecies (Cullen et al. 1999). *Podiceps nigricollis californicus* Heermann, 1854 {California}. Interior British Columbia and s Manitoba south locally through w USA (California, s Nevada, c Arizona, n New Mexico and s Texas) and c USA (c Minnesota, nw Iowa, n Nebraska) to s-c Mexico. **First Alaska specimens**: Univ. Alaska Museum (UAM) 36350, hatching-year ♀, 7 Oct 2014; and UAM 39297, hatching-year ♀, 27 Oct 2016—both Middleton Island, Gulf of Alaska (DeCicco et al. 2017; photo WB 48:237, 2017). The specimens were identified as the North American subspecies by Withrow at UAM. History in Alaska: Casual in S-C and interior Alaska, once in SE (see Gibson et al. 2003, Gibson and Withrow 2015).

Selasphorus calliope (Gould, 1847) {= Real del Monte, Hidalgo}. Calliope Hummingbird. Breeds w Canada (s-c British Columbia and sw Alberta) and w USA. **First Alaska record** (no specimen; photos AKCLC and ML): hatching-year male, 3–5 Sep 2016, Auke Bay, Juneau (G. B. van Vliet and P. A. Rose). History in Alaska: Long ago, Willett (1921:159) wrote, "According to [local resident F. H.] Gray, quite common at Wrangell in spring and fall during some years; other years apparently absent." After a hiatus of four decades, there were six unsubstantiated reports in SE Alaska from the late 1960s through the 1980s: male, in May 1967, Juneau (R. J. Gordon); female, 6 May 1968, Juneau (R. J. Gordon); at least one, in summer 1968, Juneau (fide R. J Gordon); one, 27 Jul 1974, Juneau (E. S. Dunn); male, 14 Aug 1975, Little Port Walter, Baranof Island (A. C. Wertheimer); and female, 18 Jun 1988, Mitkof Island (P. J. Walsh).

Numenius americanus Bechstein, 1812 {New York}. Long-billed Curlew. Breeds sw and s-c Canada (s-c British Columbia, s Alberta to s Manitoba) and w and s-c USA. **First Alaska record** (no specimen; photos NAB 68:414, 2015, and WB 46:121, 2015): One bird with a Whimbrel, 3–7 May 2014, Eagle River mouth, Juneau (D. Sanvik and M. Kallenberger; Tobish 2015a). History in Alaska: There were three unsubstantiated reports of single birds from 1973 to 2008 in SE and S-C Alaska: One with four Whimbrels, 5–6 Jun 1973, Eagle Beach, Juneau (Gibson and Byrd 1973); one alone, 4 May 1992, Sergief Island, Stikine River flats (Tobish and Isleib 1992); and one bird, 30 May 2008, Situk River, Yakutat (Tobish 2008). Gabrielson and Lincoln (1959) had listed this species as hypothetical on the basis of five unsatisfactory reports in the U.S. Fish and Wildlife Service's distribution files. Notes: Monotypic (Grinnell 1921, Hellmayr and Conover 1948).

Ardenna carneipes (Gould, 1844) {small islands off Cape Leeuwin, Western Australia}. Flesh-footed Shearwater. Breeds Île St. Paul, islands off sw Australia, Lord Howe Island, islands off North Island and in Cook Strait (New Zealand). **First Alaska record**: One bird, 21 Aug 2013, Gulf of Alaska at 59° 34′ N, 141° 58′ W (A. J. Lang, R. W. Dittrick, and M. Vaughn; photos AKCLC and ML)**. First Alaska specimen**: UAM 36300, ad. ♂, 8 Sep 2014, off Middleton Island, Gulf of Alaska (DeCicco et al. 2017; photo WB 48:253, 2017). History in Alaska: Maintained as a casual or intermittent summer/autumn visitant in the Gulf of Alaska by Isleib and Kessel (1973), Kessel and Gibson (1978), and Gibson and Byrd (2007), but not substantiated in Alaska waters until 2013 (Tobish 2014, Gibson and Withrow 2015), after which DeCicco et al. (2017) described this species as currently rare to fairly common in fall in the n Gulf of Alaska. See also Bond and Lavers (2015).

Puffinus puffinus (Brünnich, 1764) {= Faeroe Islands}. Manx Shearwater. Breeds Iceland, Faeroes, islands off British Isles and w France, Azores, Madeira, and Middle Lawn Island (Newfoundland). **First Alaska specimens**: UAM 34000, ad. ♀, 30 Aug 2013; and UAM 34001, ad. ♂, 17 Sep 2013—both Middleton Island, Gulf of Alaska (DeCicco et al. 2017; photos WB 39:192, 2008; 48:253, 2017). History

Figure 1. Nazca Booby (*Sula granti*), 30 Aug 2017, 21 km off East Amatuli Island, Barren Islands, Alaska, at 58° 55′ N, 151° 35′ W.

Photo by M. G. Levine

IN ALASKA outlined by Gibson et al. (2008). Rare summer/autumn visitant in n Gulf of Alaska, first substantiated by photo in 2005.

Sula granti Rothschild, 1902 {Galápagos archipelago = Culpepper Island}. Nazca Booby. Breeds c-e Pacific Ocean (Galápagos, Clarión, San Benedicto, Clipperton, Malpelo, and la Plata islands). **FIRST ALASKA RECORD** (no specimen; photos AKCLC and ML; Figure 1): ad., 30 Aug 2017, 21 km off East Amatuli Island, Barren Islands, entrance to Cook Inlet, at 58° 55′ N, 151° 35′ W (M. G. Levine). This identification was corroborated by J. L. Dunn (in litt., 2017) and K. L. Garrett (in litt., 2017). The committee did not agree on the identification of an adult Masked/Nazca booby seen six days earlier, on 24 Aug 2017, 64 km south of Tugidak Island, Kodiak archipelago, at 55° 58′ N, 154° 34′ W (S. Cobb—photos AKCLC and ML), so it maintains the record as of an unidentified *S. dactylatra*/*S. granti*. NOTES: As of 2015, Searcy et al. (2018) acknowledged just three California records of *S. granti*, 22 of *S. dactylatra* (Masked Booby), and 20 of *S. dactylatra*/*S. granti*. But by November 2017 the number of Calfornia records of *S. granti* had grown to 12 (californiabirds.org/cbrc_book/update.pdf). See Pitman and Jehl (1998) and AOU (2000). We did not find other published records of *S. granti* (or *S. dactylatra*) north of California waters.

Sula leucogaster (Boddaert, 1783) {= Cayenne}. Brown Booby. Breeds widely in tropical oceans: Caribbean and Atlantic islands off South America; São Tomé, Príncipe, Annobón, Ascension, and St. Helena islands; islands in the eastern Pacific from Islas Los Coronados (Whitworth et al. 2007) and the Gulf of California, south at least to Isla Gorgona, Colombia; Red Sea, Indian Ocean, se Asian seas to New Guinea and Northern Australia, w and c Pacific Ocean—in four subspecies (Dickinson and Remsen 2013). *Sula leucogaster* [*brewsteri* Goss, 1888 {Isla San Pedro Mártir, Gulf of California}]. Islas Los Coronados, Gulf of California, and Revillagigedo, Marías, Isabel, and Clipperton islands. **FIRST ALASKA RECORDS** (no specimen; photos [of

Figure 2. Red-footed Booby (*Sula sula*), 10 Sep 2015, 15.7 km off East Chugach Island, Kenai Peninsula, Alaska, at 58° 54′ N, 151° 12′ W.

Photo by L. H. DeCicco

each of the eight] AKCLC and ML): ad. female, 28 Oct 2014, 296 km east-southeast of Kodiak Island, at 56° 02′ N, 148° 04′ W (J. Smith; Gibson and Withrow 2015, Tobish 2015b; photo NAB 69:138, 2015); ad. female, landed aboard ship, 29 Oct 2014, off Kruzof Island, Alexander Archipelago (M. Goff and J. Cedarleaf; Gibson and Withrow 2015, Tobish 2015b); imm. aboard ship, 28 Aug 2015, ~12 km south of Amlia Island, c Aleutian Islands, at 51° 57′ N 173° 07′ W (J. Greenway; Tobish 2017—photo NAB 70:136, 2017); ad. female, 13 Sep 2015, Wrangell Narrows, near Petersburg (J. Sebastian; Tobish 2017); ad. female, 20 Jul 2016, near Dutch Harbor, Unalaska Island, e Aleutian Islands (T. Foley); ad. female landed aboard ship, 6 Aug 2016, Salisbury Sound, Kruzof Island, Alexander Archipelago (K. Martinsen); ad. female, 12 Aug 2017, 120 km east of Marmot Island, Kodiak archipelago, at 58° 13′ N 149° 43′ W (S. Cobb); and, three weeks later, a different ad. female, 6 Sep 2017, 88 km east-southeast of Marmot Island, Kodiak archipelago (C. Johnson). NOTES: Breeding range extended north to Los Coronados Islands, Baja California, in 2005 (Whitworth et al. 2007). For reference to the scale of the irruption that reached Alaska, see records and discussion of this species in fall 2014 and 2015 in British Columbia (Charlesworth 2015c, 2017), Oregon and Washington (Irons et al. 2015, Waggoner and Merrill 2017), and California (Davis et al. 2015, 2017, McCaskie and Garrett 2015, 2017). HISTORY IN ALASKA: A specimen (UAM 11555, ad. ♂) was collected 15 Jul 2000 in c Bering Sea (at 58° 44′ N, 174° 09′ W) after landing aboard the same ship on 13 and 15 Jul. It was identified as *S. l. plotus* (Forster, 1844) {near New Caledonia} by Gibson at UAM. In the absence of an obvious summer storm, Gibson and Withrow (2015) judged that bird unlikely to have reached the Bering Sea without direct human assistance (see also Red-footed Booby below).

Sula sula (Linnaeus, 1766) {= Barbados}. Red-footed Booby. Breeds Caribbean and tropical sw Atlantic islands; tropical Indian Ocean and Pacific Ocean east to Hawaiian Islands, Line Islands, Îles Marquises, and Pitcairn Island; islands off w Mexico; Islas de Coco, Isla de la Plata, Galápagos Islands—in three subspecies (Dickinson and Remsen 2013; but cf. Murphy [1936] and Schreiber et al. [1996]. The work of Baiao et al. [2007] lends credence to Nelson's [1978:654] comment that perhaps the species' variation "is theoretically most meaningfully described in purely genetical, rather than taxonomic terms"). *Sula sula* [*websteri* Rothschild, 1898 {Clarión Island, Revillagigedo Islands}]. Islands off w Mexico (Clarión and San Benedicto; Islas Marías), Cocos Island, Isla de la Plata, Galápagos Islands. **FIRST ALASKA RECORD** (no specimen; photos AKCLC and ML; Figure 2): imm., 10 Sep 2015, 15.7 km off East Chugach Island, Kenai Peninsula, at 58° 54′ N, 151° 12′ W (L. H. DeCicco; Tobish 2017). An immature identified two weeks earlier, on 25 Aug 2015, 148 km southeast of the town of Kodiak, Kodiak Island, at 56° 48′ N, 150° 30′ W (R. L. Pitman; Tobish 2017) was not photographed. NOTES: Seven records during the period 5 Jul–24 Sep 2015 were the most ever accepted in a single year by the California Bird Records Committee (Searcy et al. 2018:34); those birds "were most likely a result of the strengthening El Niño-Southern Oscillation. All were immatures and six of the seven died." We did not find other published records between California waters and the Gulf of Alaska. HISTORY IN ALASKA: Ship-assisted arrival in Alaska waters was documented in Aug 1999 when an immature accompanied the 145-ft yacht *Royal Eagle* from Hawaii to Kodiak (see *Anchorage Daily News*, 12 Aug 1999, including photo—identified as a "brown booby").

Plegadis chihi (Vieillot, 1817) {= Paraguay and the campos of Buenos Aires, Argentina}. White-faced Ibis. Breeds locally in w and c USA (n California, e Oregon, n Utah, Colorado, Nebraska), south locally to c Mexico, and locally from se Bolivia and s Brazil to c Chile and c Argentina. **FIRST ALASKA RECORD** (no specimen; photos AKCLC and ML; Figure 3): One bird, 19 May 2016, Klawock, Prince of Wales Island (J. Colon). An unidentified *Plegadis* ibis was recorded three days later, on 22 May

2016, at Haines (A. Mulyca via P. Randles, photos AKCLC). NOTES: This species was described as very rare in s British Columbia by Campbell et al. (1990a). More recent records in that province have included one on s Vancouver Island on 31 May 2012 (Charlesworth 2013a:506—"increasingly common"); "an unprecedented invasion" in May 2015, when at least 19 birds provided four spring–summer records, including up to 12 birds near Kamloops from 13 May to at least 10 Aug (Charlesworth 2016:471–472); and two separate juveniles in Sep 2016, at which season "still exceptionally unusual" (Charlesworth 2017:104). "In recent years this species has become an annual winter resident" in Hawaii, where in winter 2015–2016 recorded in a flock of eight on Molokai, possibly the same flock (of seven) on Oahu, a flock of four on Oahu, and a lone bird on Maui (Tanino 2016:513).

Milvus migrans (Boddaert, 1783) {= France}. Black Kite. Breeds Africa, Arabia, Eurasia, and Lesser Sundas to Celebes, New Guinea, and Australia—in seven subspecies (Dickinson and Remsen 2013). *Milvus migrans* [*lineatus* (J. E. Gray, 1831) {China}]. Siberia, Russian Far East east to Sea of Okhotsk, Amurland, and Ussuriland, south to Manchuria, Korea, Japan (Kyushu), China, *etc.* **FIRST ALASKA RECORD** (no specimen; photos AKCLC and ML; Figure 4): One bird, 2–3 Jan 2017, St. Paul Island, Pribilof Islands (B. Lestenkoff). NOTES: Records in the Hawaiian Islands (at Midway Atoll in Jan–Feb 1962, Dec 1994–Mar 1995, and Jan–Jun 1998) have similarly involved midwinter arrivals (see Pyle 1998, AOU 2000, Pyle and Pyle 2017).

Asio otus (Linnaeus, 1758) {= Sweden}. Long-eared Owl. Breeds Canary Islands; Azores, nw Africa and Eurasia east to Russian Far East (to Sea of Okhotsk), south to Mediterranean and sw Asia; North America from s Canada to Baja California and c-s USA—in three subspecies (Vaurie 1965, Gibson and Withrow 2015). *Asio otus* [*otus*]. Azores, nw Africa and Eurasia east to Russian Far East (to Sea of Okhotsk). **ADDITIONAL SUBSPECIES** (no specimen; photos AKCLC and ML; Figure 5): One bird captured and released, 8–11 Jun 2016, Buldir Island, w Aleutian Islands (M. Mudge and K. Pietrzak). The record of a Long-eared Owl, 19 May 2006, aboard a ship in the Bering Sea southwest of St. Lawrence Island, at 63° 15′ N, 173° 44′ W, was likely an example of this subspecies as well (Gibson et al. 2008; photo WB 39:198, 2008). NOTES: Paler than New World *A. o. wilsonianus* (Lesson, 1830) {Pennsylvania}, *A. o. otus* has tawny-buff facial discs and orange-red irides. Compare Figure 5 with published photos of Long-eared Owls in SE Alaska at NAB 64:133, 2010 (not in color); 66:194, 2012 (in color); 67:140, 2013 (in color at http://nab.aba.org/i/233397-volume-67-no1-2013?token=YTA5ODk1MWNlYTU4NWM3NWZiNzdhMmY1OGIzYjY0YjM1ZTRlNmY1NA%3D%3D); and 69:281, 2016 (in color at http://nab.aba.org/i/705084-volume-69-no2-2016?token=YTA5ODk1MWNlYTU4NWM3NWZiNzdhMmY1OGIzYjY0YjM1ZTRlNmY1NA%3D%3D). See also Gibson and Withrow (2015).

Melanerpes lewis (G. R. Gray, 1849) {= Montana, about lat. 46° N}. Lewis's Woodpecker. Breeds sw Canada (se British Columbia) and w USA. **FIRST ALASKA RECORD**: UAM 40000, imm. ♂, seen 10–29 Nov 2016, Petersburg (S. Rice, B. L. Hunter, and K. Cornelius); specimen salvaged 17 Dec 2016 (B. Lyons); photos AKCLC and ML. NOTES: Rare in British Columbia away from the dry s interior (Charlesworth 2010). Formerly nested in coastal sw BC but declined after 1940 and last nested in 1963 (Vierling et al. 2013). Three records in n-c interior BC, as far north as Prince George (Sep 2010; Charlesworth 2011), and three older extralimital fall records in Haida Gwaii (22 Oct [1938]–29 Nov [1949]; Campbell et al. 1990b).

Salpinctes obsoletus (Say, 1822) {n part of Douglas Co., Colorado, near junction of Plum Creek with South Platte River}. Rock Wren. Breeds sw Canada (s-c British Columbia, s Alberta, w Saskatchewan) to Costa Rica—in six to 11 subspecies (Lowther et al. 2000). *Salpinctes obsoletus* [*obsoletus*]. Sw Canada and w USA to s-c Mexico.

Figure 3. White-faced Ibis (*Plegadis chihi*), 19 May 2016, Klawock, Prince of Wales Island, Alaska.

Photo by J. Colon

Figure 4. Black Kite (*Milvus migrans*), 2 Jan 2017, St. Paul Island, Pribilof Islands, Alaska.

Photo by B. Lestenkoff

First Alaska record (no specimen; photos AKCLC and ML; Figure 6): One bird, 3 Jul–18 Nov 2017, Gustavus (B. B. Paige, N. K. Drumheller). Notes: In w Canada, "summer vagrants (May–Jul) recorded north to ne British Columbia, nw Mackenzie [= Northwest Territories], n Alberta, and n Manitoba" (Lowther et al. 2000); see also Godfrey (1986), Warning (2016).

Phylloscopus inornatus (Blyth, 1842) {= near Calcutta}. Yellow-browed Warbler. Breeds Urals, Siberia, and Russian Far East east to Anadyrland, south to Altai, n Korea, ne Mongolia, and ne China. **First Alaska specimen**: UAM 36492, hatching-year unsexed, 19 Sep 2014, Middleton Island, Gulf of Alaska (DeCicco et al. 2017; photo NAB 69:39, 2015, and WB 48: 262, 2017). History in Alaska: Casual in w Alaska at St. Lawrence Island; accidental in sw Alaska in w Aleutian Islands at Attu Island and in s-c Alaska at Middleton Island (see Gibson et al. 2003, Gibson and Withrow 2015 and citations therein, DeCicco et al. 2017). Notes: Monotypic when subspecies *humei* (Brooks, 1878) {North-West Frontier Province, India} is recognized as a species (Hume's Leaf Warbler)—see Sangster et al. (2002) but compare Red'kin and Konovalova (2004). Dickinson and Christidis (2014) maintained *inornatus* in *Abrornis* J. E. and G. R. Gray, 1847.

Phylloscopus examinandus Stresemann, 1913 {Bali}. Kamchatka Leaf Warbler. Breeds e Russian Far East (Kamchatka). **First Alaska records** founded on taxonomic revision of *Phylloscopus borealis* (Blasius, 1858) {= Sea of Okhotsk}, the Arctic Warbler (see Alström et al. 2011, Chesser et al. 2014, Withrow et al. 2016). Alaska specimens (n = 24: UAM, 22; U.S. National Museum, 2) identified by comparisons of genetic with phenotypic data. History in Alaska: Casual or intermittent migrant in sw Alaska in the w Aleutian Islands; recorded in w Alaska at St. Matthew Island and on the Yukon–Kuskokwim delta (see Gibson and Withrow 2015). Notes: Molecular studies suggested that this taxon and *P. xanthodryas* (Swinhoe, 1863) {Amoy}, the Japanese Leaf Warbler, are separate species—distinct from *P. borealis* and from each other (Alström et al. 2011). This Kamchatka-nesting species is a migrant in the w Aleutians (Chesser et al. 2014), and the name *P. examinandus* supplants prior Aleutian references to *P. borealis xanthodryas* and to *P. b. borealis*.

Acrocephalus aedon (Pallas, 1776) {Dauria}. Thick-billed Warbler. Breeds s Siberia east through Russian Far East to Amur River basin and Ussuriland, and in China from Manchuria south to Hebei (Hopeh) Province—in two subspecies (Dickinson and Christidis 2014). *Acrocephalus aedon* [*stegmanni* Watson, 1985 {Radde, e Amurland}]. W and middle Amur basin, Ussuriland, and ne China. **First Alaska record** (no specimen; photos AKCLC and ML; this issue's front cover): One bird, 8–13 Sep 2017, Gambell, St. Lawrence Island (Rosenberg et al. 2018). Notes: This species has been maintained long and widely in *Acrocephalus* J. A. and F. Naumann, 1811 (see Vaurie 1959, Watson 1986, Parkin et al. 2004, Bairlein 2006, OSJ 2012). Some recent authorities have included it in the genus *Iduna* Keyserling and Blasius, 1840 (Fregin et al. 2009, Clements et al. 2017), while others have emphasized its distinctiveness by assigning it to a monotypic genus—to *Arundinax* Blyth, 1845 (Dickinson and Christidis 2014), to *Phragamaticola* Jerdon, 1845 (Kennerly and Pearson 2010), or to (the emended) *Phragmaticola* Blyth, 1849 (Dickinson 2003). The subspecies are weakly differentiated, and the species is sometimes treated as monotypic; see Williamson (1976), Cramp (1992), Svensson (1992), and Parkin et al. (2004). Casual or accidental in Japan (Honshu, Hegura-jima), where four records, one in fall (see OSJ 2012).

Acrocephalus dumetorum Blyth, 1849 {India}. Blyth's Reed Warbler. Breeds from Finland, the Baltic states, and n Ukraine to w and c Siberia (northeast to Vilyuysk, southwestern Yakutia), n and se Kazakhstan, n Tien Shan, and nw Mongolia. **First Alaska record** (no specimen; photos AKCLC and ML; B 49[6]:48, 2017): One

Figure 5. Long-eared Owl (*Asio otus*), 8–11 Jun 2016, Buldir Island, w Aleutian Islands, Alaska.

Photo by M. Mudge and K. Pietrzak

bird, 18–21 Sep 2015, Gambell, St. Lawrence Island (C. Irrigoo Jr., P. E. Lehman, M. M. Taylor, C. Feeney, L. Peavler, P. W. Sykes; Tobish 2017). Authoritative comments on this identification included those from P. Kennerly (in litt., 2015): "There is no doubt about this one. It's a typical Blyth's Reed. In addition to the emargination on P4, the rump is concolorous with the mantle, and the primary projection is shorter than that of Reed and Marsh Warblers, all classic features of Blyth's Reed. Paddyfield

Figure 6. Rock Wren (*Salpinctes obsoletus*), 14 Jul 2017, Gustavus, Alaska.

Photo by J. D. Levison

is easily eliminated by the lack of supercilium behind the eye, and by the lack of warm brown tones to the upperparts." And from J. Hough (in litt., 2015): "I see this as a fairly typical Blyth's. Even on the ground the emarginations on the primaries fall level with the end of the tertial tips. The concolorous tertials lacking any contrast between the darker center and a paler fringe and the head pattern, with a weak, post-ocular super and loral 'bulge' are all classic Blyth's features." HISTORY IN ALASKA: One earlier, unsubstantiated report, of one bird on 9 Sep 2010, also at Gambell (Lehman and Ake 2011), about which the AKCLC (Gibson et al. 2013:191) wrote, "Of the many photos taken, most are of poor quality or are flight shots [on file AKCLC]. None show clearly the wing formula, and similar species in this difficult genus, such as the Large-billed Reed Warbler (*A. orinus*) and Eurasian Reed Warbler (*A. scirpaceus*), cannot be entirely eliminated." NOTES: Accidental in Japan (twice in fall, once in spring; OSJ 2012).

Locustella fluviatilis (Wolf, 1810) {Danube in Austria}. River Warbler. Breeds c and e Europe, into sw Siberia, east to the Irtysh River. **FIRST ALASKA RECORD** (no specimen; photos AKCLC and ML; WB 49:137–138, 2018): One bird, 7 Oct 2017, Gambell, St. Lawrence Island (Lehman 2018). NOTES: Extralimital in w Europe (Vaurie 1959), but apparently not known in e Asia (see Vaurie 1959, Brazil 2009, OSJ 2012).

Phoenicurus phoenicurus (Linnaeus, 1758) {= Sweden}. Common Redstart. Breeds Europe and nw Africa to c Siberia (east to the upper Nizhnyaya Tunguska River and Lake Baikal) and n Mongolia; Asia Minor to Turkmenistan, s Uzbekistan, and Iran—in two subspecies (Vaurie 1959, Dickinson and Christidis 2014). *Phoenicurus phoenicurus* [*phoenicurus*]. Europe and nw Africa to c Siberia and n Mongolia. **FIRST ALASKA RECORD** (no specimen; photos NAB 68:167, 2014; 69:186, 2016): One bird, 8–9 Oct 2013, St. Paul Island, Pribilof Islands (Schuette and Gochfeld 2016). NOTES: Accidental in Japan (Nov 1998, Hegura-jima; OSJ 2012).

Figure 7. Pied Wheatear (*Oenanthe pleschanka*), 8 Jul 2017, Cape Nome, Seward Peninsula, Alaska.

Photo by J. D. Levison

Oenanthe pleschanka (Lepechin, 1770) {Saratov, lower Volga}. Pied Wheatear. Breeds se Europe to s Transbaikalia (Onon River), n China (northeast to Chaoyang, Liaoning Province), and nw Himalayas. **First Alaska record** (no specimen; photos AKCLC and ML; Figure 7): Second-year female, 4 Jul–4 Aug 2017, Cape Nome, Seward Peninsula (A. Harper, T. G. Tobish Jr.). Notes: Age and sex inferred by P. Alström (in litt., 2017). Monotypic when subspecies *cypriaca* (Homeyer, 1884) {Cyprus} is recognized as a species, the Cyprus Wheatear, as recommended by Sangster et al. (2004) and Randler et al. (2012). Casual in Japan, where at least 16 records, spring and fall (see OSJ 2012).

Hylocichla mustelina (J. F. Gmelin, 1789) {= New York}. Wood Thrush. Breeds se Canada (s Ontario to Nova Scotia) and c Great Plains (se North Dakota to e Oklahoma) to e USA. **First Alaska record** (no specimen; photos B 47[5]:32, 2015; NAB 69:39, 2015): One bird, 3 Oct 2014, St. Paul Island, Pribilof Islands (S. C. Schuette, N. Swick; Tobish 2015b). Notes: Casual visitant in w North America from Oregon, Utah, Montana, Saskatchewan, and Manitoba south to California, Arizona, and New Mexico (AOU 1998). Accidental in s British Columbia (Oct 2015; Charlesworth 2017).

Dumetella carolinensis (Linnaeus, 1766) {Virginia}. Gray Catbird. Breeds Canada (s British Columbia, c Alberta, c Saskatchewan, s Manitoba, w Ontario) through c, e, and se USA; Bermuda. **First Alaska specimen**: UAM 36494, ad. ♀, 14 Sep 2014, Middleton Island, Gulf of Alaska (DeCicco et al. 2017). History in Alaska: Casual in SE and S-C Alaska and accidental in W Alaska (see Gibson et al. 2003, Tobish 2011a, 2015b, 2016, Gibson and Withrow 2015).

Carpodacus roseus (Pallas, 1776) {Uda and Selenga rivers, Transbaikalia}. Pallas's Rosefinch. Breeds Siberia, and Russian Far East to Amurland; Sakhalin—in two subspecies (Browning 1988, Dickinson and Christidis 2014). *Carpodacus roseus* [*roseus*]. Range of the species except Sakhalin. **First Alaska record** (no specimen; photos AKCLC and ML; B 49[6]:54, 2017): hatching-year male, 20–24 Sep 2015, St. Paul Island, Pribilof Islands (C. Gregory, D. Gochfeld, T. Johnson; Tobish 2017). Notes: The species is a winter visitant in n Japan (see OSJ 2012).

Icterus cucullatus Swainson, 1827 {= state of México, Mexico}. Hooded Oriole. Breeds sw USA from California to Texas; much of Mexico; Belize—in five subspecies (Dickinson and Christidis 2014). *Icterus cucullatus* [*nelsoni* Ridgway, 1885 {Tucson, Arizona}]. Sw USA and nw Mexico. **First Alaska record** (no specimen; photos AKCLC; NAB 70:103, 136, 2017): ad. male, 19–22 Sep 2015, Juneau (O. Squires and M. Squires). Notes: As of 1981 nested nw California and by early 2000s nearly annual sw Oregon (S. G. Mlodinow *in* Wahl et al. 2005); eight records in Washington (Apr–Jul; see Mlodinow et al. 2007a, b). Casual in s British Columbia (seven records through 2001—S. G. Mlodinow, *in* Wahl et al. 2005; plus Dec 2013–Mar 2014 [Charlesworth 2015a, b] and May 2015 [Charlesworth 2016]). Includes subspecies *californicus* (Lesson, 1844) {California}, following Phillips et al. (1964), Pyle (1997).

Oreothlypis ruficapilla (Wilson, 1811) {near Nashville, Tennessee}. Nashville Warbler. Breeds s Canada (s British Columbia) and w USA (south in mountains to San Bernardino Mts. of s California); s-c Canada and e USA—in two subspecies (AOU 1957). *Oreothlypis ruficapilla ruficapilla*. S-c Canada (Saskatchewan to Newfoundland) and e USA (New England to West Virginia). **Additional subspecies**: UAM 36700, hatching-year ♀, 5 Oct 2014, Middleton Island, Gulf of Alaska (DeCicco et al. 2017; photo WB 48:267, 2017). Notes: Specimen identified to subspecies by P. Pyle (in litt., 2016) at Museum of Vertebrate Zoology, University of California, Berkeley. Tail shorter, rump duller and more olive than in subspecies *ridgwayi* (van Rossem 1929) {= East Humboldt Mts., Nevada}. See Gibson et al. (2013).

Setophaga americana (Linnaeus, 1758) {= South Carolina}. Northern Parula. Breeds s-c and se Canada (se Manitoba, w and c Ontario, s Quebec) and e USA (Minnesota, New England to Gulf of Mexico)—see Moldenhauer and Regelski (2012). **First Alaska record** (no specimen; photos AKCLC and ML; Figure 8): Singing male, 28–29 Jun 2017, Ketchikan (S. C. Heinl and A. W. Piston). History in Alaska: One earlier, unsubstantiated report: imm., 23–24 Sep 1987, Middleton Island, Gulf of Alaska (DeCicco et al. 2017). Notes: North of California (where nesting almost annually from the early 1990s; Hamilton et al. 2007) and Oregon (where a regular migrant, most records late Apr–late Jun, east of the Cascades; Marshall et al. 2006), casual in Washington (Wahl et al. 2005) and s British Columbia (see Campbell et al. 2001). From early 2000s rare (annual) in s British Columbia (see Cecile 2006, 2007a, b); at least 16 records by 2015 (see Cecile 2009, Charlesworth 2011, 2013b, 2017).

Setophaga dominica (Linnaeus, 1766) {= Hispaniola}. Yellow-throated Warbler. Breeds e USA (e Iowa to Virginia, south to Gulf of Mexico, Florida). **First Alaska record** (no specimen; photos AKCLC and ML; NAB 70:136, 2017; Figure 9): One bird, 22–24 Sep 2015, Bartlett Cove, Glacier Bay National Park (E. Johnson, S. Schaller, N. K. Drumheller). Notes: Monotypic (McKay 2008). Casual or accidental widely in w North America north to s Oregon and Idaho (AOU 1998); once in Washington (Dec 2001–Jan 2002; Wahl et al. 2005) and twice in s British Columbia (Jan 1998; Campbell et al. 2001; May 2012; Charlesworth 2013a).

Setophaga nigrescens (J. K. Townsend, 1837) {= near Fort William, Portland, Oregon}. Black-throated Gray Warbler. Breeds sw Canada (coastal sw British Columbia), w USA, and nw Mexico. **First Alaska record** (no specimen; photos AKCLC and ML; Figure 10): ad. male, 12–22 Jun 2016, and second-year female, 10 Jul and 19 Jul 2016, Hyder (S. C. Heinl, L. Barber, L. Feldmann, J. D. Levison). History in Alaska: One earlier, unsubstantiated report: male, 5 Jul 1989, Mitkof Island, SE Alaska (Tobish and Isleib 1989).

Pheucticus ludovicianus (Linnaeus, 1766) {= Louisiana}. Rose-breasted Grosbeak. Breeds w Canada (ne British Columbia, n Alberta) east across s Canada to Nova Scotia, south to c and e USA. **First Alaska specimen**: UAM 34186, hatching-year ♀, 19 Aug 2013, Middleton Island, Gulf of Alaska (DeCicco et al. 2017). History in Alaska: Casual or intermittent (since early 2000s) in SE Alaska, accidental in S-C Alaska and in the Interior (see Gibson et al. 2003, Heinl and Piston 2009, Tobish 2010a, b, 2011b, 2014, Gibson and Withrow 2015, DeCicco et al. 2017).

ADDITIONS TO THE ALASKA UNSUBSTANTIATED LIST

Accipiter nisus (Linnaeus, 1758) {Sweden}. Eurasian Sparrowhawk. Breeds widely in Old World, from the Canaries, Madeira, nw Africa, the Middle East, and Eurasia east to the Kolyma River, Sea of Okhotsk, Kamchatka, Sakhalin, and Japan south to n Mongolia and China—in seven subspecies (Dickinson and Remsen 2013). There have been two Alaska reports, both with written details pointing to this species, but accompanied by unsatisfactory photos, both from Adak Island, c Aleutian Islands: one, 7 Dec 2013, J. Puschock; one, 21 Sep 2016, F. C. Haas.

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Figure 8. Northern Parula (*Setophaga americana*), 29 Jun 2017, Ketchikan, Alaska.
Photo by S. C. Heinl

Figure 9. Yellow-throated Warbler (*Setophaga dominica*), 23 Sep 2015, Bartlett Cove, Glacier Bay National Park, Alaska.
Photo by J. D. Levison

Figure 10. Black-throated Gray Warbler (*Setophaga nigrescens*), 12 Jun 2016, Hyder, Alaska.

Photo by S. C. Heinl

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FIRST REPORT OF THE PALAU BIRD RECORDS COMMITTEE

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ABSTRACT: After compiling a historical list of 158 species of birds known to occur in Palau, the Palau Bird Records Committee accepted 10 first records of new occurrences of bird species: the Common Pochard (*Aythya ferina*), Black-faced Spoonbill (*Platalea minor*), Chinese Pond Heron (*Ardeola bacchus*), White-breasted Waterhen (*Amaurornis phoenicurus*), Eurasian Curlew (*Numenius arquata*), Gull-billed Tern (*Gelochelidon nilotica*), Channel-billed Cuckoo (*Scythrops novaehollandiae*), Ruddy Kingfisher (*Halcyon coromanda*), Common Kingfisher (*Alcedo atthis*), and Isabelline Wheatear (*Oenanthe isabellina*). These additions bring Palau's total list of accepted species to 168. We report Palau's second records of the Broad-billed Sandpiper (*Calidris falcinellus*), Chestnut-winged Cuckoo (*Clamator coromandus*), Channel-billed Cuckoo, White-throated Needletail (*Hirundapus caudacutus*) and Oriental Reed Warbler (*Acrocephalus orientalis*). This report concludes with a current list of the bird species known from Palau.

This is the first report of the Palau Bird Records Committee (PBRC). Situated in the western equatorial Pacific and within the East Asian/Australasian Flyway, Palau has the richest bird diversity of any island group in Micronesia (Wiles 2005). The board of trustees of Belau National Museum established the PBRC on 8 December 2014 as a committee of the museum's National Program for Monitoring Forest and Coastal Birds. The geographic scope of the committee is all islands that are part of the Republic of Palau and the waters within 200 nautical miles of the coast of the Palau Islands. The mission of the committee is to review noteworthy reports of field observations of Palau's birds for the purpose of maintaining an authoritative Palau Islands

†Alan R. Olsen, a passionate birder whose dedication to chronicling Palau's birds will be forever remembered and appreciated, died suddenly and unexpectedly on 24 June 2018. His labor of love resulted in the attainment of a number of significant forest conservation milestones. Palau is much richer in knowledge for having known and considered Alan as one of our own.

bird list and building a broader understanding of the avifauna of Palau. The PBRC is the first, and so far only, bird records committee in Micronesia and the second such committee in the tropical Pacific (Hawaii has the other).

Establishment of the PBRC was motivated by the entry into force of the United Nations Convention on the Conservation of Migratory Species of Wild Animals in the Republic of Palau and the designation of the Northern Peleliu Lkes in Palau as a globally Important Bird Area and regionally (Oceania) significant site for migratory shorebirds (BirdLife International 2018). The charge to review "noteworthy" reports is purposefully flexible to permit verification of sightings of banded birds, clarification of which species are passage migrants versus winter visitors, and monitoring of other developments in Palau's sector of the East Asian/Australasian Flyway.

MEMBERSHIP AND PROCEDURES

The PBRC's membership and procedures follow bylaws established by the board of trustees of Belau National Museum. The president of the board of trustees (Otobed) is ex officio chair of the PBRC. Other committee members serve at the discretion of the board of trustees. The committee consists of a records panel, a report review panel, and an advisory group. Membership in the records panel is restricted to residents of Palau who are affiliated with Belau National Museum, Palau Conservation Society, or other local conservation organizations. Membership in the report review panel is open to resident and off-island experts in the identification of birds, especially birds that are likely to appear in Palau. Membership in the advisory group is limited to residents of Palau. The records panel (Olsen, Eberdong, and Ketebengang) receives reports of bird observations, administers the review of the reports, and maintains an up-to-date list of the birds of Palau. The report review panel (Etpison, McKinlay, O'Brien, Pratt, Wiles, and VanderWerf) reviews all reports received by the records panel, recommending acceptance or rejection of new records; reports of the occurrence (or extirpation) of a species; and other noteworthy reports. The advisory group (Leidich, Basilius, and Yalap) coordinates with organizations and initiatives that share an interest in an authoritative checklist of Palau birds. The committee's review procedures reflect Palau's traditional consensus-based decision-making process. When the report review panel reaches consensus on the acceptance or rejection of a report, its decision is forwarded through the records panel to the chair for final approval/disapproval as an official decision of the committee. The chair's approval of a new record and subsequent publication in one of the committee's reports in *Western Birds* or other peer-reviewed journal places that species on the official Palau Islands bird list maintained by the records panel (see Table 2).

HISTORICAL LIST OF PALAU'S BIRDS

In his monograph on the avifauna of Micronesia, Baker (1951) provided accounts of 92 species from Palau based on field observations (Baker 1948), museum specimens, and a thorough critical review of the literature from the mid-19th century, when the first collectors for European museums

visited Palau, through the mid-20th century. Baker examined 791 museum specimens from Palau representing 63 species, including 221 specimens (47 species) that he collected and 570 additional specimens in the American Museum of Natural History, Museum of Comparative Zoology at Harvard University, University of Kansas Museum of Natural History, and U.S. National Museum of Natural History (USNM). He included accounts of 17 additional species on the basis of credible identifications and collection data provided by German ornithologists from specimens in the Godeffroy Museum in Hamburg (Hartlaub 1868, Hartlaub and Finsch 1868a, 1868b, 1872, Finsch 1875) and by Japanese ornithologists from specimens in their collections (Kuroda 1922a, 1922b, Momiyama 1922, Hachisuka et al. 1942). Baker did not mention contemporary Palau specimens in the Museum of Vertebrate Zoology, University of California, Berkeley (Marshall 1951) and the Yale Peabody Museum (YPM) (Ripley 1951), though the species represented by these specimens were included in Baker's monograph on the basis of specimens in the other museums. Baker accepted 10 additional migratory species listed by Mayr (1945), mentioned Ripley's (1948) report of the Oriental Darter (*Anhinga melanogaster*), and included the Far Eastern Curlew *Numenius madagascariensis* on the basis of his own party's sightings only.

Wiles (2005) compiled an annotated checklist of 148 species for Palau that accepted 90 of the 92 species itemized by Baker (1951). Wiles purged the Scaly-breasted Munia (*Lonchura punctulata*) as extirpated in Palau (Pyle and Engbring 1985) and the Oriental Darter as a record of questionable accuracy. He added 58 species on the basis of a combination of field observations (Wiles and Conry 1990, Wiles et al. 2000, 2004), a full review of Baker's (1948, 1951) monographs and references, and critical reviews of reports by field ornithologists who visited or lived in Palau after Baker (Marshall 1951, Ripley 1951, Dixon and Starrett 1952, Bruyns 1964, Owen 1977a, 1977b, Pratt et al. 1980, 1987, Engbring and Owen 1981, Engbring 1983, 1988, Rauzon 1988). Wiles found three anomalous reports that he subsequently verified from museum specimens, of the Black-headed Bunting (*Emberiza melanocephala*; USNM 336692, Owen 1977a), Pale-vented Bush-Hen (*Amaurornis moluccana*; USNM 582225, Engbring and Owen 1981), and Rufous Hawk-Cuckoo (*Hierococcyx hyperythrus*; YPM 12390, Ripley 1951), and a report of the Rainbow Bee-eater (*Merops ornatus*), which he verified from the observer's field notes (J. Engbring pers. comm.). Pratt and Etpison (2008) discussed all of the species listed for Palau by Wiles (2005) with recent photos and illustrations of 129 species.

The committee's first action (tracking number P001) was to approve a historical list of 158 species of Palau birds, including 146 listed by Wiles (2005), 10 (Table 1) subsequently reported by VanderWerf et al. (2006) and Pratt et al. (2010), and two additional species of *Caprimulgus* nightjars as a result of a taxonomic revision (Gill and Donsker 2018). Two of the species from Wiles' checklist were deleted: the nightjar *Caprimulgus indicus*, as a result of its taxonomic breakup into three species, and the Asian House Martin (*Delichon dasypus*), because of the equivocal nature of the evidence (Pratt et al. 2010).

Table 1 Species First Recorded from Palau 2004–2009.

English name	Scientific name	Date	Locality	Source[a]
Glossy Ibis	*Plegadis falcinellus*	17 Jun 2009	Koror	P
Gray Heron	*Ardea cinerea*	3 May 2005	Peleliu	V
Common Snipe	*Gallinago gallinago*	17 Nov 2008	Koror	P
Red-necked Phalarope	*Phalaropus lobatus*	10 Oct 2006	Koror	P
Green Sandpiper	*Tringa ochropus*	Oct 2006	Koror	P
Brown Hawk-Owl	*Ninox scutulata*	Nov 2004	Helen Reef	P
White-throated Needletail	*Hirundapus caudacutus*	13 Apr 2004	Peleliu	P
Oriental Reed Warbler	*Acrocephalus orientalis*	11 Apr 2007	Koror	P
Scaly Thrush	*Zoothera dauma*	Jan 2006	Koror	P
Blyth's Pipit[b]	*Anthus godlewskii*	23 Apr 2005	Koror	V

[a]V, VanderWerf et al. (2006) ; P, Pratt et al. (2010).
[b]Identification corrected; see Other Committee Actions.

RECORDS ACCEPTED BY THE COMMITTEE

The committee accepted 15 of the 18 reports of bird observations it received as of 31 December 2016 as first or second records for Palau, as itemized below. The data for each species include its English name, scientific name, the committee's tracking number, number of birds constituting the record, their age and/or sex if evident (figure number), inclusive dates of occurrence, locality, responsible party, and a brief summary of other relevant information. The locality "Northern Peleliu Lkes Important Bird Area" is spelled correctly. "Lkes" is Palauan for "intertidal sand flats."

Common Pochard *Aythya ferina*. P006. Adult male (Figure 1a), 19 Nov 2014, Melekeok (Lake Ngardok Nature Reserve), Heather Ketebengang. Pratt et al. (2010) considered prior reports of the species in Palau to be equivocal. The only other Micronesian records are from Guam and the Northern Marianas (Wiles 2005).

Black-faced Spoonbill *Platalea minor*. P003. One bird (Figure 1b), 8 Dec 2013 to 15 Mar 2014, Peleliu (Northern Peleliu Lkes Important Bird Area), Glenn McKinlay. A separate report (McKinlay 2015) described the bird in detail sufficient to distinguish it from congeners. The Black-faced Spoonbill is an endangered species (IUCN 2017) with a restricted range. It migrates from breeding grounds on the west coast of the Korean peninsula, northeastern China, and northeastern Russia to winter in southern China, Taiwan, Vietnam, and southern Japan (Gill and Donsker 2018). It has not been previously reported from Micronesia.

Chinese Pond Heron *Ardeola bacchus*. P010. One adult in alternate plumage (Figure 1c), 12–14 May 2014, Koror (Malakal sewage treatment plant), Glenn McKinlay. Pratt et al. (2010) reported a heron of the genus *Ardeola* photographed 12–23 Dec 2008 at the Koror landfill by Heather Ketebengang. Although the photos showing a bird in basic plumage were "strongly suggestive" of *A. bacchus*, Pratt et al. (2010) concluded that species identification was equivocal because the basic plumage of *A. bacchus* is indistinguishable from that of the Javan Pond Heron (*A. speciosa*). Wiles et al. (2000, 2004) handled earlier reports of *Ardeola* in basic plumage from Guam and the Northern Marianas in similar fashion. This is the first unequivocal record for

Table 2 Palau Islands Bird List.

Family	Genus/species[a]	English name[a]	Status[b]
Anatidae	*Spatula querquedula*	Garganey	M
	Mareca penelope	Eurasian Wigeon	M
	Anas superciliosa	Pacific Black Duck	R
	Anas acuta	Northern Pintail	M
	Anas crecca	Eurasian Teal	M
	Aythya ferina	Common Pochard	*
	Aythya fuligula	Tufted Duck	M
Megapodiidae	*Megapodius laperouse*	Micronesian Megapode	R
Phasianidae	*Gallus gallus*	Red Junglefowl	I
Hydrobatidae	*Oceanodroma matsudairae*	Matsudaira's Storm Petrel	P
Procellariidae	*Pterodroma solandri*	Providence Petrel	P
	Calonectris leucomelas	Streaked Shearwater	P
	Ardenna pacifica	Wedge-tailed Shearwater	S
	Puffinus bailloni	Tropical Shearwater	R
	Bulweria bulwerii	Bulwer's Petrel	P
Phaethontidae	*Phaethon rubricauda*	Red-tailed Tropicbird	R
	Phaethon lepturus	White-tailed Tropicbird	R
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	M
	Platalea minor	Black-faced Spoonbill	*
Ardeidae	*Ixobrychus sinensis*	Yellow Bittern	R
	Ixobrychus eurhythmus	Von Schrenck's Bittern	V
	Gorsachius goisagi	Japanese Night Heron	V
	Gorsachius melanolophus	Malayan Night Heron	V
	Nycticorax nycticorax	Black-crowned Night Heron	M
	Nycticorax caledonicus	Rufous Night Heron	R
	Butorides striata	Striated Heron	M
	Ardeola bacchus	Chinese Pond Heron	*
	Bubulcus coromandus	Eastern Cattle Egret	M
	Ardea cinerea	Gray Heron	M
	Ardea alba	Great Egret	M
	Ardea intermedia	Intermediate Egret	M
	Egretta garzetta	Little Egret	M
	Egretta sacra	Pacific Reef Heron	R
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican	V
Fregatidae	*Fregata minor*	Great Frigatebird	R
	Fregata ariel	Lesser Frigatebird	S
Sulidae	*Sula dactylatra*	Masked Booby	S
	Sula sula	Red-footed Booby	R
	Sula leucogaster	Brown Booby	R
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant	R
	Phalacrocorax sulcirostris	Little Black Cormorant	V
Pandionidae	*Pandion haliaetus*	Western Osprey	M
Accipitridae	*Accipiter soloensis*	Chinese Sparrowhawk	M
	Milvus migrans	Black Kite	(M)
	Haliastur indus	Brahminy Kite	(V)
	Butastur indicus	Gray-faced Buzzard	(V)
Rallidae	*Rallina fasciata*	Red-legged Crake	V
	Rallina eurizonoides	Slaty-legged Crake	R
	Gallirallus philippensis	Buff-banded Rail	R
	Amaurornis moluccana	Pale-vented Bush-hen	V

(*continued*)

Table 2 (*continued*).

Family	Genus/species[a]	English name[a]	Status[b]
	Amaurornis phoenicurus	White-breasted Waterhen	*
	Porzana cinerea	White-browed Crake	R
	Porphyrio melanotus	Australasian Swamphen	R
	Gallinula chloropus	Common Moorhen	R
Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt	M
Charadriidae	*Erythrogonys cinctus*	Red-kneed Dotterel	V
	Pluvialis fulva	Pacific Golden Plover	M
	Pluvialis squatarola	Gray Plover	M
	Charadrius hiaticula	Common Ringed Plover	M
	Charadrius dubius	Little Ringed Plover	M
	Charadrius alexandrinus	Kentish Plover	M
	Charadrius mongolus	Lesser Sand Plover	M
	Charadrius leschenaultii	Greater Sand Plover	M
	Charadrius veredus	Oriental Plover	V
Scolopacidae	*Numenius phaeopus*	Whimbrel	M
	Numenius minutus	Little Curlew	M
	Numenius madagascariensis	Far Eastern Curlew	M
	Numenius arquata	Eurasian Curlew	*
	Limosa lapponica	Bar-tailed Godwit	M
	Limosa limosa	Black-tailed Godwit	M
	Arenaria interpres	Ruddy Turnstone	M
	Calidris tenuirostris	Great Knot	M
	Calidris canutus	Red Knot	V
	Calidris pugnax	Ruff	M
	Calidris falcinellus	Broad-billed Sandpiper	V
	Calidris acuminata	Sharp-tailed Sandpiper	M
	Calidris ferruginea	Curlew Sandpiper	M
	Calidris subminuta	Long-toed Stint	M
	Calidris ruficollis	Red-necked Stint	M
	Calidris alba	Sanderling	M
	Calidris alpina	Dunlin	M
	Calidris melanotos	Pectoral Sandpiper	M
	Gallinago megala	Swinhoe's Snipe	M
	Gallinago gallinago	Common Snipe	M
	Xenus cinereus	Terek Sandpiper	M
	Phalaropus lobatus	Red-necked Phalarope	V
	Actitis hypoleucos	Common Sandpiper	M
	Tringa ochropus	Green Sandpiper	V
	Tringa incana	Wandering Tattler	M
	Tringa brevipes	Gray-tailed Tattler	M
	Tringa totanus	Common Redshank	M
	Tringa stagnatilis	Marsh Sandpiper	M
	Tringa glareola	Wood Sandpiper	M
	Tringa nebularia	Common Greenshank	M
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	M
Laridae	*Anous stolidus*	Brown Noddy	R
	Anous minutus	Black Noddy	R
	Gygis alba	White Tern	R
	Chroicocephalus ridibundus	Black-headed Gull	M
	Gelochelidon nilotica	Gull-billed Tern	*
	Thalasseus bergii	Greater Crested Tern	R

(*continued*)

Table 2 (*continued*).

Family	Genus/species[a]	English name[a]	Status[b]
	Sternula albifrons	Little Tern	M
	Onychoprion lunatus	Spectacled Tern	S
	Onychoprion anaethetus	Bridled Tern	R
	Onychoprion fuscatus	Sooty Tern	R
	Sterna sumatrana	Black-naped Tern	R
	Sterna hirundo	Common Tern	M
	Chlidonias hybrida	Whiskered Tern	M
	Chlidonias leucopterus	White-winged Tern	M
Stercorariidae	*Stercorarius longicaudus*	Long-tailed Jaeger	P
Columbidae	*Caloenas nicobarica*	Nicobar Pigeon	R
	Alopecoenas canifrons	**Palau Ground Dove**	R
	Ptilinopus pelewensis	**Palau Fruit Dove**	R
	Ducula oceanica	Micronesian Imperial Pigeon	R
Cuculidae	*Clamator coromandus*	Chestnut-winged Cuckoo	V
	Urodynamis taitensis	Pacific Long-tailed Cuckoo	V
	Scythrops novaehollandiae	Channel-billed Cuckoo	*
	Cacomantis variolosus	Brush Cuckoo	V
	Hierococcyx hyperythrus	Rufous Hawk-Cuckoo	V
	Cuculus optatus	Oriental Cuckoo	M
	Cuculus canorus	Common Cuckoo	V
Strigidae	***Pyrroglaux podargina***	**Palau Owl**	R
	Ninox scutulata	Brown Hawk-Owl	V
Caprimulgidae	*Caprimulgus jotaka*	Gray Nightjar	M
	Caprimulgus phalaena	**Palau Nightjar**	R
Apodidae	***Aerodramus pelewensis***	**Palau Swiftlet**	R
	Hirundapus caudacutus	White-throated Needletail	V
Coraciidae	*Eurystomus orientalis*	Oriental Dollarbird	M
Alcedinidae	*Halcyon coromanda*	Ruddy Kingfisher	*
	Todiramphus chloris	Collared Kingfisher	R
	Todiramphus pelewensis	**Rusty-capped Kingfisher**	R
	Alcedo atthis	Common Kingfisher	*
Meropidae	*Merops ornatus*	Rainbow Bee-eater	V
Falconidae	*Falco peregrinus*	Peregrine Falcon	(M)
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	I
Psittaculidae	*Eclectus roratus*	Eclectus Parrot	I
Meliphagidae	*Myzomela rubratra*	Micronesian Myzomela	R
Artamidae	*Artamus leucoryn*	White-breasted Woodswallow	R
Campephagidae	***Coracina monacha***	**Palau Cicadabird**	R
Pachycephalidae	***Pachycephala tenebrosa***	**Morningbird**	R
Laniidae	*Lanius cristatus*	Brown Shrike	V
Rhipiduridae	***Rhipidura lepida***	**Palau Fantail**	R
Monarchidae	***Myiagra erythrops***	**Palau Flycatcher**	R
Hirundinidae	*Hirundo rustica*	Barn Swallow	M
Cettiidae	***Horornis annae***	**Palau Bush Warbler**	R
Acrocephalidae	*Acrocephalus orientalis*	Oriental Reed Warbler	V
Locustellidae	*Locustella lanceolata*	Lanceolated Warbler	V
Zosteropidae	***Megazosterops palauensis***	**Giant White-eye**	R

(*continued*)

Table 2 (*continued*).

Family	Genus/species[a]	English name[a]	Status[b]
	Zosterops semperi	Citrine White-eye	R
	Zosterops finschii	**Dusky White-eye**	R
Sturnidae	*Aplonis opaca*	Micronesian Starling	R
	Agropsar philippensis	Chestnut-cheeked Starling	V
Turdidae	*Zoothera dauma*	Scaly Thrush	V
	Turdus obscurus	Eyebrowed Thrush	V
Muscicapidae	*Muscicapa griseisticta*	Gray-streaked Flycatcher	M
	Calliope calliope	Siberian Rubythroat	V
	Ficedula narcissina	Narcissus Flycatcher	V
	Monticola solitarius	Blue Rock Thrush	V
	Oenanthe isabellina	Isabelline Wheatear	*
Passeridae	*Passer montanus*	Eurasian Tree Sparrow	I
Estrildidae	*Erythrura trichroa*	Blue-faced Parrotfinch	R
	Lonchura atricapilla	Chestnut Munia	I
Motacillidae	*Motacilla tschutschensis*	Eastern Yellow Wagtail	M
	Motacilla cinerea	Gray Wagtail	V
	Motacilla alba	White Wagtail	V
	Anthus godlewskii	Blyth's Pipit	V
	Anthus cervinus	Red-throated Pipit	V
Emberizidae	*Emberiza melanocephala*	Black-headed Bunting	V

[a]Endemic species are in boldface. Scientific and English names follow Gill and Donsker (2018) except as noted in text.

[b]Status codes follow Wiles (2005): R, resident species; M, migratory species; S, seabird occasionally sighted near shore inside Palau's barrier reef; P, pelagic species seen only on open seas outside Palau's barrier reef; V, vagrant, I, introduced. Parentheses indicate that a status code is provisional and under review. *, Species newly added to the Palau list in this report.

Palau. A sighting of a bird in alternate plumage on Guam represents the only other confirmed record for Micronesia (Wiles et al. 1993). The Chinese Pond Heron breeds widely in China, Korea, and Japan and winters south to Sumatra and Borneo.

White-breasted Waterhen *Amaurornis phoenicurus*. P007. One bird (Figure 1d), 30 Oct–3 Nov 2009, Ngaremlengui (Ngermetengel hamlet), Mark Vereen. Buden and Retogral (2010) mentioned this sighting in their report of the first record for Micronesia, based on a breeding population at Woleai Atoll, Yap, Federated States of Micronesia. The committee accepted photos taken by Vereen on 1 Nov 2009 as satisfactory confirmation of the first record for Palau and the second for Micronesia. The species occurs across southern and eastern Asia east to Japan and the Moluccas.

Eurasian Curlew *Numenius arquata*. P013. One bird (Figures 1e, 1f), 20 Mar–12 Apr 2014, Peleliu (Northern Peleliu Lkes Important Bird Area), Glenn McKinlay. The photograph of the bird in flight (Figure 1e) shows a diagnostic white V on the rump and lower back; the other photograph (Figure 1f) shows the bird in comparison with a Far Eastern Curlew (*N. madagascariensis*). This is the first record for Palau. Wiles (2005) listed the Eurasian Curlew as a migrant to Guam and the Northern Marianas.

Broad-billed Sandpiper *Calidris falcinellus*. P012. Up to three birds (Figure 2a), 27 Sep–27 Oct 2015, Ngiwal (sand flats at Ngirngemelas monument), Milang Eberdong, Glenn McKinlay, Alan Olsen, and Angelina Smaserui-Olsen. The committee accepted this record on the basis of photos showing the diagnostic bill. A male specimen (USNM 384772) taken 21 Sep 1945 on Angaur Island by Baker (1948, 1951) provides the only prior record for Palau and Micronesia.

Figure 1. First recorded occurrences in Palau of the (a) Common Pochard (*Aythya ferina*), Melekeok (Lake Ngardok), 19 Nov 2014; (b) Black-faced Spoonbill (*Platalea minor*), Peleliu, 12 Dec 2013; (c) Chinese Pond Heron (*Ardeola bacchus*), Koror, 12 May 2014; (d) White-breasted Waterhen (*Amaurornis phoenicurus*), Ngaremlengui, 1 Nov 2009; (e) Eurasian Curlew (*Numenius arquata*), Peleliu, 30 Mar 2014; (f) Eurasian Curlew (right) and Far Eastern Curlew (*N. madagascariensis*) (left), Peleliu, 30 Mar 2014; (g) Gull-billed Tern (*Gelochelidon nilotica*), Koror, 14 Dec 2014; (h) Ruddy Kingfisher (*Halcyon coromanda*), Kayangel, 26 Sep 2011; (i) Common Kingfisher, (*Alcedo atthis*) Rock Islands Southern Lagoon World Heritage Site, 1 Feb 2012; (j) Isabelline Wheatear (*Oenanthe isabellina*), Koror, 7 Oct 2014.

Photos by Heather Ketebengang (a), Ron Leidich (i), Glenn McKinlay (b,c,e,f,g,j), Mark Vereen (d), Ality Inawo (h).

Gull-billed Tern *Gelochelidon nilotica*. P011. One bird (Figure 1g), 14 Dec 2014, Peleliu (Northern Peleliu Lkes Important Bird Area), Glenn McKinlay. The bird's adult basic plumage (with no signs of breeding plumage in December) and bill shape (with prominent gonydeal angle) point to the southeast Asian subspecies *G. n. affinis* rather than the Australian *G. n. macrotarsa*. This is the first record for Palau. Wiles (2005) listed this species as vagrant to Guam.

Chestnut-winged Cuckoo *Clamator coromandus*. P018. One bird (Figure 2b), 1 Mar 2013, Kayangel, Vivian Eledui. Photos of the bird in hand show the distinctive black upperparts and crest, white hind collar, rufous wings and throat, and white underparts. The only previous record for Palau is of a specimen (USNM 526212) collected 4 Jun 1967 in Koror (Owen 1977a) and verified by C. Milensky (pers. comm.) as a Chestnut-winged Cuckoo. The species is widespread in south and southeast Asia and migratory at least in China.

Figure 2. Second recorded occurrences in Palau of the (a) Broad-billed Sandpiper (*Calidris falcinellus*), Ngiwal, 27 Oct 2015; (b) Chestnut-winged Cuckoo (*Clamator coromandus*), Kayangel, 1 March 2013; (c) Channel-billed Cuckoo (*Scythrops novaehollandiae*), Angaur, 3 Nov 2013; (d) White-throated Needletail (*Hirundapus caudacutus*), Kayangel, 21 Oct 2015; (e) Oriental Reed Warbler (*Acrocephalus orientalis*), Koror, 10 Dec 2013.

Photos by Alan Olsen (a), Vivian Eledui (b), Joel Miles (c), Heather Ketebengang (d), Glenn McKinlay (e).

Channel-billed Cuckoo *Scythrops novaehollandiae* P005a. One bird, 14 Jul 2011, Koror, Heather Ketebengang. The committee accepted this first record on the basis of Ketebengang's photo and description of the bird's distinctive morphology. The committee also accepted a second record (P005b) supported by a higher-quality photo (Figure 2c) of an immature bird with a diagnostic massive bill, red eye, buff areas on the wing and underparts, and a long tail with black and white tip, found on Angaur by Joel Miles, 3 Nov 2013. This Australasian species, migratory in the southern part of its range, has not been previously reported from Micronesia.

White-throated Needletail *Hirundapus caudacutus*. P017. One bird (Figure 2d), 21 Oct 2015, Kayangel, Heather Ketebengang. Photos of the bird in flight show a

diagnostic combination of white chin, dark underbody, and white undertail. The only previous record for Palau was of four birds sighted on 13 Apr 2004 on Bloody Nose Ridge, Peleliu (Pratt et al. 2010; Table 1).

Ruddy Kingfisher *Halcyon coromanda*. P008. Two birds (Figure 1h), 26 Sep 2011, Kayangel, Ality Inawo. The photos clearly show the ruddy plumage with a diagnostic blue dorsal streak. This species has not been previously reported from Micronesia. Its patchy distribution includes breeding in Japan and Korea and wintering in the Philippines.

Common Kingfisher *Alcedo atthis*. P004. One bird (Figure 1i), 1 Feb 2012, Koror (Rock Islands Southern Lagoon World Heritage Site), Ron Leidich. The photo shows the characteristic white chin and facial marks, reddish brown underparts, and bright blue dorsum. This is the first unequivocal record of this species from Palau. A sighting on Guam is the only other record for Micronesia (Wiles et al. 1993). The migratory subspecies *bengalensis* breeds as far east as the Kuril Islands and winters regularly east to the Philippines and Moluccas; resident subspecies occur as far east as the Solomon Islands.

Oriental Reed Warbler *Acrocephalus orientalis*. P014. Two birds (Figure 2e), 9 Dec 2013 to 18 Mar 2014, Koror (Malakal sewage treatment plant), Glenn McKinlay. The committee accepted this record on the basis of photos showing a plain warbler with a combination of bill, body, and tail proportions and body plumage typical of the Oriental Reed Warbler. A white supercilium and dark eye stripe, both distinctly extending well behind the eye, and white-tipped tail feathers, distinguish the bird from congeners in its range. McKinlay further informed the committee that the bird's call recorded on video matched that of the Oriental Reed Warbler, including a sharp harsh single "*chkt*," rapid sequences "*cht-cht-cht-cht*," and longer warbling sequences. The only other record of this species for Palau is of a pair of birds photographed at the same location on 11 Apr 2007 (Pratt et al. 2010; Table 1). The Oriental Reed Warbler breeds from central China northeast to Sakhalin and winters in southeast Asia east regularly to the Philippines and Moluccas, rarely to New Guinea.

Isabelline Wheatear *Oenanthe isabellina*. P009. One bird (Figure 1j), 7 Oct 2014, Koror (Malakal sewage treatment plant), Glenn McKinlay. The photos show several diagnostic features, including a black alula that contrasts with the rest of the wing, wings not contrasting with the back, and an eyebrow white in front of the eye. This species has not been previously reported from Micronesia. Its normal range is central Asia to Arabia and north Africa, with vagrants recorded as far east as Australia, Japan, and the Korean peninsula (Shimba 2007, Christidis and Boles 2008, Gill and Donsker 2018).

OTHER COMMITTEE ACTIONS

The committee reviewed three additional items.

Chinese Sparrowhawk *Accipiter soloensis*. P016. One bird, 17 Sep 2015, Kayangel, Ality Inawo. The committee accepted this report as a valid but not particularly unusual observation because we consider this species the raptor that visits Palau most frequently (Wiles et al. 2000, Pratt and Etpison 2008). Because of uncertainty concerning the status of various raptors as migrant or vagrant in Palau (cf. Wiles 2005, Pratt and Etpison 2008), the committee reviews all reports of raptors to help clarify the status of each species.

Latham's Snipe *Gallinago hardwickii*. P015. This report of a possible first record was placed in abeyance pending receipt of additional information. Photos reviewed by the committee were inconclusive with regard to identification characteristics, especially

the number and shapes of the rectrices, which help distinguish *G. hardwickii* from other species of *Gallinago* known to occur in Palau.

Blyth's Pipit *Anthus godlewskii*. P002. One bird, 23 Apr 2005, Koror (Malakal sewage treatment plant), originally reported as Richard's Pipit (*A. richardi*; VanderWerf et al. 2006). The original photos were re-examined by Lees and VanderWerf (2011) and the identification was corrected to *A. godlewskii*. This correction is reflected in Tables 1 and 2.

THE PALAU ISLANDS BIRD LIST

As of December 2016, a total of 168 species are known to have occurred in Palau (Table 2): 158 species from the historical list and 10 new species accepted by the committee. Table 2 represents the official Palau Islands bird list of the PBRC. English and scientific names follow Gill and Donsker (2018) except the English name Rufous Night Heron is applied to *Nycticorax caledonicus* to reflect local usage for the resident subspecies *N. c. pelewensis*, and the spelling of the species name of the White-breasted Woodswallow is emended from *Artamus leucorynchus* to *A. leucocoryn* to be consistent with article 32.5.1 of the International Code of Zoological Nomenclature (David and Dickinson 2014).

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A NONINVASIVE TECHNIQUE FOR SAMPLING FOOD AVAILABILITY FOR FOLIAGE-GLEANING BIRDS

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ABSTRACT: We describe a noninvasive modification to the technique of branch-clipping for sampling arthropods and evaluate its efficacy for studying food resources for a foliage-gleaning warbler breeding in the sky islands of southern Arizona. In the foliage-area method, arthropod abundance is measured on individual branches, and search area is controlled for by estimating surface area with a shadowed grid, analogous to canopy cover being estimated with a densiometer. Our technique enables repeated sampling of the same branch, which can limit sampling error and facilitates detailed studies of phenology across seasons and over multiple years. Overall it required less effort than traditional approaches, but because of the logistical challenges associated with sampling tree canopies, it is best suited for studies of species that forage relatively low to the ground. The foliage-area method does not alter the habitat, making it ideally suited for studies in protected areas, when foliage is limiting, or for work with food crops or endangered plant species.

Assessing the availability and distribution of food resources is essential to addressing a variety of questions in ecology (e.g., Morrison et al. 1990). For insectivorous species, however, the cost and time constraints associated with sampling arthropods often limit sampling effort (Morris 1960, Southwood 1980, Smith and Rotenberry 1990, Poulin and Lefebvre 1997). Branch-clipping is gaining favor as an easy and effective method for sampling arthropod communities. In this technique, researchers estimate the density of arthropods on a plant by measuring the dry mass of clipped branches upon which the arthropods are counted (Johnson 2000, Vitz and Rodewald 2006, McGrath et al. 2009, Decker et al. 2012). Unfortunately, because it is destructive to the sampled plant, branch-clipping is precluded when foliage is limited (e.g., in desert riparian corridors), on food crops or endangered plants, or when temporal changes are being assessed, as in studies of plant/arthropod phenology, herbivory, or arthropod depletion. Alternative approaches to estimating arthropod density, such as counting the number of individual arthropods per leaf (e.g., Holmes et al. 1979, Holmes and Schultz 1988), are equally limited when a study addresses phenology or when plant species with different leaf sizes are being compared, as the number of leaves may not reflect the availability of habitat for arthropods. Here we describe and evaluate a novel sampling technique, the foliage-area method, which is based on the relationship between the number of arthropods counted and the estimated area of foliage and overcomes some limitations of sampling. Specifically, we evaluate and compare the foliage-area method to the branch-clipping method for measuring differences in food resources among substrates and across the breeding season for the

Red-faced Warbler (*Cardellina rubrifrons*). We contrast the limitations and advantages of the foliage-area protocol in comparison to the branch-clipping method, and discuss its application.

METHODS

From April to July of 2008, we sampled arthropods on four 16- to 20-ha study plots in a high-elevation (2300–2700 m) mixed-conifer forest in the Coronado National Forest, Santa Catalina Mountains, Pima County, Arizona (32.43° N, 110.76° W). Sampling was limited to larvae of Lepidoptera found on the outermost 25–45 cm of White Fir (*Abies concolor*) and Big-tooth Maple (*Acer grandidentatum*) branches located 0.25–2.5 m off the ground because Red-faced Warblers regularly forage in the lower branches of these trees, and approximately 80% of their diet during the breeding season is Lepidoptera (Martin and Barber 1995, K. Decker unpubl. data).

To estimate the density of larvae we first visually inspected and tallied the number of larvae on the top and underside of all leaves, flowers, and stems of the sampled branch, being careful not to disrupt the arthropod community. Visual inspection has limitations (Cooper and Whitmore 1990) but is appropriate when arthropods are sessile, not highly cryptic, and therefore easily detected (Moir et al. 2005). If necessary, however, alternative sampling techniques (e.g., enclosing the branch in a container and shaking or gassing it) are adaptable to the foliage-area method. Next we estimated the surface area of each sampled branch by placing the branch (while attached to the tree) on a grid (Figure 1) and counting the number of squares covered

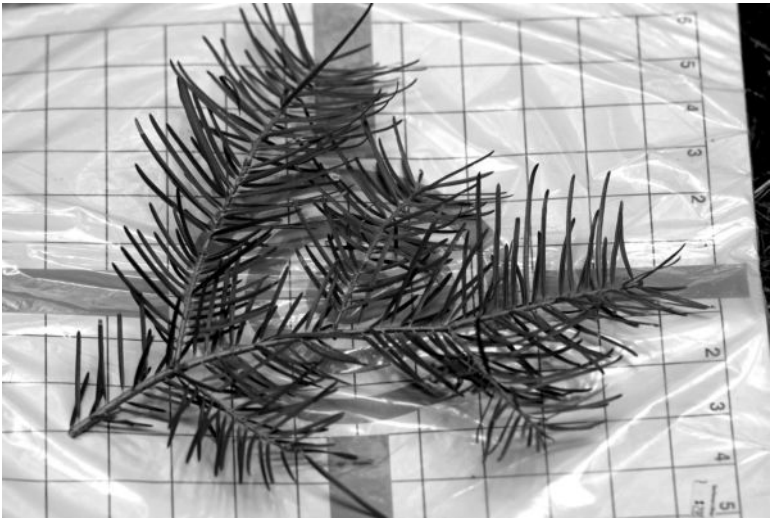

Figure 1. The foliage-area method relies on an estimation of branch area to account for search effort. A branch is placed on a gridded piece of paper, and the number (or percentage) of covered squares is recorded to estimate area.

by any part of the branch, be it stem, leaf, or flower, in a manner similar to estimating canopy cover with a densiometer. Although gridded paper can be made, we used an inexpensive ($3/dozen) paper target, which we laminated to protect it against the elements. The grid consisted of a series of 144 squares, each 2.5 cm × 2.5 cm (totaling 900 cm^2 per grid), which was large enough for our sampling, but larger grids could be constructed. Note that the size of the grid squares may influence the precision of the estimates of area, so smaller grid squares may be necessary to distinguish small differences among substrates. After measuring the area of each branch, we cut and removed the branch from the tree, placed it in a paper bag, and stored it in a cool dry location until the completion of the field season. All branches were dried at 40° C for approximately 48 hours and weighed with a digital scale (accurate to 0.001 g).

We sampled 40 branches from Big-tooth Maple, mean mass 3.91 g (± SD 1.79) and area 346.25 cm^2 (± 145.3), and 41 branches from White Fir, mean mass 14.08 g (± 5.54) and area 457.32 cm^2 (± 139.91). Since the numerator in both calculations of density is the same (number of arthropods counted), we compared the methods on the basis of the denominators, estimated area and dry mass of each branch. After transforming the data by the natural logarithm to meet assumptions of normality, we examined the relationship between area and mass by means of two two-tailed Pearson correlation tests, one for each tree species. Using the Fisher *r*-to-*z* transformation, we then compared the correlations to see if the relationship between mass and area differed by tree species. We also examined how the density of larvae on the two species of trees differed with a Wilcoxon–Mann–Whitney two-sample rank-sum test. Finally, we examined seasonal patterns by averaging counts of larvae for each week and assessing changes by linear regression and a Student's *t*-test to compare the lines' slopes.

RESULTS

Branch area was significantly correlated with dry mass for both tree species (Figure 2; maple: $r_{39} = 0.887$, $P < 0.001$; fir: $r_{40} = 0.991$, $P < 0.001$), but the area–mass curves did differ ($Z = -5.52$, $P < 0.001$). We found no difference between the two species in density of larvae (Figure 3; branch-clipping: Mann–Whitney $U = 811.0$, $n_1 + n_2 = 81$, $P = 0.870$; foliage-area: Mann-Whitney $U = 817.0$, $n_1 + n_2 = 81$, $P = 0.956$). Both techniques showed a similar ($t_5 = 0.541$, $P > 0.25$) although insignificant seasonal decline in the density of larvae (Figure 3; branch-clipping: $t_5 = -0.736$, $P = 0.502$; foliage-area: $t_5 = 1.048$, $P = 0.354$).

DISCUSSION

Estimating food resources for insectivorous birds requires balancing the desire for ample high-quality data with the need to reduce the cost of sampling and inadvertent damage to the system being studied. With practice, we estimated the abundance of lepidopteran larvae on a branch and the branch's surface area within 2–3 minutes by the foliage-area method, obtaining results similar to those yielded by the traditional method of measuring dry leaf mass

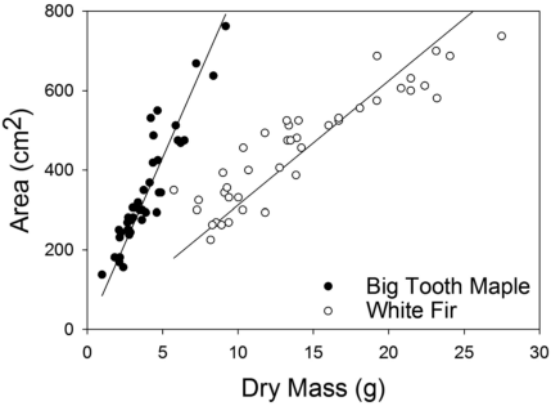

Figure 2. Estimating food resources for birds requires calibrating arthropod abundance against available habitat. Results of the foliage-area method of calibration are strongly correlated with those of the traditional approach based on estimating arthropod abundance from the dry mass of a clipped branch. Data represent the two species of trees (●, Big-tooth Maple; ○, White Fir) in which Red-faced Warblers prefer to forage.

(Figure 3). In contrast, estimates from the branch-clipping technique were not available until after the field season when drying of branches was completed. Measuring the mass of a branch in the field saves time (e.g., Johnson 2000), but water content, a significant component of branch mass, varies with a tree's age, phenology, and resource availability (Field and Mooney 1983, Larcher 2001), introducing considerable error into estimates. Measuring area, not mass, is a more intuitive means of measuring arthropod habitat and has the added benefit of not altering the vegetation.

We observed a strong correlation between branch area and dry mass (Figure 2), but the slopes for the two tree species differed. The difference in the area–mass relationships may indicate that the foliage-area method should not be used to compare estimates of arthropod density on different tree species that differ in form of branches and leaves, or it may indicate that branch mass is not an ideal measure of the availability of arthropod habitat (see below). The use of a grid has advantages over visual estimations, but precision is sensitive to grid size (Cooperrider et al. 1986, Bookhout 1994). Although a leaf-area meter (e.g., O'Neal et al. 2002) or computer analysis of digital photographs (e.g., Meyer and Davison 1987, Jorgensen et al. 2013) yield more precise results, these techniques are also more costly and time consuming.

Obviously, any approach that estimates area fails to account for vertical structure. Although we had no difficulty getting samples to lay flat, even of White Fir, which has a relatively whorled leaf structure, we suggest that there are means to overcome complex branch structures. When a branch is flexible, we found that compressing it against the grid with a clear sheet of plastic successfully incorporated the vertical component of the branch into the area estimate. This approach proved particularly useful when we test-

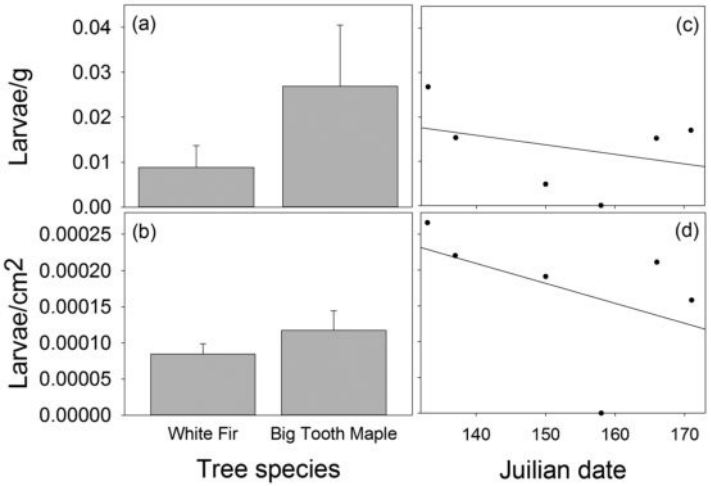

Figure 3. Comparison of estimates of density of lepidopteran larvae by species of tree (a, b; mean ± SD) and through the season (c, d; mean and linear regression) by the foliage-area method we describe and by estimating arthropod abundance from the dry mass of a clipped branch. The patterns of results from the two techniques did not differ.

sampled long-needled pines, but it carries the risk of damaging the plant and arthropods. Another approach is to use the grid to measure both horizontal and vertical area as an additive estimate of the total area. While this approach is effective, it likely limits comparisons to a single tree species because differences between species in the structure of branches can lead to error.

We believe that the tree-specific area–mass relationship we found is related to differences in the proportion of leaf and stem on a given branch, not to sampling error. This finding is important because while the majority of arthropod habitat on a branch is often leaf, because of the difference between stems and leaves in density, the majority of a branch's mass is almost always stem. If mass rather than surface area of a branch is used as an index, the relative density of arthropods may be both overestimated (i.e., small stem, large or many leaves) and underestimated (i.e., large stem, small or few leaves), making comparisons between tree species or even samples difficult. This supposition is supported by our data, which suggest that the relative difference in density of larvae between the White Fir and Big-tooth Maple, the former being dominated by stem, the latter by leaves, is greater when the density of larvae is estimated by mass rather than by area (Figure 3). In practice this may have little effect on estimates when branches with similar structure are compared, but the difference may be important in a study encompassing multiple plant species or plants undergoing changes in phenology. Moreover, most food studies assess birds' foraging behavior (e.g., Johnson 2000, McGrath et al. 2009), and while it may be reasonable to suspect a relationship between branch mass and arthropod abundance, the linkage to foraging strategy is more dubious, as studies of predator–prey

interactions refer to the area searched, not the mass (e.g., Andersson 1981). Counting arthropods per leaf (e.g., Holmes et al. 1979) may overcome some of these problems, but not in studies of phenology where leaf area, and thus arthropod habitat and the area a bird searches, change over time.

Like other methods of sampling, the foliage-area method has limitations (see Cooper and Whitmore 1990). Most significantly, it is important to identify the tree species and foraging locations appropriate to the birds being studied to ensure samples are representative (Cooper and Whitmore 1990). Like the branch-clipping method, the foliage-area method has limited applicability for aerial foragers and for arthropods that are prone to escape or fall from branches (Johnson 2000). Without the use of a ladder, a logistical challenge, the foliage-area method is restricted to heights <2.5 m, which is about half the height available to researchers using an extendable tree pruner to collect branch samples (generally <6 m). Visually counting rather than collecting arthropods has limitations if identifying the prey species is important, or if the prey vary in size, but this can be overcome by using a portable reference collection and classifying prey by body size. Finally, highly cryptic arthropods may prove challenging, particularly when a branch of complex structure is sampled. In our case, we were successful in finding the small green lepidopteran larvae that dominate the Red-faced Warbler's diet (Martin and Barber 1995). In some cases, however, shaking or gassing of the branch may prove necessary.

The foliage-area method overcomes some of the limitations of the branch-clipping method, uses a more intuitive measure of sampling effort, and proved effective for sampling larvae of Lepidoptera. Still, estimating food resources for insectivorous birds involves understanding arthropod and plant ecology as much as the ecology of the study species to ensure appropriate sampling. We reiterate the importance of identifying the microhabitat in which a bird forages and its preferred arthropod prey to ensure that the sampling procedure is appropriate (Cooper and Whitmore 1990, Johnson 2000, Sherry et al. 2005), but we also suggest researchers understand arthropod–plant relationships to ensure that sampling techniques (e.g., mass versus area) truly account for sampling effort and address the question at hand.

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SEXUALLY DIMORPHIC PLUMAGE CHARACTERISTICS IN THE NORTHERN BLACK SWIFT

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ABSTRACT: Most published accounts of the Northern Black Swift (*Cypseloides niger borealis*) contain disagreements and inaccuracies concerning the species' sexual dimorphism in plumage. These reports represent small sample sizes and are not based on birds recaptured and followed over time. In our study, to gain a better understanding of dimorphic plumage characteristics, we captured swifts at four breeding colonies in the Rocky Mountains from 2004 through 2017. We banded breeding adults, recorded eight metrics (wing chord, flat wing, length of the outermost [r5] and innermost [r1] rectrices, the difference in these lengths, length of white tipping on the abdomen and undertail coverts, and weight), and photographed the birds' underparts. We followed these characteristics in birds recaptured for up to 13 years. The difference in the mean depth of the tail fork (r5 – r1) was the most definitive plumage characteristic distinguishing the sexes of adults, being accurate in 95% of the birds examined. With few exceptions, males had only slight white tipping of the abdominal feathers and undertail coverts, whereas females had significantly longer white tipping on those feathers. Individuals that were recaptured did not change appreciably over time in wing chord, depth of tail fork, or degree of white tipping on the abdomen and undertail coverts. This is the largest and longest study of sexual dimorphism in the Northern Black Swift and clarifies previous misinterpretations of these characteristics.

Differences between the plumages of adult male and female Northern Black Swifts (*Cypseloides niger borealis*) have been debated since 1857, when the type specimen was collected at Simiahmoo Bay, Puget Sound, Washington Territory (Kennerly 1857). Starting with this initial description, observers drew varying conclusions about how the plumage varied with sex and age. The purpose of our project was to identify sexually dimorphic plumage characteristics in adult Black Swifts.

Some previous observers concluded, from freshly collected or museum specimens, that adult male and female Black Swifts are indistinguishable by plumage. Drew (1882), Swarth (1911, 1912, 1924), and Brooks (1917, 1924) all indicated that adult female Black Swifts are indistinguishable from adult males. Marín and Stiles (1992) agreed with Drew (1882) and Brooks (1924), stating that fully adult birds show no sexual dimorphism.

Many observers have used the white tipping of the abdominal feathers and undertail coverts as a method of sexing and aging Black Swifts. Drew (1882), Swarth (1911, 1912), and Brooks (1917) stated that as the birds age, the white tips of the ventral feathers disappear completely. Rathbun (1925) concluded that there is a seasonal variation in the markings of the

posterior underparts of females, with birds collected from early June to mid-July having progressively larger white tips on the abdominal feathers and undertail coverts, to the point they form circular spots. Davis (1931) related that three female specimens were flecked with white on breast and belly but one had no white tipping; he questioned whether this was due to the age of the birds or if there could be that much variation in birds in any one year. Ridgway (1911) stated that specimens with white-tipped feathers on posterior underparts are females and those without white-tipped feathers are males. Brooks (1924) and Rathbun (1925) reported that males lack any trace of light tipping on the ventral feathers and that the majority of females have the feathers of the lower breast and abdomen broadly edged with white. Zimmer (1945) concluded that male Black Swifts often show some trace of narrow pale tips on the ventral feathers. Marín and Stiles (1992) concluded from museum study skins that white tipping occurs in young Black Swifts at least into their second year. Later, also on the basis of museum specimens, Marín (1997) stated that white tipping on the abdomen and crissum persists for at least three years and possibly more. Neither Marín and Stiles (1992) nor Marín (1997) specified the sex of the specimens or indicated how their age was determined.

Some researchers have mentioned sexual dimorphism in the depth of the tail fork, expressed as the difference between the length of the outermost rectrix (r5) and the innermost rectrix (r1). Drew (1882) stated that as birds progress from young of the year to their fourth year, their tail changes from rounded to forked, but he did not describe how he aged the birds. Brooks (1917) stated that females aged two years and over have a forked tail. Swarth (1911, 1912) and Zimmer (1945) noted that males have a deeply forked tail and females have a square or slightly rounded tail, except for one specimen of a male with a distinctly rounded tail, a characteristic Zimmer attributed to age of the bird. M. A. Marín (pers. comm.) concluded that the degree of tail fork is related to age, not sex, and he stated that Pyle (1997) was incorrect in stating that females retain a squarish tail with a fork of no more than 3 mm.

The long duration of our study, measurements of 181 swifts, genetic determination of sex, and statistical analysis of measurements clarifies previous misconceptions and accurately represents sexual dimorphism in the plumage of the Black Swift.

METHODS AND STUDY AREAS

We captured Black Swifts at four colonies in Colorado, one in New Mexico, and one in Idaho from 2004 through 2017 (Table 1).

We captured swifts with mist nets or hand-held nets (mesh of both 38 mm) from the third week of July to the last week of August. These dates coincide with the third quarter of the breeding season (Hirshman et al. 2007). Because, during this part of the breeding season, swifts visit their nests infrequently during daytime, we attempted to capture them from 05:30 to 07:00 or 19:00 to 21:00 Mountain Daylight Time. Each individual was marked with a U.S. Geological Survey aluminum band. We took measurements as described by Pyle (1997), including wing length, length of outermost (r5) and innermost (r1) rectrices to the nearest millimeter, and body weight to the

nearest tenth of a gram. We quantified the white tipping on the abdomen and undertail coverts as the longest white tip on these feathers, measured to the nearest 0.5 mm. To track any changes in white tipping over time, we photographed the birds' underparts.

Ten individual banders participated; 67% of birds were banded by Potter, 31% by Beason, and 16% by eight other persons. All banders were experienced, holding required federal and state banding permits, which helped minimize variation in measurements among banders. In some cases, more than one bander handled birds at a colony during a year; in some cases, banders at a colony varied from one year to the next.

We do not address the other two recognized subspecies of the Black Swift, *C. n. costaricensis* and *C. n. niger*. Nor do we discuss the juvenal plumage, as it has been well described (Foerster 1987, Collins and Foerster 1995, Marín 1997, Pyle 1997) and is not useful for identifying sex.

For sexing of all the swifts we handled, we collected blood and/or feathers and submitted them to one of two laboratories. The U.S. Geological Survey's FORT Molecular Ecology Laboratory, Ft. Collins, Colorado, received 71 samples. At this laboratory, DNA was isolated from blood or feather samples and was amplified at two loci developed for sexing of birds: P8/P2 (Griffiths et al. 1998) and Z37B (Dawson et al. 2015). An individual was identified as female if the sample yielded two peaks at both of the loci and male if only one peak was observed at each locus. DDC Veterinary, Fairfield, Ohio, received 26 samples and also used the method of sex determination described by Griffiths et al. (1998). Twenty-five samples were sent to both labs. All blood and feather samples amplified, we did not detect any errors in sex determination, and results from the two labs matched 100% of the time.

We evaluated the distributions of eight variables to identify overt differences between the sexes. Candidate covariates included wing chord, flat wing, r5 length, r1 length, the difference between r5 and r1, length of white tipping on the abdomen and undertail coverts, and body weight. Difference in length of rectrices alone accounted for over 99% of the variance between the sexes and minimized cases of missing data. We therefore used this variable in a discriminant analysis function (Dechaume-Moncharmont et al. 2011) to assess its ability to differentiate between male and female Black Swifts. We used three validation methods to assess the accuracy of the discriminant function in classifying individuals: resubstitution, jack-knife cross-validation, and splitting the dataset into two subsets, a training subset consisting of two-thirds of the birds measured and a testing subset consisting

Table 1 Sites of Captures of Black Swifts Measured in This Study

Study site	Coordinates	Elevation
Fulton Resurgence Cave, Colorado	39° 49′ N, 107° 24′ W	3015 m
Box Canyon Falls, Colorado	38° 1′ N, 107° 40′ W	2377 m
Zapata Falls, Colorado	37° 37′N, 105° 33′ W	2869 m
St. Charles River Falls, Colorado	37° 59′ N; 105° 0′ W	2320 m
Jemez Falls, New Mexico	35° 48′ N, 106° 36′ W	2377 m
Shadow Falls, Idaho	47° 45′ N, 116° 6′ W	1058 m

of the other third. The training subset served as the basis of predictions for the testing subset (Dechaume-Moncharmont et al. 2011).

We did not have a sample of repeatedly measured individuals sufficient for evaluating changes in the variables over time directly. However, the relative richness of the dataset in terms of total number of individuals captured over many years allowed us to leverage repeated subsampling within each year to calculate the mean of four of the variables (wing chord, depth of tail fork, abdominal white tipping, and undertail covert white tipping). We calculated the mean of a sample of five individuals from each of the 12 years (for a total sample across years of 60) by sex and for each metric, and repeated this process 100,000 times to arrive at a distribution of subsampled population means through time. This procedure accounts for varying representation of the available population in any given year's crop of captured individuals (e.g., one year the random sampling may overrepresent older individuals, while the next year the random sampling may overrepresent younger individuals).

RESULTS

We banded 34 adult males and 38 adult females. Of those, 17 males (49 total recaptures) and 24 females (60 total recaptures) were recaptured from one through 13 years later, some swifts being recaptured multiple times, for a total of 181 captures. For the discriminant function analysis, we included only a single observation per individual (72 observations). Table 2 lists results of the eight measurements obtained for both males and females when the birds were first banded. Some weights included boluses of insects in the swift's esophagus; boluses can range up to 3.8 g in wet weight (Potter unpubl. data).

Figure 1 shows results for males versus females for each of the eight variables measured. With the difference in length of rectrices between sexes as the sole predictor, the resubstitution method for validation yielded a classification accuracy of 95.88% (95% confidence interval [CI] = 95.84%–95.92%). Jack-knife cross-validation yielded a classification accuracy of 95.21% (95% CI = 95.16%–95.26%). Splitting the dataset produced a classification accuracy of 95.75% (95% CI = 95.73%–95.78%).

Table 2 Mean Measurements (mm) and Weights (g) of Adult Black Swifts

Sex	Male	Female
Wing chord	165.8 (160–173, *n* = 34, 3.1)	163.4 (156–170, *n* = 38, 3.6)
Flat wing	170.1 (160–179, *n* = 18, 4.3)	168.6 (163–173, *n* = 20, 2.9)
r5	57.9 (51–65, *n* = 34, 3.3)	50.6 (36–55, *n* = 38, 3.2)
r1	51.4 (46–57, *n* = 34, 2.8)	49.6 (36–54, *n* = 38, 3.1)
r5 minus r1	6.5 (1–9, *n* = 34, 2)	0.9 (0–3, *n* = 38, 0.9)
Abdominal tipping	0.5 (0–2.8, *n* = 20, 0.8)	2.7 (0–4.6, *n* = 23, 1.3)
Undertail covert tipping	0.3 (0–2, *n* = 20, 0.5)	1.0 (0–2.9, *n* = 23, 0.7)
Weight	45.6 (39.3–50.1, *n* = 34, 2.8)	44.0 (37.7–49.4, *n* = 36, 3.5)

[a]Ranges, sample size, and standard deviation in parentheses.

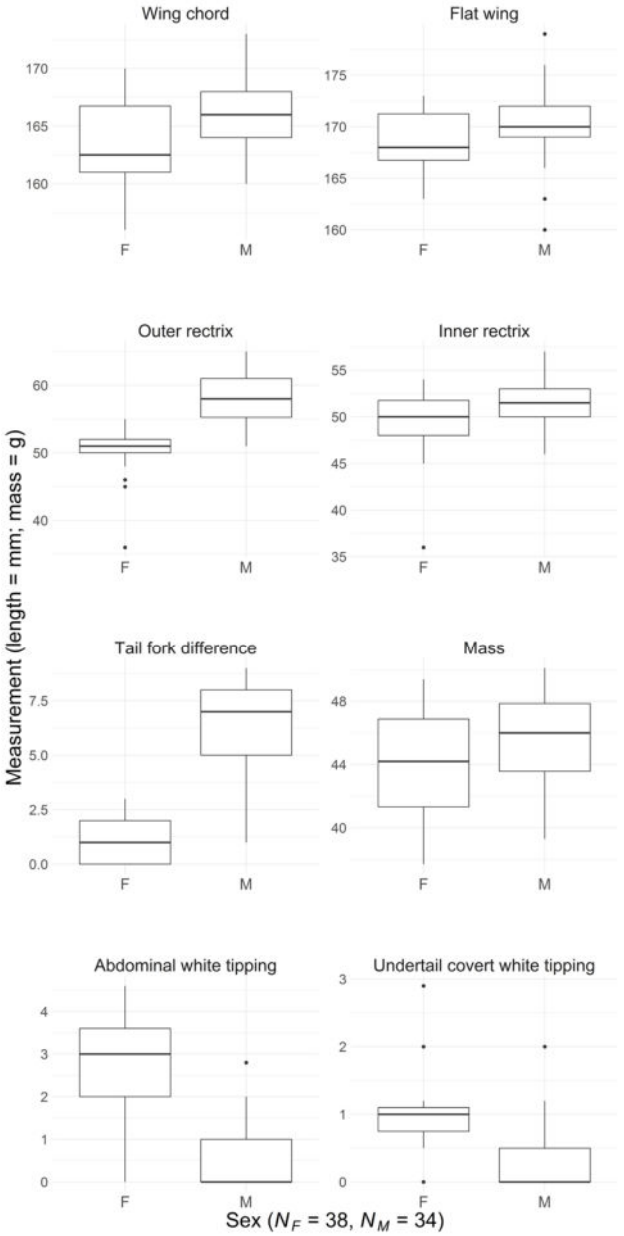

Figure 1. Box plots for the eight variables measured that could serve as predictors of sex in the Black Swift. Heavy horizontal line, median; box, 25% and 75% quantiles; whiskers, 5% and 95% quantiles; dots, outliers.

With the exception of three males among the 72 birds sampled, we found no overlap in tail-fork depth (r5 minus r1) between the sexes, as assessed by DNA analysis (Figure 2). There was a clear threshold around 2–3 mm distinguishing males and females by depth of tail fork.

Nevertheless, one male (sex determined genetically by two different labs) captured eight times over a 10-year period had an average tail-fork measurement of 2.9 mm (range 2–4 mm), within the range reported for females by Pyle (1997).

We found the length of white tipping of the abdominal feathers to be 82% greater and that of the undertail coverts to be 70% greater in females than in males (Table 2, Figure 1), but this metric alone was not a conclusive predictor of sex. Some females completely lacked white tipping, and some males had a slight degree of white tipping.

The number individuals we captured repeatedly was not large, but we used the data on the change in values of each metric in recaptured individuals over time as a rough validation of our population-level approach. Since we saw no substantive variation over time in any measurement, either at the population level or in the individuals that were recaptured, we are confident that these attributes are relatively immutable throughout an individual's life (Figure 3). Given the variation in the measurements at both the population and individual level from year to year, we infer a high degree of sampling error, in spite of all banders being highly experienced and well trained (Figure 4).

The presence or absence of white tipping on the abdomen and undertail

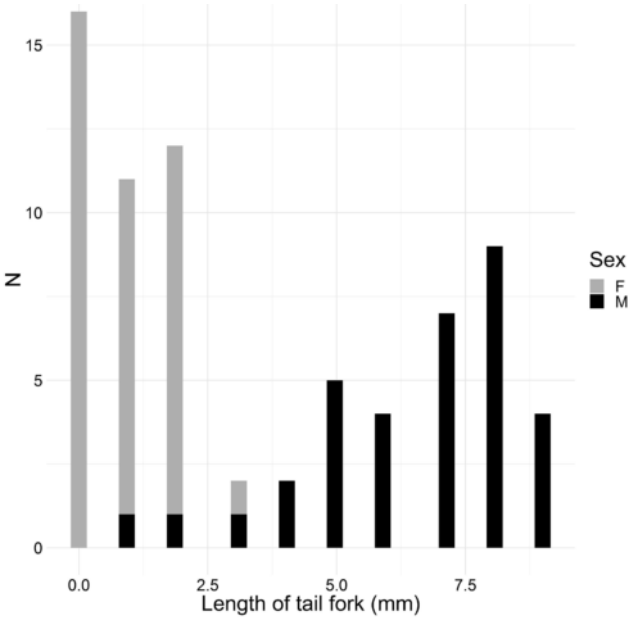

Figure 2. Depth of tail fork length (r5 minus r1) by sex in 72 Black Swifts with data on this measure.

coverts of an individual remained relatively constant through time irrespective of its sex or age. Figures 5–7 are representative photographs of this finding.

DISCUSSION

The large number of observations in our study, its long duration, genetic sex determination, and statistical analysis of the data have clarified misinterpretations about sexual dimorphism in the Northern Black Swift. The difference in the lengths of the outer and inner rectrices is an easy, repeatable, and nearly conclusive measurement for sexing the species.

Because the difference in the length of rectrices alone accounted for over 99% of the variance between the sexes, we did not include other variables in the statistical analysis. Additional variables weakened the distinguishability of the sexes because more individuals had to be excluded from evaluation as a result of missing data. For instance, only 10 individuals lacked data on tail-fork depth, while 50 individuals lacked data on the extent of white on the abdomen. Only 19 individuals had data for every variable.

Our measurements of wing length, tail length, and tail-fork depth agree with a few previous reports (Kennerly 1857, Zimmer 1945, Pyle 1997). However, our study did not corroborate other published statements about the Black Swift's plumage variation by age or sex that were based on small sample sizes without individuals being followed through time (Drew 1882, Swarth 1911, 1912, 1924; Brooks 1917, Rathbun 1925, Davis 1931, Marín and Stiles 1992, M. A. Marín pers. comm.). Early descriptions by Baird (1858), Elliot (1869), Cooper (1870), and Coues (1872) only reiterated Kennerly's (1857) observations of one male Black Swift, stating that the tail is forked, the tips of undertail coverts are gray, and the wing is about 171 mm long.

Little is known about the molt of the Northern Black Swift. In our study, no adult birds showed loss of any flight feathers, retained flight feathers, or distinct molt limits during the latter part of the breeding season. Swarth (1922) reported that 17 swifts collected at Sergief Island, Alaska, 12 June 1919, had finished the annual molt and were in new plumage. Rathbun (1925) collected 31 birds from late June to early August in Washington and stated that the plumage seemed to have been recently renewed, being bright with no traces of molt. Pyle (1997) stated that in their year of hatching, Black Swifts are believed to undergo their first prebasic molt from July to November. However, no hatch-year swifts that we handled from July through August showed signs of molt prior to fledging. Black Swifts are presumed to begin their southward migration immediately upon fledging. From examination of specimens, Pyle (1995) concluded that in both first-year and adult Black Swifts the prebasic molt of flight feathers likely takes place in the winter range and is complete but protracted. Most body feathers are replaced by January, and replacement of flight feathers extends through the winter and early spring. Howell (2010) generally agreed with Pyle, predicting that Black Swifts do not molt in North America, and that the prebasic molt occurs in the nonbreeding range.

Body mass is probably least helpful in determining sex in the Northern Black Swift. Presence of an insect bolus can increase body weight. The condition of the bird and the season in which it is captured add additional variation

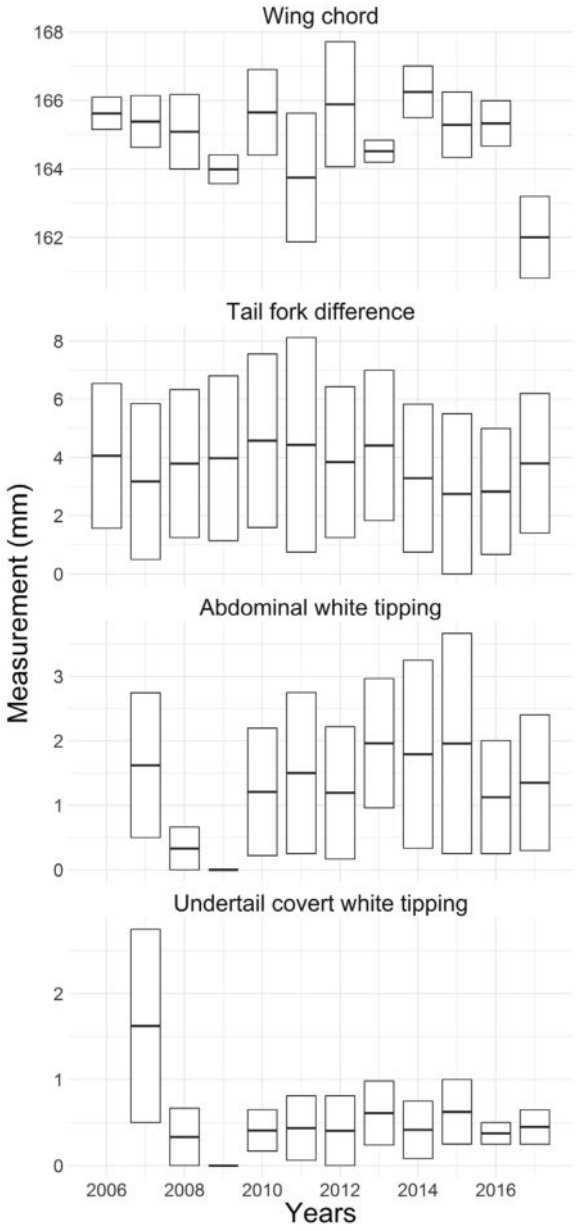

Figure 3. Box plots by year for four variables measured in the Black Swift. Year-to-year variation in values is likely driven by variation in banders' measurement techniques, less so by changes in individual birds, a conclusion supported by results displayed in Figure 4.

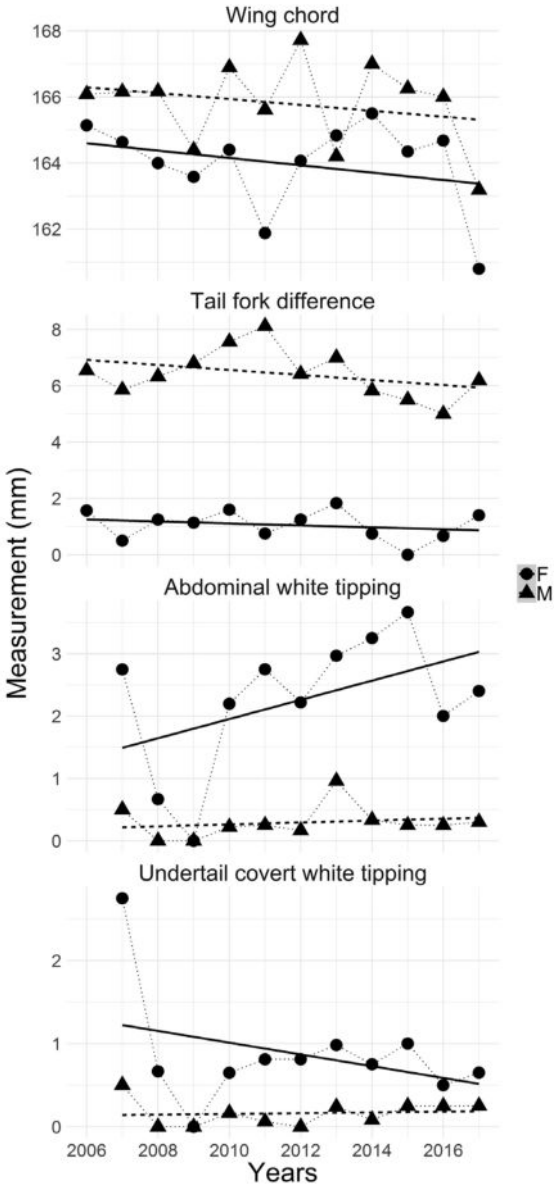

Figure 4. Trends of change over time for four variables in Black Swifts captured repeatedly, by sex. Lines represent linear regression for each sex (slopes near zero suggest no change over time). Only the extent abdominal white tipping among females demonstrated any substantive change over time (slope 0.153). All other slopes were less than 0.1 units from zero.

Figure 5. (A) Female Black Swift banded 28 August 2006 at an age of ≥1 year and photographed at Fulton Resurgence Cave 21 July 2010; length of white tips on the abdominal feathers and undertail coverts recorded as 5 mm and 1 mm, respectively. (B) Same individual photographed 29 August 2017; length of white tips on the abdominal feathers and undertail coverts recorded as 4 mm and 0.5 mm, respectively. The characteristics were essentially unchanged over a period of eight years, until the swift was at least 12 years of age.

to this metric. There is no published information on clinal variation in size in *C. n. borealis*, so it is unknown whether body mass varies geographically.

The maximum longevity reported for the Northern Black Swift is 16 years, 1 month (Lowther and Collins 2002). This protracted life span al-

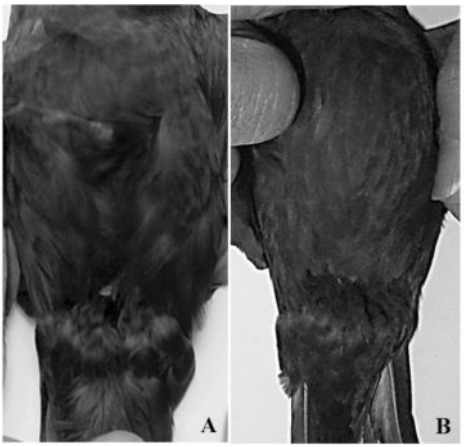

Figure 6. (A) Female Black Swift banded 25 August 2008 at an age of ≥1 year and photographed at Fulton Resurgence Cave 22 August 2011; no white tips on either abdominal feathers or undertail coverts. (B) Same individual photographed 24 August 2016; no change over six years, until the swift was at least nine years of age.

Figure 7. (A) Male Black Swift banded and photographed at Fulton Resurgence Cave 21 July 2010 at an age of ≥2 years; length of white tips on the abdominal feathers and undertail coverts recorded as 1 mm and 0.5 mm, respectively. (B) Same individual photographed on 26 August 2014; no change over five years, until the swift was at least seven years of age.

lows for further sampling and broader verification of the results of our study. Examination of other characteristics such as a brood patch and cloacal protuberance early in the breeding season may confirm the sex of a breeding Black Swift.

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NOTES

THICK-BILLED WARBLER (*IDUNA AEDON*) AT GAMBELL, ALASKA: FIRST RECORD FOR NORTH AMERICA

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In the evening on 8 September 2017, in the "far boneyard" at Gambell, St. Lawrence Island, Alaska (63.78° N, 171.74° W), Victor and Ruben Stoll flushed a passerine they could not immediately identify. The "boneyards" are large pits excavated by the resident Yupik Natives seeking buried ivory and artifacts, a result of several thousand years of sea-mammal hunting from this island's Northwest Cape. Working these pits turns the soil, which has resulted in the growth of relatively lush vegetation consisting of two species of *Artemisia*, known locally as "wormwood." The combination of lush vegetation (reaching 0.5–1 m in height) and deep depressions that offer protection from the wind is attractive to migrant and vagrant landbirds in the otherwise flat, gravelly landscape. Soon thereafter, we, along with Greg Scyphers, Monte Taylor, and other birders then at Gambell, converged at the far boneyard in search of the bird. It was soon relocated and seen on the ground briefly by Lang, who suggested it was a Thick-billed Warbler (*Iduna aedon*), a bird he was familiar with from southeastern Asia and a species not previously recorded in Alaska or North America. Plumage features of this bird included brown upperparts, warm reddish-brown rump and tail, and pale underparts. Lang noticed that it had a very plain gray ("blank looking") face, lacking any noticeable eye-line or pale supercilium. It also appeared to be relatively large bodied, and long tailed. These features eliminated any other Old World warbler previously recorded in North America. The bird was flushed several more times that evening but proved difficult to see and photograph well.

The next day the bird was still present, and Rosenberg, Lang, and Scyphers obtained good photos. The bird remained there through 13 September. From observations in the field, and study of photos, we provide the following description of this individual. It was a relatively large warbler mainly brown above and grayish-white below (Figures 1–4). The upperparts, including the wings, were somewhat warm brown, becoming "warmer" or more rufescent on the rump and tail (Figure 1). This was most evident when the bird was flushed and flying away. The underparts appeared grayish-white, whiter on the throat, and buffier on the flanks and undertail coverts. The tail was both long (for a warbler) and distinctly graduated in shape. In flight and on the ground, the bird often spread its tail partially (Figures 3 and 4). The appearance of the head and crown varied from somewhat rounded to distinctly peaked or crested, depending on feather position (Figures 1 and 2). The bird lacked any eye-line or a pale supercilium, and had an almost "blank" gray appearance to the face, with a noticeable pale loral spot (Figures 1–4). The wings lacked any discernible wingbars. The primary extension looked short, and the spread wing appeared roundish (Figures 1, 2, and 4). The bill was heavy for a warbler, had a slightly but distinctly curved culmen, and was pale horn colored on the mandible and gray on the maxilla. The legs appeared gray (Figures 1–4).

Figure 1. Thick-billed Warbler at Gambell on 9 September 2017, under neutral and flat light conditions. Many key features of this species are evident: a rather large warbler with uniform dull brown upperparts, dull grayish-white underparts, a bit browner on the flanks, a rather plain face with no *eye*-line or pale supercilium, a pale loral spot from the base of the bill to the *eye*, a rather long tail that is contrastingly more rufous (along with the rump) than the back, a relatively thick bill that has a distinct curvature to the culmen and which has a pale lower mandible. The bird lacks prominent wing-bars, although this photo shows indistinct lighter tips to both the greater and lesser wing coverts, giving the wings a slightly barred appearance, perhaps suggesting the bird was immature.

Photo by Gary H. Rosenberg

Figure 2. This photo depicts many of the same characters of the Thick-billed Warbler as shown in Figure 1. It was taken in slightly brighter light, and the browns of the wing coverts and scapulars appear somewhat warmer toned than when viewed under more neutral lighting. Also evident in this photo is the distinctly peaked crown that is characteristic of this species, as well as a "blank" face.

Photo by Greg Scyphers

The identification of a Thick-billed Warbler seen well is straightforward. It is the only East Asian reed warbler that lacks a distinct eye-line or supercilium. The absence of a supercilium, in combination with the bird's relatively large size, distinctly heavy bill with a curved culmen, long graduated tail, and relatively short primary projection, make it one of the more distinctive Asian reed warblers. Given that Old World vagrants documented in the Bering Sea region are not restricted to an "east Asian" origin, as attested by the Sedge Warbler (*Acrocephalus schoenobaenus*; Rosenberg and Lehman 2008) and others, we considered several species in the genera *Iduna*, *Acrocephalus*, and *Hippolais* and eliminated them as follows. The only member of this group that has previously occurred in North America is the Blyth's Reed Warbler (*A. dumetorum*). Four warbler species in the genus *Iduna*, the Booted (*I. caligata*), Sykes's (*I. rama*), Eastern Olivaceous (*I. pallida*), and Western Olivaceous (*I. opaca*), all differ from the Gambell bird in question by their smaller size, smaller bill, typically pale eye-line, distinctly less graduated and shorter tails, and in having less rufous coloration, particularly on the rump and tail. Four species of reed warbler in the genus *Acrocephalus*, the Blyth's, Great (*A. arundinaceus*), Oriental (*A. orientalis*), and Eurasian (*A. scirpaceus*), differ from the Gambell bird as follows. Blyth's has a narrow and more distinct supercilium in front of and over the eye, has a shorter and less rufescent tail that is not as graduated, and has a smaller and thinner bill. The Great Reed and Oriental Reed Warblers both have a paler supericilium, thinner and longer bill, longer primary extension, and buffier underparts and flanks that contrast with a whiter throat. The Eurasian Reed Warbler is smaller than the Thick-billed, typically shows a more distinct pale supercilium and eye-ring, has a shorter, less rufescent, and less graduated tail, has a smaller and thinner bill, and has a longer primary projection. The Thick-billed Warbler has a primary projection shorter than in most species of *Acrocephalus*. Members of the genus *Hippolais* can look superficially similar to Thick-billed Warbler and other species of *Iduna*, but they are generally grayer overall with yellowish tones, have longer and thinner bills, and often show pale edging or pale tips to the outer tail feathers.

The Thick-billed Warbler is a fairly widespread breeding bird across southeastern Asiatic Russia, Mongolia, and northeastern China, with the more westerly breeding birds constituting the nominate subspecies, *aedon*, and eastern birds placed in the subspecies *stegmanni* (Kennerley and Pearson 2010, Dyrcz 2018). The closest breeding areas are in the Amur River Basin in southeasternmost Russia, about 4300 km from Gambell. The Thick-billed Warbler winters in continental southeast Asia from Vietnam west through Thailand to northern and eastern India and Nepal. It is a vagrant to western Europe, with at least six records from the United Kingdom through 2017, most in the fall, as well as scattered records from Finland, Norway, and Egypt (Kennerley and Pearson 2010, BOU 2018). Gambell is at a distance similar to—but in complete mirror-image direction from—the distance between the Thick-billed Warbler's main breeding range and its winter grounds in southern Vietnam and Thailand. Misorientation and reverse migration most likely explain a majority of the vagrants that have been found at Gambell in the fall (see Howell et al. 2014 for a concise summary of this phenomenon).

The taxonomic treatment of the Thick-billed Warbler is complicated. It was long maintained in the genus *Acrocephalus* (Clements 2000), but for now we follow Fregin et al. (2009) and Clements et al. (2017), who place it in the genus *Iduna*. More recent genetic studies corroborate its differences in morphology and behavior from other members of *Iduna*, such as tail shape and structure, nest construction, and especially song structure (Kennerley and Pearson 2010, Arbabi et al. 2014). These support placing the Thick-billed Warbler in a monotypic genus, for which *Arundinax* is the oldest name, according to Pittie and Dickinson (2013).

We thank Lucas DeCicco, Daniel D. Gibson, and Kimball Garrett for making useful suggestions that improved this manuscript, as well as Greg Scyphers for contributing a photograph for this note.

Figure 3. This photo was taken partly in neutral light, and shows the Thick-billed Warbler with the tail spread. Note the tail's length, rufescent coloration, and graduated shape.

Photo by Aaron Lang

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Figure 4. This photo of the Thick-billed Warbler in flight also shows the long, graduated tail, as well as the buffy brown undertail coverts. The plain face pattern, pale lores, and thick bill are also evident.

Photo by Aaron Lang

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FIRST RECORD OF THE COMMON GRACKLE FROM SONORA

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The Common Grackle (*Quiscalus quiscula*) is common in eastern North America, and since the 1970s has steadily spread west. It now breeds as far west as eastern British Columbia and central New Mexico, and records of vagrants elsewhere in the West have increased (Peer and Bollinger 1997, Jaramillo and Burke 1999). Northern populations are migratory, Great Lakes populations moving 1000 km on average (Dolbeer 1982). In this note, we document the first record of the Common Grackle for Sonora and summarize the status of the species in Mexico.

As part of the annual Álamos Christmas Bird Count, we, with Deirdre O'Connell and John Gorey, stopped at the Álamos landfill (26° 59′ 52″ N, 108° 56′ 01″ W) on 17 December 2017, 15:10, where Harter spotted an immature Common Grackle. Recognizing the species' rarity, we immediately obtained photos. Over the next two days, the bird was seen by 15 observers and was last reported on 18 December. It was feeding in trash with a flock of Bronzed Cowbirds (*Molothrus aeneus*). The flock occasionally flew into the edges of nearby tropical deciduous forest. Field identification was based on the grackle's being slightly larger than the Bronzed Cowbirds, having a longer tail and heavier bill (Figure 1), and having an iridescent blue-green head, neck, and upper chest that contrasted strongly with the iridescent bronzed body. The tail and wings showed an iridescent purple tinge (Figure 2). The bronze body color identifies the subspecies as *Q. q. versicolor*, the Bronzed Grackle (Pyle 1997, Jaramillo and Burke 1999), which accounts for all records of vagrant Common Grackles west of the Rocky Mountains (Peer and Bollinger 1997). The bird was in its year of hatching (immature) by the dull brown eye, which only showed a hint of yellow in certain lights (see Pyle 1997).

This species is a late fall migrant; records of fall vagrants extend as late as mid December, merging into those of wintering (Hamilton et al. 2007b, Rosenberg et al. 2011). As this individual was likely not looked for after 18 December (David MacKay pers. comm.), we cannot know if it was a late fall migrant or attempted to overwinter. The Common Grackle shows a pattern of vagrancy in the southwestern United States just north of Sonora. There have been 33 records in Arizona through 2014 (Rosenberg et al. 2017), of which roughly half represent fall migrants scattered throughout the state, and roughly a sixth are from lowland southern Arizona in winter. California had 100 records as of 2015 (Searcy et al. 2018). In New Mexico, the species breeds in the northern and central parts of the state but winters largely farther east, though it is regular in winter in west Texas (Jaramillo and Burke 1999) and flocks have been found in winter in southern New Mexico, mainly along the Rio Grande (www.eBird.org, accessed 26 March 2018). We are unaware of any prior records for Sonora, where the Common Grackle was not reported by Russell and Monson (1998). Neither are there reports via www.eBird.org or www.iNaturalist.org or any known to H. Gómez de Silva (pers. comm.). We know of four prior records from western Mexico, three from El Rosario, Baja California, of one 9–21 January 1996 (Erickson et al. 2001), one 21 February 2003 (Hamilton et al. 2003), and two 26–27 December 2006, of which one continued until 26 February 2007 (Hamilton et al. 2007a). The fourth is from Rancho El Descanso ~43 km east of El Rosario, 12 December 2000 (Hamilton et al. 2001). The species has been reported multiple times in northeastern Mexico (Howell and Webb 1995), but we are only aware of a single well-documented report prior to 2018, of one photographed (*fide* H. Gómez de Silva) in Gómez Farías, Tamaulipas, on 24 January 2014 (www.eBird.org).

Figure 2. This Common Grackle at Álamos, Sonora, 17 December 2017, showed the characteristic plumage pattern of the Bronzed Grackle, subspecies *versicolor*, with brownish body plumage and a contrasting bluish hood (macaulaylibrary.org/asset/79010691).

Photo by David Vander Pluym

Thanks to Richard A. Erickson, who provided us with information on the Baja California records, and to Héctor Gómez de Silva, who examined the Tamaulipas photograph. We thank David MacKay for hosting and compiling the Álamos Christmas Bird Count. We also thank Daniel D. Gibson, Robert A. Hamilton, and Andrew B. Johnson for helpful reviews that further improved the manuscript.

Figure 1. Common Grackle foraging among Bronzed Cowbirds at Álamos, Sonora, 17 December 2017. Note the long, stout bill (macaulaylibrary.org/asset/81984001).

Photo by Lauren B. Harter

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FEATURED PHOTO

HYPEREUMELANISTIC HORNED GREBE OBSERVED IN EASTERN INTERIOR ALASKA

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On 30 May, 31 May, and 1 June 2017 we observed a melanistic Horned Grebe (*Podiceps auritus*) at Canvasback Lake (66° 23.13′ N, 146° 23.18′ W) on the Yukon Flats National Wildlife Refuge, situated in eastern interior Alaska, 185 km north of Fairbanks. We photographed it, accompanied by a smaller Horned Grebe in normal breeding plumage, on 30 and 31 May (see this issue's outside back cover). At midday on 30 May the melanistic grebe responded to our playing a recorded call of a territorial male by assertively approaching and greeting the normally plumaged grebe, its likely mate. The melanistic bird remained with that grebe throughout our playing of the call.

Noticeably larger than the second bird so presumably a male, the melanistic Horned Grebe had the mantle, back, and rump black. Its nape, crown, forehead, facial feathers, and base of its "horns" were dark brown and transitioned into iridescent black horn tufts and "helmet" feathers. Except for the white tip, the bill was solid black and differed from that of its apparent mate, which had white contours on the upper and lower mandibles. The pupil of the eye was black, ringed in pale yellow, and the remainder of the iris was scarlet. In the other Horned Grebes in the area the rings around the pupil varied from pale yellow to deep orange. We departed the area on 2 June 2017. A crew from the refuge surveyed broods of waterfowl on the lake from 17 to 24 July 2017; their attempts to relocate the bird were unsuccessful.

Melanins are the pigments responsible for dark plumage colors in birds. Davis (2007) pointed out that of the two general types of pigments, melanins and carotenoids, the former predominate among darker colors. Of the two types of melanins, eumelanins are common in black, gray, and dark brown feathers, whereas phaeomelanins are common in brown and chestnut colors (Van Grouw 2017). Darker-than-normal plumage is referred to as hypermelanism (also called melanism or nigrism); it is termed hypereumelanism when the plumage is predominantly black. We suspect that the dark-pigmented grebe we observed represents an example of hypereumelanism. Van Grouw (2013) described three ways in which this condition typically affects plumage: (1) normally dark markings have a more vivid appearance and exceed their typical boundaries, often causing the remaining plumage to appear dark as well; (2) all plumage is predominantly brown or black; and (3) the normal plumage pattern or pigment distribution is altered, but the plumage is not darkened. Our bird fits the second category well, having predominantly black plumage and lacking the normal chestnut of the foreneck, lores, upper breast, and flanks and the pale yellow of the horn tufts. Cases of aberrant plumages in grebes have been compiled and reported worldwide (Dittberner and Dittberner 1979, Jehl 1985, Thiede 2005). Konter (2015) compiled, organized, and analyzed the literature on and photos of aberrant grebes from the past 150 years, providing a world view of reported plumage aberration in grebes, and describing the likely causes of those aberrations. So far as we have been able to determine, our observation provides the first report of hypereumelanism in the Horned Grebe.

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Photo by © Commander Michael G. Levine, NOAA ship *Oscar Dyson*:
Nazca Booby (*Sula granti*)
~27 km south of the southern tip of the Kenai Peninsula, Alaska, 30 August 2017

The Nazca Booby nests principally on the Galapagos Islands and on Malpelo Island off Colombia. It was not confirmed to disperse north as far as the U.S. until 2013, but since then over a dozen are known to have reached California. In 2017 one strayed as far north even as the western margin of the Gulf of Alaska, as reported in this issue of *Western Birds* by Daniel D. Gibson, Lucas H. DeCicco, Robert E. Gill Jr., Steven C. Heinl, Aaron J. Lang, Theodore J. Tobish Jr., and Jack J. Withrow in the fourth report of the Alaska Checklist Committee.

This incursion of the Nazca Booby thousands of miles from its normal range may represent bad news for the species. In a study published in 2017 (*PLoS One* 12[8]:e0182545), Emily M. Tompkins, Howard M. Townsend, and David J. Anderson linked lower reproductive success of the Nazca Booby in the Galapagos to a shift from a diet of sardines (8% fat) to less nutritious flying fish (<1% fat), a shift that took place in the wake of El Niño of 1997–98 and has not been reversed since. And the increasing ocean temperature is likely to preclude the anchovy population of the Galapagos from recovering. Perhaps 15 to 20 years of a diet of leaner fish is driving the Nazca Booby to search far beyond its normal range for better feeding.

"Featured Photos" by Adam Grimm of Burbank, South Dakota: melanistic Horned Grebe (*Podiceps auritus*), paired with a normally colored mate, at Canvasback Lake, Yukon Flats National Wildlife Refuge, Alaska, 30 May 2017.