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STATUS AND OCCURRENCE OF
MIGRATORY BIRDS IN THE HAWAIIAN ISLANDS:
PART 1 — ANSERIFORMES: ANATIDAE (WATERFOWL)

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Status and Occurrence of Migratory Birds in the Hawaiian Islands: Part 1 — Anseriformes: Anatidae (Waterfowl)

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Abstract. This is the first in a series of papers to summarize the status and occurrence of migratory birds in the Hawaiian Islands. Part 1 synthesizes over 5,800 records to determine the status of thirty-six species of migratory waterfowl (ducks, geese and swans) recorded from the Hawaiian Islands. Ten species are annual visitors, with Northern Shoveler, Northern Pintail, Lesser Scaup, American and Eurasian wigeons, and Green-winged Teal accounting for 95% of the records from the Islands. Five species are common, non-breeding visitors, nine are uncommon or occasional, and the remainders are casual or accidental. Although Hawai'i still supports several species of migratory waterfowl every winter, the numbers have dramatically declined during the last forty years. Historic records prior to the 1960s, indicate Northern Pintail was the most numerous migratory duck accounting for over 50% of the total birds counted annually in the islands. However, beginning in the early 1960s pintail numbers began to decline. By 1990, the Northern Shoveler became the most numerous migratory duck in the islands each year. Three unpublished species records are first reported herein, Falcated Duck, Baikal Teal, and Barrow's Goldeneye. An additional species, Common Pochard, is for the first time confirmed through diagnosis of photos.

INTRODUCTION

The Hawaiian avifauna is best known for its assemblage of endemic landbirds, particularly those that comprise the Hawaiian honeycreepers (Drepanidinae). Along with other endemic birds, these are considered the "Native" avifauna by most researchers and resource managers. However, more than 50% of the Hawaiian avifaunal diversity is comprised of migratory species that are grouped into two temporal patterns (Pyle, 1997). First are species that migrate to the islands to breed and depart thereafter (Hawai'i's breeding seabirds). Second are those that breed elsewhere and winter or pass through the Hawaiian Islands (southern hemisphere procellariids, Holarctic breeding shorebirds and waterfowl). Less attention is paid to scarce, rare, or irregularly occurring species, such as Hawai'i's migrant non-breeders, for chance only seems to determine their detection and their role in community ecology appears negligible. Regarding these "lesser" elements of local fauna, the study of rarities has become important on two accounts. First, it is realized that bird species are to a greater or less extent dynamic; the "stray" individuals caught outside of their regular distributional range are all potential colonists. The trends in their occurrence outside the "normal" range and throughout a longer time period may reveal the nature and extent of the pioneering tendency of the species. Second, it is also realized that species composition of faunas fluctuates; thus rare visitors may reveal trends in faunal changes.

Migratory waterfowl (Anseriformes: Anatidae) remain a constant and significant component of birds occurring in the Hawaiian Islands. There have been few studies of their occurrence (Medeiros, 1958; Spear *et. al.*, 1988; English, 1988; Udvardy & English,

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2001). However, documentation has been generated over the past 150 years (specimen records, field reports, photographs, rare bird records) to help develop a better understanding of their status in the archipelago. In this manuscript, we synthesize these records and summarize waterfowl species status and occurrence in an attempt to identify and better understand the migrant component of Hawaii's avifauna, which in turn may aid in their conservation.

METHODS

In order to assemble this treatment, we used numerous sources and records. We are certain that additional individual records are still to be uncovered, but we believe that the species list presented herein is complete through 2003. Invaluable to beginning this effort has been the development of the SIGHTINGS Database (Pyle, R.L. 2003. *in* Occurrence and Status of Birds in Hawai'i [electronic database], Bishop Museum, Honolulu, Hawai'i (SIGHTINGS)). This database contains over 5800 migratory waterfowl observations from ca. 1900 through 30 May 2003, the period of our examination. SIGHTINGS was frequently queried through 18 October 2003. Our first task was to confirm the presence of each species first through the specimen record, photographs, and published literature. We then used SIGHTINGS records to determine status, distribution, and seasonal occurrence.

We examined specimens in the Bishop Museum (BBM, BPBM, BBM-X), National Museum of Natural History (USNM) (collections of the Pacific Seabird Group provided numerous specimen records mostly from the Northwestern Hawaiian Islands [NWHI]), Museum of Wildlife and Fish Biology, U.C. Davis (MWFB), and Brigham Young University–Hawai'i Campus (BYUH). European collections were not investigated. Other collections were queried for Hawai'i waterfowl specimens but failed to yield additional species records. The senior author completed identification, aging, and sex determination of all specimens covered in this treatment. Hatch year birds are designated as "HY" in the species accounts.

Thousands of records in SIGHTINGS, and in the literature, lacked adequate details to support identification to the species level or even to precise locality or habitat, and thus we were cautious to not over interpret observations for other distributional questions such as geographic origin of waterfowl, habitat associations, populations, and movement. Although we did not pass judgment on any observations, we chose not to include many in this treatment due to inadequate details.

Our geographic setting is the exposed islands in the entire chain of the Hawaiian Islands. It includes the large, populated islands from Hawai'i to Ni'ihau (Main Islands), and all small islands and islets in the NWHI from Kaula Rock to Kure Atoll (Fig. 1).

We derived status for common, uncommon, and occasional species based on records beginning in 1976. This coincided with the beginning of American Birds (Audubon Field Notes) reports compiled by RLP. The American Birds/Audubon Field Notes have been fully summarized in the SIGHTINGS database. We examined photo records from the Hawai'i Rare Birds Photograph File (HRBP) housed at the Bishop Museum. We also examined photos taken by the authors and other observers in the islands for additional records. From these sources we defined status codes, which will be used throughout this series.

STATUS CODES

| | |
|---------------------------------------|--|
| Common Nonbreeding Visitor | Annual since 1976 on most Main Islands, often in flocks |
| Uncommon Nonbreeding Visitor | Nearly annual since 1976 on most Main Islands |
| Occasional Nonbreeding Visitor | Fewer than 75% of years, more than 20 total records in Hawai'i |
| Casual | Six to 20 total records in Hawai'i |
| Accidental | Fewer than 6 total records in Hawai'i |

Bar graphs depict the seasonal status of all species of occasional, uncommon, and common status (Appendix 2). To develop the graphs, we plotted records from SIGHTINGS on a calendar year for each species. A dashed line indicates fewer than 10 records since 1976 during the time period indicated. A thin line indicates 10 to 20 records since 1976. A thick line indicates more than 20 records since 1976. Dots represent single records. Taxonomy follows the Checklist of North American Birds 7th ed., and the 42nd, 43rd, and 44th supplements to the Checklist of North American Birds (American Ornithologists Union [AOU], 1998, 2000, 2002, 2003).

SPECIES ACCOUNTS—SUMMARY

Through May 2003, 36 species of migratory waterfowl have been recorded in the Hawaiian Islands, which represents 54% of number of species recorded in the AOU Checklist region (AOU, 1998). Pyle (1997) and Hawaii Audubon Society (1997) each listed 33 species occurring in the islands, Pratt *et al.* (1987) listed 31 species. Three new and unpublished species records are presented herein, Falcated Duck (*Anas falcata*), Baikal Teal (*Anas formosa*), and Barrow's Goldeneye (*Bucephala islandica*). A fourth, Common Pochard (*Aythya ferina*) is diagnosed for the first time, confirming previous, unpublished determinations. Five species are common, nonbreeding visitors, nine are uncommon or occasional, and the remainders are casual or accidental. Twenty-six species recorded in Hawai'i's are represented by specimens. The remaining ten species were substantiated only by photographs and/or written descriptions; several are published herein, for the first time. It is clear from SIGHTINGS that several species occur in good numbers throughout the chain, while others occur annually in small numbers. The occurrence of species on each island is summarized in Appendix 1.

There is a continuum of abundance, which makes interpretation of what is accidental or casual (common or uncommon) difficult. Our status codes were established so more regularly occurring species could be assessed against each other but not against all species. Annual arrival and departure dates for waterfowl visiting Hawai'i vary. From our analysis, we note that dabbling ducks (genus *Anas*) tend to arrive earlier and depart later than diving ducks (genus *Aythya*). Although oversummering occurs, it is a rare event. Canada Goose (*Branta canadensis*) and Brant (*Branta bernicla*) frequently oversummer; some remain for years (Appendix 1).

The Hawaiian Islands have a finite number of lowland wetlands utilized by migratory waterfowl. The majority of these sites have been surveyed annually since the 1940s, thus providing a good indication of recent population trends. Prior to these surveys the number of waterfowl overwintering remains unclear. The Hawaiians recognize two

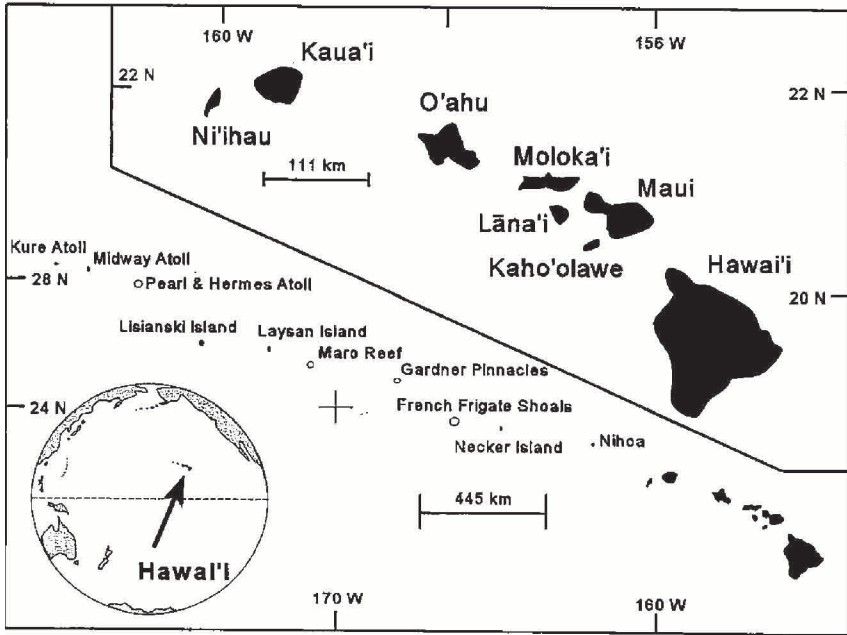


Figure 1. Map of the Hawaiian Islands.

species by name, Northern Pintail (*koloa mapu*) and Northern Shoveler (*koloa moha*), indicating that these species were an annual and obvious component to the Hawaiian Islands' avifauna before Captain Cook discovered the archipelago in the 1770s (Hawaii Audubon Society, 1997; Udvardy & Engilis, 2001). During the late 1800s, ornithologists Henshaw (1903) and Perkins (1903) both commented on the abundance of migratory waterfowl in the islands. Surveys in the early 1950s documented migratory duck numbers exceeding 10,000 birds (Medeiros, 1958). Since that time we have witnessed a steady decline in the number of ducks and other waterfowl species visiting the islands to fewer than 1000 birds a year by the mid-1990s (Udvardy & Engilis, 2001).

It is clear, from banding studies and observation records that a flyway exists between the Hawaiian Islands and North America (Medeiros, 1958). A good example of this flyway link is seen with Green-winged Teal (*Anas crecca*) which regularly winters in Hawaii'i. Over 98% of the Green-winged Teal observed in Hawaii'i have been attributed to the North American subspecies, *A. c. carolinensis*. However, the Hawaiian flyway is more complex than previously understood (Medeiros, 1958; Udvardy & Engilis, 2001). Northern Pintail (*Anas acuta*) banded in Hawaii'i in the 1950s have been recovered from Asia as well as North America. One bird banded in Hawaii'i was recovered on the breeding grounds in Alberta, another in Saskatchewan. Thus, pintails wintering in Hawaii'i can, and do originate from various locations throughout the Holarctic (Udvardy & Engilis, 2001). The Asian connection is further emphasized by the near annual presence of Gargany (*Anas querquedula*), Eurasian Wigeon (*A. penelope*), and Tufted Duck (*Aythya*

fuligula). Other species of Holarctic ducks probably exhibit similar migration patterns (as seen for pintail) to and from the Islands, but there are no banding records for other species.

Escapes from waterfowl collections and unsuccessful introductions have confused the record of extralimital species in Hawai'i. In this treatment we have chosen not to include birds that are escapes, were introduced to the islands, or where their origin is unknown.

SIGHTINGS and the specimen record document numerous Hawai'i records of escaped free-flying birds (presumably from captive flocks) including: Rosy-billed Pochard (*Netta ferina*), Black-bellied Whistling Duck (*Dendrocygna autumnalis*), Chiloe Wigeon (*Anas sibilinax*), and Radjah Shelduck (*Tadorna radjah*). Most waterfowl introductions occurred before the 1940s. Species involved included: Wood Duck (*Aix sponsa*), Australian Wood Duck (*Chenonetta jubata*), Mallard (*Anas platyrhynchos*), Blue-winged Teal (*A. discors*), Mute Swan (*Cygnus olor*), and Black Swan (*Cygnus atratus*). All except Mallard failed to establish breeding populations in the islands.

The origin of the Fulvous Whistling-Duck (*Dendrocygna bicolor*) that led to a breeding population on O'ahu remains an enigma. Did it arrive on its own through dispersal, or were they the result of captive escapes? This species' amazing dispersal tendencies are well documented in the literature so it is conceivable that they arrived under their own power, perhaps from Western Mexico.

Because SIGHTINGS weighs so heavily in this and future summaries, it is important to say something about observer effort in Hawai'i. Hawaii's birding community has always been, and remains small when compared with other states. Prior to 1976, observations were limited to a handful of observers and represents less than 20% of the total waterfowl records in the SIGHTINGS database. Also, Hawai'i has never had a bird review committee to evaluate and "accept" rare observations as is the norm in other states. These committees help to document and develop state and regional species lists.

Increase in observer effort seen since 1977 has resulted in changes in species identification and documentation. In the last half of the 19th and first third of the 20th centuries only 15 species of waterfowl were documented from the Hawaiian Islands (Bryan, 1941). Field identification of waterfowl began to improve in the mid-1940s through the 1960s, as observer numbers increased and better optics were available. During that time period, wigeons and teal were being identified to species and reported in the *'Elepaio* (the journal of the Hawai'i Audubon Society). Starting in the mid-1970s, identification techniques, field guides, and optics became more sophisticated allowing for better accountings of notoriously difficult to identify groups such as *Aythya*. At that time, field ornithologists and birders began to recognize the opportunity to improve our knowledge of migrant birds and recommended the study of species pairs or groups that occur or have occurred in Hawai'i (Scott *et al.*, 1978). By the mid-1980s, accurate field identification of most birds in Hawai'i could be attained, allowing for a better understanding of the status of many species.

Coverage in the islands is limited as well. SIGHTINGS shows that there are few records from the uninhabited NWHI and the main islands of Ni'ihau, Lāna'i, Moloka'i, and Kaho'olawe. The islands of Ni'ihau and Moloka'i support diverse wetlands that if visited more regularly would yield additional records. Lāna'i lacked wetlands until wastewater treatment ponds were opened in 1989. Since then, annual waterbird surveys have yielded additional reports.

SPECIES ACCOUNTS

Greater **White-fronted Goose** *Anser albifrons* (Scopoli)

Status: Casual, seventeen records.

Specimens: Two: HY female collected at Kamakakai [Kaunakakai] Moloka'i on 1 Mar 1895 (BBM 7078); HY female found dead at French Frigate Shoals, Tern Island by K. Niethammer on 15 Oct 1990 (BYUH 3116).

Observations: **Hawai'i:** Single bird arrived Waiakea Pond, Hilo on 11 Jan 1996; present through Aug 1999 (T.K. Pratt, pers. comm.). A single bird was collected on 'Aimakapā Pond, Hawai'i on 18 Dec 1891 by H.C. Palmer. This was apparently one of two birds observed at that time (Rothschild, 1893–1900). The whereabouts of the specimen is unknown at this writing (Munro, 1946). **Maui:** Single bird, Keālia Pond on 17 Nov 1981 (P. Paton, pers. observ.), also seen in Pukalani in Dec 1981 (J. Medeiros, pers. observ.). Six observed at Keālia Pond on 6 Nov 1990. This flock was also observed at Kanaha Pond on 2 and 30 Dec 1990. Two immature birds at Keālia Pond NWR, first observed 17 Oct 1996 (AEJr and RLP). These birds overwintered on the refuge through Mar 1997 (M. Nishimoto, pers. comm.). **Moloka'i:** Earliest record was of bird collected in 1895. One observed 28 Sep 1969 on Kainalu Ranch. One observed at Kaunakakai Waste Water Ponds on 24 Jan 1978 (R. Coleman, pers. observ.). **O'ahu:** One observed, Pu'uloa-'Ewa Coast on 28 Oct 1956; it was present through 25 Nov 1956 (C. Hanson, pers. observ.). One arrived to Kahuku Wetlands (Amorient Prawn Ponds and Ki'i Unit of James Campbell NWR) in late Aug 1980 and remained there through 23 May 1981 (numerous observers). One at Pearl Harbor NWR (Honouliuli Unit) and Waipi'o Peninsula, 12 Oct 1981 through 26 Mar 1982 (numerous observers). **Kaua'i:** Immature found at Hanalei NWR on 25 Oct 1997 (AEJr, pers. observ.). This bird present through the winter. **NWHI:** One at Midway Atoll, Sand Island on 20–21 Nov 1985 (HRBP 462). Two observed (adult and HY) on French Frigate Shoals, Tern Island from 11 to 15 Oct 1990. Both birds were found dead in the surf on 15 Oct 1990, specimen of HY bird taken. One bird observed on Laysan 3 May through early Jun 1995

Notes: BBM specimen collected was incorrectly listed as subspecies *A. a. gambelli*. Measurements of bill and wing identify the bird as *A. a. frontalis*. BYUH specimen is of same race (AEJr).

Emperor Goose *Chen canagica* (Sevastianov)

Status: Casual, eight records.

Specimens: Four: adult (sex unknown) collected at Punalu'u, O'ahu by J. Redo in Jan 1956 (BPBM 153367); HY female collected on Kure Atoll, Green Island on 15 Dec 1968 (USNM 544274). Two collected in 1969 in the NWHI have not been located.

Observations: **Hawai'i/Maui/Lāna'i:** Two birds (age unknown) arrived Lāna'i on 20 Dec 1977. These birds were found on Honuaula Beach (P. Connally). The birds subsequently moved to Maui where observed on the beach at Lahaina (40 mi distant from Lāna'i observation) from 29–31 Dec 1977 (R. McCabe, D. Snider). The pair was relocated on Hawai'i, South Kohala, 'Anaeho'omalua Beach on 16–20 Apr 1978 (W.F. Nichols) (photos taken). **Hawai'i:** Four birds reported from Puna, Hawai'i in 1902 (Henshaw, 1903). A HY female was found and spent the entire winter at the Kona Village Resort, South Kohala. First reported in Nov 1996, departed in May 1997. The bird was present

Table 1. Subspecies identification, of specimens and photo/descriptions, Hawaiian documented Canada Geese.

| Documentation | Subspecies | Notes | Date | Location |
|---|------------------------------------|--|-------------------------------------|--|
| HRBP 1142 | <i>B. c. leucoparia/hutchinsii</i> | HY bird probably <i>leucoparia</i> , but plumage and bill characteristics of HY <i>hutchinsii</i> and <i>leucoparia</i> overlap too greatly to render determination | Jan 1997 | Midway Atoll, Sand Island |
| Written Description (AEF) | <i>B. c. leucoparia/hutchinsii</i> | HY bird probably <i>leucoparia</i> , but plumage and bill characteristics of HY <i>hutchinsii</i> and <i>leucoparia</i> overlap too greatly to render determination | 11 Nov 1998 | Mau: Hansen Road Pond |
| Photo: TK Pratt Photo HD Pratt | <i>B. c. minima</i> | Relatively dark chest. First observed, had paler chest. As matured, breast darkened and neckline became bolder. TK Pratt photo shows bird in worn plumage, HD Pratt in fresh plumage | First date? photos Aug and Nov 2000 | Hawai'i: Hilo, Waiakea Pond, Hilo |
| Olsen (1970) | <i>B. c. minima</i> | Small dark -chested bird, well described and seen by numerous observers | June 1969 | O'ahu: Kane'ole Marine Corps Base— Golf Course |
| HRBP 776 and 842 RE David Photo (Fig 3) | <i>B. c. minima</i> | | 776—27 Mar 1988 842—1 Jan 1989 | Hawai'i: Hilo, Waiakea Pond |
| Written Descriptions | <i>B. c. minima</i> | Small dark breasted, yellow neckband with black number (902), with 7 others. | Dec 1991 - 27 Apr 1992 | Various as this flock moved around Kauai' and O'ahu. |
| HRBP 1113, 1115 HD Pratt Photo (Fig 2) | <i>B. c. minima/leucoparia</i> | Early photos in HY plumage. Photo by Pratt clearly depicts plumage character s of <i>leucoparia</i> . Bill size small, within range for <i>minima</i> . | 8 Dec 1996 through 2000 | O'ahu: Ka'elepulu Pond |
| Written Description P. Donaldson (photos) | <i>B. c. leucoparia</i> | Described head, neck and bill features for <i>leucoparia</i> . In flock of six, small Canada Geese. | Oct 1985—spring 1986. | O'ahu: Kahuku, Amorriot Aquaculture Ponds |
| HD Pratt photos | <i>B. c. leucoparia</i> | | 25 October 1991 | Hawai'i: Hilo, Waiakea Pond |
| AEF - Photo | <i>B. c. occidentalis</i> | Medium goose, dark breast. Bird next to it in photo is probably a <i>parvipes</i> or <i>taverneri</i> | 4 Mar 1989 | O'ahu: Kahuku, Amorriot Aquaculture Pond |
| BBM—7079 | <i>B. c. parvipes</i> | Medium size, bill 40.5 mm | Dec. 1902 | Moloka'i: Pala'au Flats |
| BFBM—158930 | <i>B. c. parvipes</i> | Medium size bill 38 mm | 10 Mar 1982 | O'ahu: Hickam AFB |
| BFBM—178352 | <i>B. c. taverneri</i> | Medium sized, pale, bill 34 mm | 11 Oct 1990 | Mau: Makena |
| HRBP—431 (Fig 4) | <i>B. c. taverneri</i> | Medium sized, pale, small bill in relation to head | 29 Jul 1984 | Hawai'i: Puna Sugar Mill |
| HRBP—392 | <i>B. c. taverneri/parvipes</i> | Photo inconclusive to separate between two. | Nov 1981 | O'ahu: Nu'u'upia Pond |
| BFBM—177067 | <i>B. c. taverneri/parvipes</i> | Head and bill decomposed making final id impossible | 1 Dec 1987 | O'ahu: James Campbell NWR |
| HD Pratt, TK Pratt photos | cf. <i>B. c. parvipes</i> | Reported as large form, but stature of birds and bill shape and size refers subspecies to <i>parvipes</i> . These birds arrived in mid-summer; perhaps the result of captive birds reared and released at the ponds (T.K. Pratt pers. comm.) | | Hawai'i: Hilo, Waiakea Pond |

the entire time foraging on seaweeds growing on exposed lava reef (numerous observers, cover photo). It received fresh water and loafed at the Shipwreck Bar at the resort. In Apr 1996, the bird was captured, sex determined by laparoscopy, banded, and released. **O'ahu:** Punalu'u specimen earliest record; two birds (age unknown) found on Kailua Beach, Kailua on 3 Dec 1960 (G. Hatch). One bird died 7 Dec, the other was captured, disposition of second bird unknown. **Kaua'i:** Two birds found at Wailua Beach near east end of Lihue Airport runway on 13 Dec 1967 (Telfer, 1968). The birds were also observed at Poipu Beach on 14 Dec. **NWHI:** Single specimen from Kure. Ten birds found in same winter on Kure, Midway, and Laysan from 15 Dec through at least 10 Apr 1969 (Clapp *et al.*, 1969). Two were collected, one as an alcoholic specimen another as a skeleton. These were deposited at Kansas State University and Northern Illinois University, respectively (SIGHTINGS).

Snow Goose

Chen caerulescens (Linnaeus)

Hawai'i Status: Casual, eleven records all white morph birds.

Specimens: One, an adult male (white morph) collected at Waimanalo, O'ahu on 10 Oct 1904 (BBM 3154).

Observations: **Hawai'i:** One record of an immature bird at Kea'au, Shipman's Pond on 2 Apr 1987, T.K. Pratt (the bird was reported to have been present since Nov 1986). **Maui:** one at Kanahā Pond on 4 Dec 1941 (C.S. Childs, pers. observ.) and one at Keālia Pond on 23 Nov 1966 (Kridler, 1967). **O'ahu:** Earliest record, 1904 specimen from Waimanalo. Immature bird found in Hale'iwa on 21 Oct 1958 (Hanson, 1958; Udvardy, 1961a) present through mid-Jan 1959 (numerous observers). Single bird (no age) reported from Waipi'o Peninsula on 9–11 Oct 1982 (P. Donaldson, RLP, M. Ord). Two (*C. c. caerulescens*) arrived in subadult plumage on 20 Oct 1991 at James Campbell NWR, Ki'i Unit. These birds were observed to molt into adult plumage and departed by early May 1992 (numerous observers, photos AEJr). **Kaua'i:** Two adults flying along Lumahai Beach (towards Hanalei Bay) on 21 Nov 1991 (H.D. Pratt). Only one was present at Hanalei NWR from 4 Dec 1991–15 Apr 1992 (K. Viernes, R. Voss). It associated with a flock of "Cackling" Canada Geese through the winter. **NWHI:** One recorded and photographed (HRBP-256) at Midway Atoll, Sand Island on 14–23 Oct 1983 (Pyle, 1984).

Notes: The Waimanalo specimen was prepared as a live pose. Measurements taken by the first author indicate that this bird was of the race *C. caerulescens atlanticus* (bill = 69 mm; tarsus exceeded 80 mm). The bird was taken from a group of three. *Chen c. atlanticus* breeds in Northeastern Canada and winters on the Atlantic Coast of the United States, thus this record represents a highly irregular wandering. Snow Goose is an accidental species in Japan where most records are of the nominate race, but remarkably one record, from Hokkaido in winters of 1994–1997, is of *atlanticus* race (Hoshiko, 1997). Other birds seen in the state are more than likely of the nominate race which winters in the central and western U.S. No blue morph birds have been recorded from the islands.

Canada Goose

Branta canadensis (Linnaeus)

Status: Uncommon Nonbreeding Visitor; some oversummer (Appendix 2).

Specimens: Four: HY male (*B. c. parvipes*) collected Moloka'i Ranch, Moloka'i in Dec 1902 (BBM 7079); female (*B. c. parvipes/taverneri*) collected James Campbell NWR, O'ahu on 1 Dec 1987 (BPBM 177067); female (*B. c. parvipes*) collected Hickam Air Force Base on 10 Mar 1982 (BPBM 158930); female (*B. c. taverneri*) found by golfer at

Makena Golf Course, Maui; sent to Olinda facility where it later died on 10 Mar 1990 (BPBM 178352).

Observations: Scarce in NWHI, only one photo record from Midway (Table 1). Numerous observations from Main Islands except Moloka'i (1902, 1992), Lāna'i (1997), Ni'ihau (1993), Kaho'olawe (no records). Lāna'i record is of a single bird present at the Lāna'i Wastewater Treatment Plant through the winter of 1997 (plant officials communication with AEJr, 17 Nov 1998). Neck collared (#902) *B. c. minima*, first found on Kaua'i but also seen on O'ahu from Dec 1991–27 Apr 1992, was banded in the Yukon-Kuskokwim Delta, Alaska in summer 1989. It wintered in the Central Valley, CA in winter 1989–1990, and in the Willamette Valley, OR in 1990–1991 (Migratory Bird Banding Lab, USGS).

Notes: The earliest records of Canada Goose are reported from the late 1800s. The species was documented in Wilson & Evans (1890–1899) and Rothschild (1893–1900), although race could not be clearly ascertained from paintings. Our efforts have accounted for five races documented in the Hawaiian Islands. All Hawai'i observations determined by us are of Arctic nesting, migratory forms of Canada Goose. Two subspecies of small "Tundra geese" have been documented (*B. c. leucoparia* and *minima*), a third *B. c. hutchinsii* has been reported, but we could not substantiate its occurrence in the state (Table 1, Figs. 2–4). *B. c. minima* is most commonly reported, but *B. c. leucoparia* reports have increased in recent years, perhaps a result of rebounding breeding populations. Lesser forms are also regularly encountered and are represented by two migratory subspecies, (*B. c. taverneri* and *parvipes*) (Table 1, Fig. 5); there is one record of Dusky Canada Goose (*B. c. occidentalis*) (Table 1). There are no records of large forms (*B. c. maxima*, *canadensis*, *moffitti* or *interior*) from the Hawaiian Islands. Larger forms are less migratory than Arctic nesting species (Bellrose, 1978).

The majority of records in SIGHTINGS have no supporting documentation to discern subspecies; many observers report, simply Canada Goose, "cacklers" or "lessers." Cackling Canada Goose (*B. c. minima*) has long been documented in Hawai'i's literature as the form most commonly encountered (Bryan, 1941; Munro, 1960; Berger, 1972). However, this does not accurately portray the fact that other migratory forms can be equally encountered in the Islands. The earliest specimen collected by G.C. Munro in 1902 was incorrectly identified as *minima* and thus helped to perpetuate this assumption. Munro's specimen is actually *B. c. parvipes* (Lesser Canada Goose) based on size and bill measurements (AEJr).

There are also numerous accounts of a single Canada Goose being identified to different subspecies, even though observers saw the same bird. One explanation for this confusion may be related to the bird's age and molt conditions. Other explanations are the confusion in taxonomy of subspecies, overlap of characters for several forms, and poor identification keys. An additional explanation may be that two birds may have been involved over a span of years (e.g., small Canada Goose at Ka'elepulu Pond, O'ahu, Fig. 2). HY birds of all forms are paler and often lack defining characters seen in adult birds and thus may not be determinable to subspecies. In all small geese, the HY plumage characters have not been clearly defined and bill measurements overlap. This is particularly true for *B. c. leucoparia* and *B. c. hutchinsii*. In addition, lost birds that reside in Hawaii, often for years, can lack environmental cues to promote development into adult plumage (P. Pyle, pers. comm.), thus many birds arriving to the region remain undetermined to subspecies.

To summarize, bill structure and head shape, coupled with plumage becomes important in all forms and we urge that future reports of Canada Goose are coupled with photographs, or adequate descriptions of size, head and bill shape, plumage are obtained from the observers. We were able to summarize records and render subspecies determinations only from specimens, photos, and/or well-documented descriptions, which was a small subset of the total observations (Table 1).

Brant

Branta bernicla (Linnaeus)

Status: Uncommon Nonbreeding Visitor; some over-summer (Appendix 2).

Specimens: Four: adult female collected French Frigate Shoals, Tern Island on 3 Dec 1970 (HINWR-1); adult female collected 'Ewa Beach, O'ahu on 27 Nov 1981 (BPBM 158625); adult male (heavy molt) collected 'Aimakapā Pond, Hawai'i on 9 Jul 1984 (BPBM 161231); adult male collected French Frigate Shoals, Tern Island on 8 Dec. 1986 (BPBM 175791).

Observations: Earliest report in the Islands, from Maui in 1891 (Bryan, 1941). Recorded nearly annually on O'ahu, Maui, and Hawai'i since 1980, usually single birds. Recorded on NWHI (1970, 1986, 1990–1991), Kaua'i (1979, 1980, 1981, 1985, 1988, 1991), and Moloka'i (1985, 1986). All three specimens and photos examined (HRBP 989, 990, 1018, 1101, RED photographs are Pacific Black Brant, *B. b. nigrescens*). The specimen collected on 3 Dec 1970 has not been located. It was prepared by A. Ziegler at Bishop Museum but was housed at the U.S. Bureau of Sports Fisheries and Wildlife office in Kailua, subspecies unknown (Kridler, 1971).

Tundra Swan

Cygnus columbianus (Ord)

Status: Accidental, one record; two hypothetical.

Specimens: One, a HY bird on Sand Island, Midway Atoll (G. Grant and numerous observers). The bird was photographed in a weakened state on 7 Nov 1979 (HRBP 1045). The bird latter died and the skeletal remains were collected and deposited at the USNM (unaccessioned).

Observations: **Moloka'i:** Hypothetical, a bird attributed to this species observed at Kakahai'a NWR on 7 Jan 1982. The bird was seen at a distance and defining characteristics to determine *C. columbianus* not documented (T. Burr, pers. observ.). **Maui:** Hypothetical, an adult bird observed at Keālia Pond, Maui on 3 Jan 1988. It was seen well enough for one observer to report seeing yellowish ocular spot (G.R. Homel, pers. observ.). However, other observers did not relocate the bird. **NWHI:** single specimen only record.

Notes: The specimen was assigned to the North American, nominate race, *C. c. columbianus* (J. Dean, USNM, pers. comm.).

Gadwall

Anas strepera Linnaeus

Status: Casual, fourteen records.

Specimens: One: male molting to 1st Alternate plumage collected Pala'au Flats, Moloka'i on 11 Nov 1902 (BBM-7066). A specimen from Midway has not been located.

Observations: **Hawai'i:** Female observed at 'Aimakapā Pond, Hawai'i from 26 Dec 1986 through 9 Mar 1987. Female observed at 'Aimakapā Pond, Hawai'i from 19 Dec 1988 through 28 Jan 1989 was relocated (we presume same bird) at Keālia Pond, **Maui** on 24

Feb 1989. Female observed on stock pond at Hakalau NWR, Honohina Tract on 29 Oct 1993. Pair present at Waiākea Pond, Hilo, Hawai‘i from 8 Nov 1989 through 1 Feb 1990. **Moloka‘i:** Earliest record is specimen collected in 1902. Female present at ‘Ohiapilo Wetland from 21 Feb 1995 (A.J. McCafferty, pers. observ.). **O‘ahu:** Four birds (age and sex unreported) at Kahuku on 21 Jan 1967 (Pyle, 1967). Female observed at Waipi‘o Peninsula Sugar Ponds from 6 Nov 1977 through 29 Jan 1978. Single bird present at James Campbell NWR, Ki‘i Unit, 8–14 Dec 1979. Pair observed at James Campbell on 13 Feb 1982. Three birds (two females, one male) reported at numerous localities in West Loch of Pearl Harbor from 16 Dec 1989 through 2 Mar 1990. Female present at Waialua on 19 Dec and Ki‘i Ponds on 27 Dec 1992. Female present at Pearl Harbor NWR, Hono‘uli‘uli Unit on 11 Oct 1993. **NWHI:** one bird observed and collected Midway, Eastern Island in Dec 1962 (Fisher, 1965). Three birds (one male, two females) photographed at Midway Atoll on 28 Nov 1979. Present through 13 Mar 1980 (HRBP).

Falcated Duck

Anas falcata Georgi

Status: Accidental, one record.

Specimens: One: HY female (based on plumage) found dead Midway, Sand Island on 21 Oct 2001 (BPBM 184418). Measurements: Total length = 440; tail = 82; tarsus = 36; wing chord = 240; culmen = 37; middle toe c/u = 43; middle toe s/u = 39.

Observations: The bird was found dead in the water catchment basin on Sand Island, Midway by USFWS personnel. In the winter/spring 2001–2002, Falcated Ducks were also reported from Washington and California indicating there may have been a trans-Pacific movement (AEJr).

Diagnosis: Chord, tarsus, culmen, and wing chord measurements fit ranges reported for female Falcated Duck (Dement‘ev & Gladkov, 1952; Johnsgard, 1978). The bird was badly decomposed and was prepared as a skeletal + wing. The bird was washed, dried, photographed, and measured prior to preparation (C. Kishinami, pers. comm.). The following diagnostic characters were noted (as reported in AEJr letter to Bishop Museum):

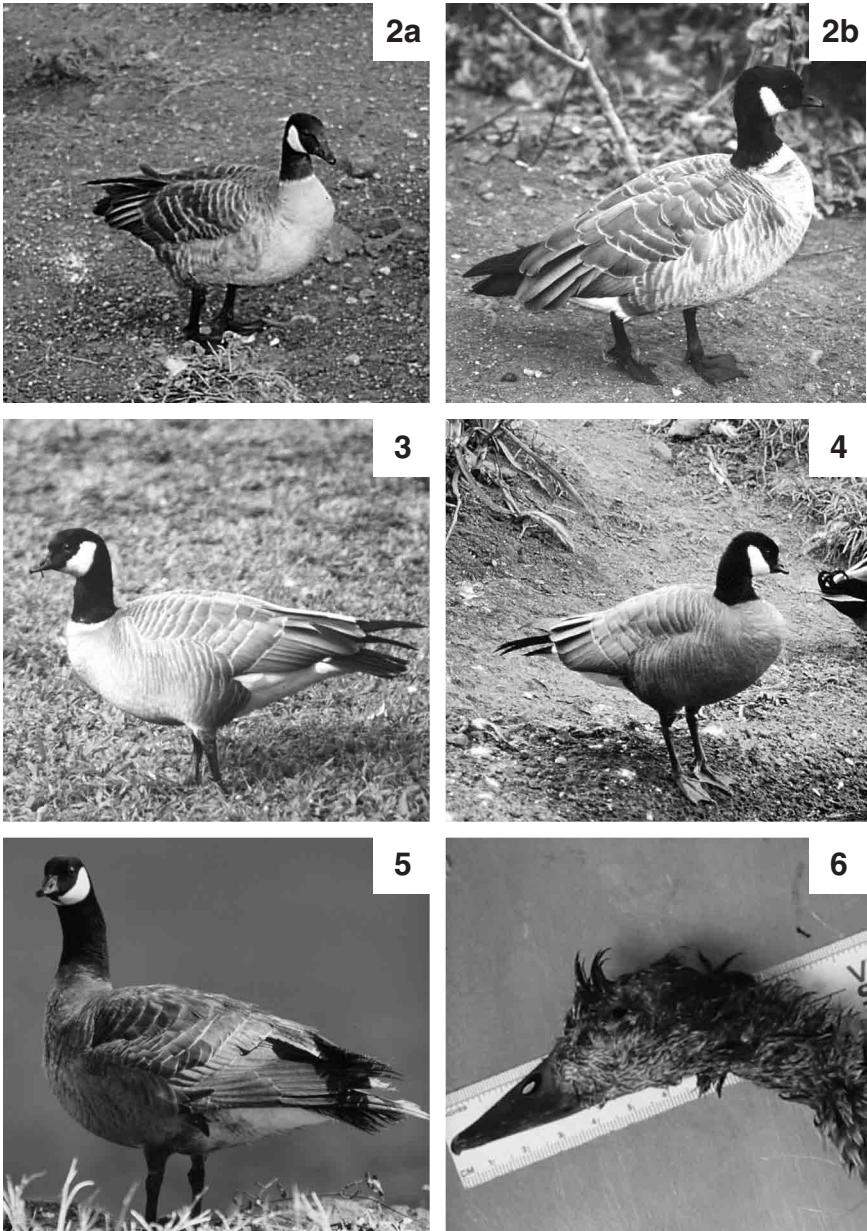
“The bird was clearly an *Anas* duck based on the morphology of the legs, feet and bill. Its size was similar to that of a wigeon, but the bill seemed a bit longer, structurally thinner, and entirely blackish, the legs were dark gray.

Distinguishing features were seen on this badly decomposed specimen determining its identification [Figs. 6, 7]. These are as follows:

Belly was whitish, framed by brown flanks, with speckled brown and buff chest. The white belly was similar to that seen in female Gadwall or wigeons. The head, neck and chin were a uniform gray-brown, and entirely, finely speckled black, imparting a peppered look [Fig. 6]. The speculum was blackish showing no iridescence and was bordered by faint white fore and aft (this is characteristic of [Falcated Duck] FADU). The under tail coverts and side of rump showed variable black, brown, and white patterns, particularly along the lateral margins (characteristic of FADU).

The bird is a hatching year female based on upper-parts being solid dark-brown with some buff-ocher edging on back. In addition, scapulars are uniform dark brown with ochre-buff tips, no internal markings imparting a uniform color (Dement‘ev & Gladkov, 1952; Madge & Burn, 1988, [Fig. 7]).

Baikal Teal (*Anas formosa*), Garganey, and Green-winged Teal females have face patterns, lacking in this bird. We can rule out wigeons due to long black bill (37 mm is longer than either species of wigeon) and lack of white in the tertials (prominent in both female wigeons). We can rule out gadwall female, bill entirely black, higher at base, and bird lacked white speculum.”



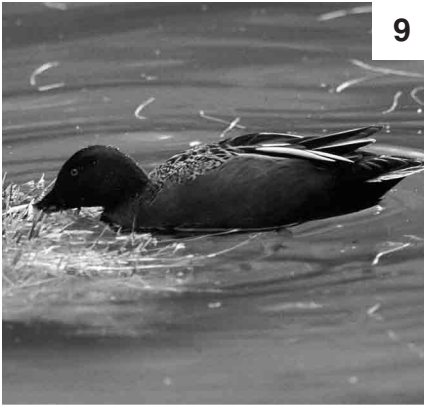
Figures 2–6. **2a.** HY Aleutian Canada Goose (*B. c. leucoparia*), Ka'elepulu Pond, Kailua, O'ahu. HY plumage 1996 (HRBP 1112, photo L. Paul). **2b.** Same location, an adult plumage Aleutian/Cackler photographed in 2000 (photo by H.D. Pratt). The bill structure of both birds differs and seems to indicate that two birds are involved in this "single" record spanning several years. The 2000 photo matches an MWFB specimen of *B. c. minima* (WFB 400). **3.** Aleutian Canada Goose, adult. Waiākea Pond, Hilo, Hawai'i. Photo H.D. Pratt. **4.** Cackling Canada Goose (*B. c. minima*), Waiākea Pond, Hilo, Hawai'i (HRBP 430, photo R.E. David). **5.** Taverner Canada Goose (*B. c. taverneri*). Puna Sugar Mill, Hawai'i (HRBP 431, photo by R. E. David). **6.** Falcated Duck (*Anas falcata*) specimen from Sand Island, Midway Atoll. Photo at BPBM A. Suzumoto.



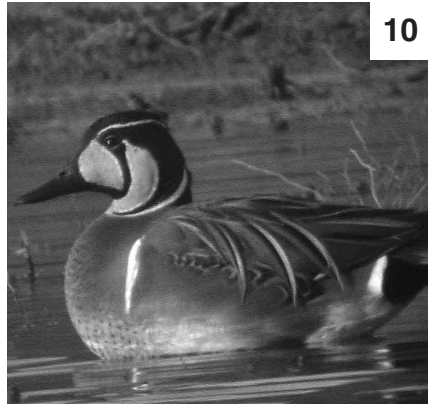
7



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Figures 7–12. 7. Falcated Duck (*Anas falcata*) specimen from Sand Island, Midway Atoll. Photo at BPBM A. Suzumoto. 8. Blue-winged Teal, pair with brood, 'Aimakapā Pond, Hawai'i (HRBP 182, photo P. Paton). 9. Cinnamon Teal. Kaua'i Surf Hotel, Kaua'i. Photo R.E. David. 10. Baikal Teal, Hanalei NWR. Photo Brenda Zaun, USFWS. 11. Redhead, Waiākea Pond, Hilo Hawai'i. Photo R.E. David. 12. Common Pochard, Sand Island, Midway Atoll (HRBP 113, photo G. Grant).



13



14

Figures 13–14. 13. Hooded Merganser, female at Waiākea Pond, Hawai‘i (HRBP 991, photo K. Islam). 14. Common Merganser, Keālia Pond, Maui. (HRBP 710, photo R.E. David).

Eurasian Wigeon

Anas penelope Linnaeus

Status: Uncommon Nonbreeding Visitor.

Specimens: Five: HY female collected Midway on 12 Jan 1963 (USNM 493458); one salvaged off beach (skeleton specimen) Midway on 13 Nov 1963 (USNM 498076); adult female collected Kure on 10 Nov 1964 (USNM 494359); HY female collected Kure on 14 Nov 1965 (USNM 496208); female (unknown age) collected French Frigate Shoals, Tern Island on 31 Jan 1988 (USNM 597156).

Observations: Earliest record, a male (well described) from Waipahu mudflats, O‘ahu on 15 Dec 1944 (Cogswell, 1945). Since 1976, recorded annually from NWHI and Main islands. It is rare on Moloka‘i (5 records) and unrecorded from Ni‘ihau, Lāna‘i and Kaho‘olawe. More numerous records in recent years may reflect an increase in breeding numbers in Alaska and/or better field identification characters developed to separate females and HY birds from American Wigeon.

Notes: Regular in mixed flocks of American Wigeon, sometimes in small numbers. Frequents coastal wetlands of the Main Islands. Not recorded in mid-elevation ponds.

American Wigeon

Anas americana Gmelin

Status: Common Nonbreeding Visitor.

Specimens: Four: Alternate male collected Moloka‘i on 11 Mar 1902 (BBM 7067); Alternate male collected Midway on 4 Dec 1963 (USNM 496202); adult male (prealternate molt) collected Midway on 12 Jan 1963 (USNM 493457); adult female collected Midway on 23 Nov 1986 (BPBM 175890).

Observations: Recorded from Midway (six records), Laysan (1896, 1993), Ni‘ihau (130 birds in 1993) and Moloka‘i (nine records). Recorded nearly annually from Kaua‘i, O‘ahu, Maui, Hawai‘i since mid-1970s. **Notes:** Regular, sometimes in mixed flocks with Eurasian Wigeon. Frequents coastal wetlands and mid-elevation ponds. Earliest records are from Laysan in 1896 and Moloka‘i in 1902 (Bryan, 1941).

Mallard*Anas platyrhynchos* Linnaeus

Status: Migrant status unclear as observations are confounded by established feral populations.

Specimens: Three: Alternate male and female collected together on Laysan on 9 Feb 1913 (USNM 240941 and 240942 respectively); Alternate female collected Midway on 10 Dec 1957 (USNM 466152).

Observations: The three specimens from the NWHI represent, in our opinion, migrant birds. All three have been assigned to the nominate race at the USNM. One photo record exists of a female observed Laysan on 10 May 1993 (HRBP 1035). Two males and one female were observed Kure Atoll on 5 Dec 1977 (Rauzon, 1978). There are numerous observations of Mallard over the past 40 years from all Main Islands (except Kaho‘olawe and Ni‘ihau), where observers mention the “wildness” of birds and therefore concluded that they were migrants. There is no way of being sure that the observer is not seeing feral birds or even hybrid Mallard × Hawaiian Duck. Sorting those observations in the SIGHTINGS database thus is fruitless in hoping to establish patterns of occurrence in the Hawaiian Islands. Recent observations in the NWHI might very well be migrants, but feral Mallards (breeding on Main Islands) might also be dispersing up the chain. This latter phenomenon is supported by numerous records of Cattle Egret (*Bubulcus ibis*) from the NWHI; birds that probably originated from the Main Islands (Hawaii Audubon Society, 1997; RED, pers. observ.).

Blue-winged Teal*Anas discors* Linnaeus

Status: Uncommon Nonbreeding Visitor; has nested.

Specimens: None.

Observations: Earliest record, a male observed on Waimea Stream, 1 km upstream of Waimea Town, Kaua‘i on 6 Aug 1946 (Pearsall, 1946a). Introduced from collections in Australia to O‘ahu in 1922, did not establish (Bryan, 1941). Has been recorded annually from Kaua‘i, O‘ahu, Maui, and Hawai‘i since 1976. Documented from Lisianski on 21 Apr 1999 (SIGHTINGS), rare on Moloka‘i (1979, 1995), unrecorded on Lāna‘i and Kaho‘olawe.

Notes: Blue-winged Teal is the only migratory anatid that has nested in Hawai‘i (Paton & Scott, 1985) (Fig. 8). The following summary of the nesting efforts was gleaned from SIGHTINGS. Six birds (three male and three female) arrived ‘Aimakapā Pond, Hawai‘i on 15 Feb 1982. A pair remained and nested. The brood was first noted on 13 Jun 1982 (seven young). These birds remained at ‘Aimakapā through the following winter and again a pair nested in 1983 (Paton *et al.*, 1983). Eleven downy chicks (reported to be only several days old) were observed with both parents on 2 Jun 1983. On 5 July, 10 fledged young were observed with the female. From 1984 through 1986 several observers noted Blue-winged Teal from ‘Aimakapā throughout each year (several summer records). There were no further nesting attempts documented after the summer of 1983.

Cinnamon Teal*Anas cyanoptera* Vieillot

Status: Casual, eight records.

Specimens: One was reported taken from Kaua‘i in 1968 (Zeillemaker, 1975), but the specimen has not been located.

Observations: **Hawai'i:** A basic plumage (eclipse) male photographed at 'Aimakapā Pond, Hawai'i on 18 Aug 1987, stayed through Mar 1988 during which time it molted into Alternate plumage (RED, pers. observ.). **Maui/Moloka'i:** A male observed at Kanahā Pond, Maui on 4 Dec 1978 through 23 Mar 1979. A pair (male in alternate plumage) observed at Kanahā Pond on 7 Mar 1981. A bird reported from Moloka'i, Kakahaia NWR on 12 Oct 1982. **O'ahu:** A male (associating with female blue-winged teal) observed at James Campbell NWR, Ki'i Unit from 5 Dec 1992 through 28 May 1993. A pair observed, some report female as possible blue-winged teal at Ki'i Unit on 25 Aug 1993 through 6 Feb 1994 (could be same birds as observed in 1992–1993). **Kaua'i:** From 1975–1978 a single male was observed on Kaua'i. It seems likely that the previous observations are of the same bird seen over the span of years: alternate plumage male first observed at Hanalei NWR, Kaua'i on 17 Mar 1975 (Zeillemaker, 1975); Alternate male observed and photographed at the Kaua'i Surf Hotel on 19 Feb 1976 (RED, Fig. 9); Alternate male observed Hanalei NWR 12 Oct 1976; and Alternate male observed at Hanalei NWR on 28 Dec 1978. An additional record was of an HY male observed at Hule'ia NWR on 21 Jan 1991 (AEJr and F. A. Reid).

Notes: Several reports of “blue-winged” type teals in the SIGHTINGS database go unidentified. It is also of interest that Blue-winged and Cinnamon teals go undetected from the NWHI.

Northern Shoveler

Anas clypeata Linnaeus

Status: Common Nonbreeding Visitor.

Specimens: Eleven: Midway (3), Laysan (1), O'ahu (5), Lāna'i (1), Maui (1).

Observations: Recorded annually from the Main Islands (except Kaho'olawe) and NWHI of Kure, Midway, Laysan, and French Frigate Shoals. Since the early 1980s, the most numerous duck visiting the islands, due in part to the precipitous decline of Northern Pintail. In addition to wetlands this species frequents wastewater ponds.

Northern Pintail

Anas acuta Linnaeus

Status: Common Nonbreeding Visitor.

Specimens: 33 from several islands (Appendix 1).

Observations: Recorded annually from the Main (except Kaho'olawe) and NWHI. One record from Nihoa Island was of a decomposed adult male found on 15 Aug 1971, the wing was kept (USNM-567292). The most widespread migrant duck in the islands. Pintail was once the most abundant duck, but their numbers declined from highs observed in the 1940s and 1950s (Udvardy & Engilis, 2001). From 1949–1955, 2,961 pintail were banded as part of a migration study (Medeiros, 1958). The results of this effort have yielded the only scientific papers on the movements of migratory waterfowl to and from the islands (Medeiros, 1958; Udvardy & Engilis, 2001).

Notes: Pintails wintering in Hawai'i are represented by a skewed sex ratio of adult females and hatching year birds with few adult males returning (Udvardy & Engilis, 2001). However, this was not always the case. Historical data indicate that Hawai'i once received an early fall flight of adult male pintails, followed by females and hatching year birds in mid-Oct to late Nov. Over the last few decades, the “bachelor flocks” have disappeared from the migration population of pintails arriving in the islands. This may help to account for the sudden decline of pintails met in the 1960s and 1970s. The timing of

this decline coincides with similar trends on the North American Continent (Udvardy & Engilis, 2001). Pintails were actively sought by hunters until the mid-1940s when waterfowl hunting was banned in Hawai‘i. We found no pattern of age or sex in the specimen record. The age and sex breakdown of the 33 specimens are as follows: 9 adult males, 10 HY males; 6 adult females, 7 HY females: 1 unknown age/sex.

Garganey *Anas querquedula* Linnaeus

Status: Uncommon Nonbreeding Visitor.

Specimens: Three: one HY male and one HY female collected Midway on 17 Sep 1963 (USNM 493451, 493452); HY female collected Kure on 5 Oct 1983 (BPBM 159738).

Observations: Earliest report is of a male in Hilo, Hawai‘i on 20 March 1961. It was observed on two different days, but details were sketchy (Walker, 1961). Earliest confirmed records are specimens collected at Midway in 1963 (Clapp & Woodward, 1968); another main island record was a male on O‘ahu: Kahuku in the winter/spring of 1967 (Clapp & Pyle, 1967). Rare in NWHI (fewer than 10 records), rare on Moloka‘i (3 reports, 1978, 1986, 1995) and Kaua‘i (two records 1976, 1991); unrecorded Ni‘ihau, Lāna‘i, Kaho‘olawe. Observed nearly annually since 1976 from either O‘ahu, Maui or Hawai‘i.

Notes: For a more detailed summary of the occurrence of Garganey in Hawai‘i, and North America, refer to Spear *et al.* (1988). The development of field characters that help separate female and eclipse male “blue-winged” teals have been perfected over the past two decades, thus aiding in determining the status of this and the following two species in Hawai‘i.

Baikal Teal *Anas formosa* Georgi

Status: Accidental, one record. One hypothetical.

Specimens: None.

Observations: Adult male, alternate plumage was first observed and photographed at Hanalei National Wildlife Refuge, Kaua‘i by B. Zaun on 9 Dec 2003. The bird was sporadically reported from the refuge from 20 December through 8 Mar 2003, which was last date reported. The photos depict an alternate plumage male, which is an unmistakable bird (Fig. 10).

Notes: There is a previous, hypothetical report of Baikal Teal from O‘ahu. The bird was a male, in alternate plumage, seen by M.D. Silbernagle at Pearl Harbor NWR (few details, pers. comm.). Investigations into waterfowl collections yielded no Baikal Teal imported into the state for ornamental purposes (P. Donaldson, C. Probst, pers. comm.).

Green-winged Teal *Anas crecca* Linnaeus

Status: Common Nonbreeding Visitor.

Specimens: Eight: Adult male collected Kanahā Pond, Maui on 20 Jan 1892 (BBM 2221); adult male collected Moloka‘i [probably Pala‘au Flats—AEJr] on 2 Nov 1906 (BBM 7070); adult male collected French Frigate Shoals, Tern Island on 12 Oct 1980 (USNM 599955); HY female collected French Frigate Shoals, Tern Island on 31 Jan 1988 (USNM 597156); two adult females collected Midway on 4 Dec 1963 (USNM 493455, 493456); HY male collected Midway on 13 Nov 1963 (USNM 493479); adult female collected Midway on 13 Nov 1963 (USNM 493480).

Observations: Recorded annually from the chain, sometimes in good-sized flocks num-

Table 2. Early records of Eurasian Green-winged Teal from Hawaiian Islands.

| Island | Date | Notes |
|-----------------------------------|------------------------------|--|
| O'ahu, Pearl Harbor, Walker Bay | First observed 1 Jan 1969 | First observed male bird in HY plumage in Jan, observed several times through 31 Jan by which time it had attained full male Alternate plumage (Mull & Mull, 1970) |
| Midway, Sand Island | 21 Feb 1980 | Male described and photographed (photo not located) (G.S. Grant, pers. observ.) |
| O'ahu: Kahuku, James Campbell NWR | 15 Mar 1987 | Male with <i>A. c. carolinensis</i> flock for comparison (H. D. Pratt pers. observ.) |

bering 10–30 birds. Most records are from the Main Islands of O'ahu, Kaua'i, Maui, and Hawai'i. It is rare in NWHI and on Moloka'i. It is unrecorded on Kaho'olawe and there are fewer than six records from Ni'ihau.

Notes: Nearly 98% of records from the islands are of the North American Green-winged Teal (*A. c. carolinensis*). All specimens examined were of this subspecies. There are three well-documented records of Eurasian Green-winged Teal (*A. c. crecca*) from the Islands (Table 2). Eurasian forms have been reported from Sand Island, Midway in 1997, 1999, 2000, and 2001 (RLP, pers. comm.)

Canvasback

Aythya valisineria (Wilson)

Status: Occasional Nonbreeding Visitor, thirty records.

Specimens: One, an adult female collected Midway on Dec 1981 or Jan 1982 (exact date uncertain) (USNM 599507).

Observations: Earliest record on 18 Jan 1953, was of a female on Ka'elepulu Pond, O'ahu (Anonymous, 1953). Irregularly seen on Main Islands since 1976, infrequently from NWHI.

Notes: Most observed are females or immature birds, Alternate males rarely seen. Alternate male bird found at Sea Mount Golf Course, Punalu'u, Hawai'i on 7 Jan 1999, observed through 7 Mar 1999 (E. VanderWerf, T.K. Pratt, and AEJr, photos taken on 7 Mar).

Redhead

Aythya americana (Eyton)

Status: Casual, ten records.

Specimens: One reported taken from Kailua Bay, Hawai'i on 30 Oct 1961 (Walker, 1962). Specimen not located.

Observations: Hawai'i: Single female was observed on Waiākea Pond, Hilo from 27 Jan through 7 Feb 1978 (Pyle, 1979). A bird (HY male that molted into breeding plumage, Fig. 11) was present from 16 through 26 Nov 1988 on Loko Waka and Waiākea ponds, Hilo. Presumably the same bird was relocated at Keālia Pond (**Maui**) on 19 Dec 1988.

Maui: One male was present from 10 Jan through 1 Mar 1983 on Keālia Pond (numerous observers). Male (possibly same bird as HY male seen on Kaua'i (record below) relocat-

ed on 11 Mar 1991 at Kanahā Pond. **Moloka'i:** Two males (breeding plumage) were observed at Kakahai'a NWR, Moloka'i on 23 Jan 1979 (Pyle, 1979). **O'ahu:** Earliest record is of a female found by a skin diver in Kailua Bay on 30 Oct 1961. It later died and specimen was taken. According to reports the bird was banded by the USFWS (Walker, 1962). No details as to where the bird was banded and records have since been lost. Two males observed at Kawainui Marsh, O'ahu 13 Nov 1977 through 22 Jan 1978 (Shallenberger, 1977). A single female was observed by numerous observers from 19 Nov 1993 through 6 Feb 1994 on Ki'i and Punamano Units of the James Campbell NWR, O'ahu. **Kaua'i:** Female at Hanalei NWR, Kaua'i on 22 Jan 1975 (Zeilemaker, 1975). Single bird on Waitā Reservoir on 17 Dec 1977 (Sears, 1978). HY male was located at Hule'ia NWR, Kaua'i on 29 Jan 1991. **NWHI:** recorded 13 Dec 1956, Sand Island, Midway Atoll (Kenyon, 1957). Also one bird present on Midway in 1996.

Common Pochard*Aythya ferina* (Linnaeus)**Status:** Accidental, one record; two hypothetical.**Specimens:** None.

Observations: Earliest record 22 Nov 1979; a female observed loafing on flats, Sand Island, Midway Atoll (G.S. Grant, pers. observ.). The bird was reported as possibly a Common Pochard or Canvasback (Grant & Pettit, 1981). It was photographed (HRBP 112, 113, 114) (Fig. 12) but no written determination has been published on this record and its inclusion on the state list is based on verbal confirmation of identity (RLP). Our examination of the photographs confirmed the verbal identification of Common Pochard. We note the following characters from the photos: A large *Aythya* duck with sloping bill characteristic of Canvasback and Common Pochard. The overall plumage is a dark brown, and relatively uniform, indicating the bird was a juvenile. The bill is large, sloped to the forehead and shows a gray saddle across the distal portion, and a dark nail that overhangs the bill tip (Madge & Burn, 1988). These bill characteristics are typical of Common Pochard. The head is peaked, but more rounded than Canvasback. The facial spots, sub-ocular and lore are pale, and distinct. Juvenile Canvasback generally shows a more uniform face lacking the distinct sub-ocular and lore spots.

Note: One hypothetical record from 'Aimakapā Pond, Hawai'i on 28 Feb 1985 (SIGHTINGS), but there are few details. A hypothetical sight record of a female bird observed on Paialoa Pond, Moloka'i on 11 Nov 1994 (AEJr, K.A. Evans, M.J. Ritter, and J.P. Well). Two observers tried to relocate the bird the next day but failed. The bird was reported as Canvasback/Redhead in size with black, sloping bill, gray saddle near tip. Crown was more rounded than Canvasback, bill larger and more sloped than Redhead. The chest was chestnut, contrasting with even gray-brown flanks and back. Flanks were paler than chest. Head and neck were uniformly medium brown. The bird was not seen again. There were records of Common Pochard that same winter from Saipan and Guam indicating there may have been a small movement of birds into the Pacific (AEJr, pers. observ.).

Ring-necked Duck*Aythya collaris* (Donovan)**Status:** Uncommon Nonbreeding Visitor.**Specimens:** One: adult female collected Laysan in 1993 (BPBM 179748).

Observations: Regular in the Main Islands of Kaua'i, O'ahu, Maui, Hawai'i; rare on Moloka'i (5 records). Unrecorded Ni'ihau, Lāna'i, and Kaho'olawe. Casual NWHI (fewer

than 10 records). The only specimen was taken on Laysan. One record from Sand Island, Midway Atoll, 22 Nov 1979 (G. Grant, pers. observ.). Earliest reported in Hawai'i on 26 Dec 1966 at Kawaiui Marsh, O'ahu (Kridler, 1967). However, this species was probably present prior to that date as numerous observers of the early 1900s noted many scauplike birds without identification to species.

Notes: Recorded annually from 1976–2000. Frequents coastal wetlands and reservoirs, but regularly observed in mid-elevation stock ponds on Hawai'i (AEJr, K.J. Uyehara).

Tufted Duck

Aythya fuligula (Linnaeus)

Status: Uncommon Nonbreeding Visitor.

Specimens: Eleven: adult female collected Kure Atoll, Green Island, on 29 Oct 1963 (USNM 493448). The following specimens from Sand Island, Midway Atoll: HY female collected 13 Nov 1963 (USNM 493828); HY female collected 2 Dec 1963 (USNM 493450); unknown sex collected 4 Dec 1963 (USNM 493449), skeleton specimen (sex ?) collected 4 Dec 1963 (USNM 498077); skeleton specimen (sex ?) 8 Mar 1964 (USNM 488493); adult female by plumage (tag says "sex ?") (USNM 494360); skeleton specimen (sex ?) 1 Nov 1964 (USNM 498125); remains (sex ?) 7 Jan 1967 (USNM 497500); HY female collected 22 Nov 1980 (USNM 599952); HY male collected 22 Nov 1980 (USNM 599953).

Observations: Earliest record Midway Atoll on 3 Dec 1959. Earliest Main Island record, Kuilima Pond, O'ahu on 2 Nov 1975. Individual birds in mixed *Aythya* flocks are recorded nearly annually since 1988 on O'ahu, Maui, and Hawai'i; rare on Moloka'i (1 record) and Kaua'i (fewer than 5 records). Unrecorded on Ni'ihau, Lāna'i, and Kaho'olawe.

Notes: Frequents coastal wetlands, ponds, and lowland reservoirs.

Greater Scaup

Aythya marila (Linnaeus)

Status: Uncommon Nonbreeding Visitor.

Specimens: Two: wing only salvaged from beach wrecked bird on Midway, Sand Island, on 15 Dec 1979 (BBM-X 157344); HY female found dead in harbor Midway, Sand Islands on 4 Dec 1991 (BPBM 178507).

Observations: Earliest record was of three birds observed in the winter of 1902–1903 (Henshaw, 1903). The next report was of a male observed at Kahuku Ponds, O'ahu on 13 Jan 1946 (Pearsall, 1946b). Recorded in mixed *Aythya* flocks annually since 1976 with most records from O'ahu, Maui, and Hawai'i. Fewer than 5 records from Kaua'i, unrecorded Moloka'i, Ni'ihau, Lāna'i, and Kaho'olawe. Accidental in NWHI: Kure (1), Laysan (1 record), Midway (2), French Frigate Shoals (1). We believe that current consistency in reports stems from improved field identification and optics from the mid-1970s to present.

Notes: Frequents coastal wetlands, ponds and lowland reservoirs. Sometimes recorded from mid-elevation stock ponds on Hawai'i (AEJr, J. Giffin, pers. observ.). Specimen BBM-X 157344 wing arc measured 220 mm (too large for Lesser Scaup); white through primaries (AEJr).

Lesser Scaup*Aythya affinis* (Eyton)

Status: Common Nonbreeding Visitor.

Specimens: Four. Three collected by G.C. Munro [Koch Reservoir] Lānaʻi on 11 Nov 1914 (BBM 7073, 7074, 7075). These specimens are old and “foxed” rendering age and sex determination difficult. Two are female/immature plumaged birds, BBM 7075 is a HY male. Wing and mandible salvaged from beach-wrecked bird Midway, Sand Island, on 2 Feb 1980 (BBM-X 157346).

Observations: Earliest records are those birds collected by Munro in 1914. Reported from literature by Wilson & Evans (1890–1899) and Henshaw (1902). Common in small flocks in coastal wetlands, ponds and lowland reservoirs and wastewater ponds on Main Islands; casual NWHI (Laysan, Midway, and French Frigate Shoals). Unrecorded from Kahoʻo-lawe. Sometimes recorded in mid-elevation stock ponds on Hawaiʻi (SIGHTINGS).

Notes: Specimen BBM-X 157346 was determined by AEJr at Bishop Museum (wing measured 195 mm, nail on mandible, narrow and small). Numerous *Aythya* or scauplike birds reported unidentified as to species (SIGHTINGS).

Harlequin Duck*Histrionicus histrionicus* (Linnaeus)

Status: Accidental, five records, one hypothetical.

Specimens: Two: HY female collected Laysan Island in spring of 1906 (BBM-4538); HY male in prealternate molt collected Midway Atoll, Sand Island Harbor, on 30 Nov 1982 (BPBM-161201).

Observations: Sight record of a male from Midway, Eastern Island, by J.M. Bradley and K. Kenyon on 9 Apr 1976. A single bird found dead after storm 23 Nov 1999 at Midway. Another bird reported from Midway in Dec 1999, no details. An unsubstantiated report of a bird foraging along the rocks, in Sand Island Harbor, Honolulu, Oʻahu. The bird reportedly arrived before 17 Nov 1999, last reported on 20 Nov 1999.

Notes: The 1976 sight record was of a bird observed for several hours diving and swimming. Although field records of both observers do not specify whether it was a male or female, Bradley’s notes refer to the bird as “him” and that it was “unmistakably beautiful” (SIGHTINGS). We therefore deduce the sex as male. Other sight records do not indicate age or sex of birds.

Black Scoter*Melanitta nigra* (Linnaeus)

Status: Accidental, one record.

Specimens: One, a HY female collected from the water tank Midway Atoll, Sand Island on 22 Nov 1980, by R. Clapp (USNM 599954).

Observations: No other records.

Surf Scoter*Melanitta perspicillata* (Linnaeus)

Status: Accidental, one record.

Specimens: One, a HY female found exhausted in the surf Waikiki Beach (off Coconut Avenue), Oʻahu on 27 Dec 1959 (BBM-6708) (Bowles, 1961).

Observations: No other records.

Long-tailed Duck (Oldsquaw) *Clangula hyemalis* (Linnaeus)

Status: Accidental, three records.

Specimens: One, a HY female collected Midway Atoll, Sand Island on 23 Nov 1958 (BBM-6678).

Observations: **Hawai'i:** HY female observed and photographed on the Kona Wastewater Treatment Ponds from 3 Jan 1998 through 4 Jun 1998 (numerous observers). **O'ahu:** Male molting into breeding plumage found first on Paukauila River estuary in Haleiwa on 4, 5, and 6 Dec 1993. Bird moved to Loko Ea Pond (2 km away) on 8 Dec and then daily through 26 Jan 1994. **NWHI:** Single specimen is only record (Bryan, 1959).

Bufflehead *Bucephala albeola* (Linnaeus)

Status: Uncommon Nonbreeding Visitor.

Specimens: Four: HY male collected Kawainui Marsh, O'ahu on 1 Jan 1894 (BBM 2223); female collected Laysan Island on 3 Jan 1914 (USNM 240989); HY male collected Midway Atoll, Sand Island, on 22 Nov 1980 (USNM 599951); adult female collected Midway 19 Nov 1997 (BPBM 184382).

Observations: Munro (1960) reported seeing many Buffleheads in the islands before the turn of the century. In addition, RLP (pers. comm.) reported as regularly encountered in the 1950s. Their occurrence since the 1980s has been sporadic. Most reports from O'ahu and NWHI of Midway and Laysan. Casual on Kaua'i, Maui, Moloka'i, and Hawai'i, Unrecorded from Ni'ihau, Lāna'i, Kaho'olawe.

Notes: Buffleheads frequent coastal ponds, wetlands and lowland reservoirs. Single birds sometimes encountered on mid-elevation ponds on Hawai'i (AEJr, pers. observ.). Curiously there were no records of breeding plumage males in Hawai'i prior to the mid-1990s (RLP, pers. comm.).

Common Goldeneye *Bucephala clangula* (Linnaeus)

Status: Accidental, four records; one hypothetical observation.

Specimens: No specimens.

Observations: **Hawai'i:** Male observed in a pond at Honohina Tract, Hakalau NWR on 29 Oct 1999 by J. Jeffery. **Moloka'i:** Earliest record was a female bird found on Paialoa Pond on 5 Dec 1985 by J. Krakowski (USFWS records). The same bird was later relocated on **Maui** (Keālia Pond) on 12 Jan 1986 by S. Berendzen. It was observed on Keālia Pond through 23 Feb 1986 (numerous observers). **NWHI:** Female observed and photographed (HRBP-815), Laysan Island on 5–13 Nov 1988 (K. McDermond, J. Marks, P. Hendricks). One hypothetical report was from water catchment at Midway Atoll, Sand Island, 17–25 Jan 1993 by N. Seto, L. Currey-Tack (no details).

Barrow's Goldeneye *Bucephala islandica* (Gmelin)

Status: Accidental, one record.

Specimens: None

Observations: A single female was first found on Pu'u Hewa Reservoir (Mauka reservoir Hwy 52, 0.25 mi S of intersection with Hwy 50), Kaua'i on 27 Jan 1989 by T. Telfer. It was present on the same reservoir from 4–19 Feb 1989 (numerous observers).

Notes: Due to lack of adequate description in files, this species has not been added to the checklist of the birds of Hawai'i (Pyle, 1997) despite being seen over a decade earlier. The

following description is from field notes by AEJr and T. Telfer. Engilis described the bird as:

“A medium-sized duck riding low to the water. Back and flanks a uniform gray, white markings on folded wings, head and neck a rich brown. No speculum noted. Head was blocked, not peaked, [Telfer also relates this feature]. The bill was as broad as long and small in relation to head, stubbier than scaup [Telfer also noted this shape]. Bill was dark. Tail was long and held low in the water, or cocked. Bird dove and was an active feeder. Telfer also noted white marks in folded wing. Eye was yellow.”

Engilis later added that the bill was smaller and the high base was characteristic of Barrow's Goldeneye. In addition the head shape (noted by numerous observers was smaller and clearly squared off (differing from peaked head of Common Goldeneye). Yellow eye, brown head, bill shape, and gray body ruled out all other waterfowl. Sketches from Engilis' field book estimated head shape, and shape on water were drawn at the time of the observation.

Hooded Merganser

Lophodytes cucullatus (Linnaeus)

Status: Casual, ten records.

Specimens: None.

Observations: **Hawai'i:** Three female plumaged birds recorded on Kehena Reservoir, Kohala Mountains on 13 Jan 1977 (Pyle, 1977). HY female present from 14 Dec 1992 through 10 Mar 1993 on Waiākea Pond, Hilo (HRBP 991, Fig. 13). A single bird, possibly a HY male, was observed at 'Aimakapā Pond from 12 through 28 Dec 1981. **Molokai:** Alternate plumaged male found on Kaunakakai Wastewater Treatment Pond on 7 and 16 Dec 1998 through Jan and Feb and 12 Apr 1999. **O'ahu:** Female found on 21 Jan 1967 at Kahuku Ponds (Pyle, 1967). A group of six female plumaged birds remained at Nu'upia Ponds from 4 Dec 1976 through 6 Mar 1977. Female present at James Campbell NWR, Ki'i Unit on 15 Jan through 12 Mar 1979; another female at the same locality from 8–14 Dec 1979. **Kauai:** Female present on Wailua Reservoir from 30 Nov through 27 Dec 1993.

Notes: Frequents coastal deep-water ponds and mid-elevation stock ponds. The stock ponds approximate those used by this merganser in nesting and wintering range in North America.

Common Merganser

Mergus merganser Linnaeus

Status: Accidental, three records.

Specimens: None.

Observations: **Maui:** The earliest record was a female bird observed at Keālia Pond on 4 Feb 1986 (HRBP 710, Fig. 14). **O'ahu:** female observed on Waimea Stream (Waimea Falls State Park) on 21 Feb 1991. **Kauai:** female present at Hanalei NWR on 29 Dec 1991 and was present through at least 22 Feb 1992 (USFWS records).

Notes: The female on Keālia Pond was first observed on 4 Feb 1986 remained, and was observed (sightings in all months) by numerous observers through 1998 (SIGHTINGS). The Keālia bird would disappear from time to time and thus other records in the islands may be due to this bird's wanderings.

Red-breasted Merganser*Mergus serrator* Linnaeus**Status:** Casual, eight records.**Specimens:** One, HY female collected Keokaha Stream, Hawai'i on 28 Nov 1898 (USNM 169669).**Observations:** **Hawai'i:** Earliest record is specimen collected by Henshaw in 1898 (this bird part of two specimens collected at that time; whereabouts of other specimen unknown). Henshaw (1903) reports another bird preserved by C.M. Walton in Pahala in Oct–Nov 1902. **Maui:** A female bird (good description in files) observed at Keālia Pond on 9 Nov 1985. **Moloka'i:** Well-described female at Kakahai'a NWR on 23 Jan 1979 (Pyle, 1979). **Kaua'i:** Female observed at Hanalei NWR, Kaua'i on 13 Feb 1995 (C. Dippel, pers. observ.). Alternate male observed at Hanalei NWR in 1998 [exact date unknown, remains hypothetical] (USFWS refuge records). **NWHI:** One sighting of a female *Mergus* species from Midway on 25 Oct 1981 may have been this species (M. Naughton, pers. comm.). A female observed 17 and 18 Dec 1995, later found dead on 21 Jan 1996 (USFWS records)**Ruddy Duck***Oxyura jamaicensis* (Gmelin)**Status:** Accidental, two records; three hypothetical.**Specimens:** None.**Observations:** **Hawai'i:** A male in winter plumage was observed on a pond along Keanakolu Road (T. Snetsinger, pers. observ.).**O'ahu:** Three males in basic plumage (good description, but age unknown). Two of these were observed at He'eia Marsh, O'ahu in Dec 1984. Three birds were observed (presumed same as He'eia birds) at Waipi'o Peninsula Settling Ponds on 22 Jan 1985. The He'eia Marsh observation provides convincing details as to correct identification.**Notes:** A report of a pair of Ruddy Duck from Ka'elepulu, O'ahu on 23 December 1945 is poorly documented and remains hypothetical (Peterson, 1946). One hypothetical record (poor details) from Hawai'i (Udvardy, 1961b). One hypothetical report from Maui bears elaboration. Two males were reported at Keālia Pond NWR, Maui on 18 December 1993. The following day 2 males and 2 females were reported from the same location (H. and P. Baker, pers. observ.) There are no supporting details for these observations. In 1994, two males were reported by the same observers at Keālia Pond NWR (no details).**ACKNOWLEDGMENTS**

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Appendix 1. Distribution of waterfowl records in the Hawaiian Islands.

| Species | Ku | Mi | Ly | Fr | Nh | Ni | Ka | Oa | Mo | La | Ma | Ha |
|------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| G. White-fronted Goose | | PR | | SP | | | WR | WR | SP | | WR | PR |
| Emperor Goose | WR | SP | SP | SP | | | WR | SP | | WR | PR | PR |
| Snow Goose | | PR | | | | WR | WR | SP | | | WR | WR |
| Canada Goose | PR | | | | | | WR | SP | SP | WR | SP | PR |
| Brant | | | | SP | | | WR | SP | WR | | PR | SP |
| Tundra Swan | | SP | | | | | | WR | H | | H | PR |
| Gadwall | | SP | | | | | | | | | | |
| Falcated Duck | | SP | | | | | | | | | | |
| Eurasian Wigeon | SP | SP | WR | SP | | | WR | WR | WR | | WR | PR |
| American Wigeon | | SP | WR | WR | | WR | WR | WR | SP | | PR | PR |
| Mallard | WR | SP | SP | | | | WR | WR | WR | | WR | WR |
| Blue-winged Teal | | H | | | | | WR | WR | WR | | WR | PR |
| Cinnamon Teal | | SP | SP | PR | | WR | PR | SP | WR | SP | PR | PR |
| Northern Shoveler | WR | WR | WR | WR | SP | WR | PR | PR | WR | SP | PR | PR |
| Northern Pintail | | SP | | WR | | | PR | WR | WR | | WR | WR |
| Garganey | SP | SP | WR | WR | | | PR | WR | WR | | WR | WR |
| Baikal Teal | | SP | WR | SP | | | PR | H | | | | |
| Green-winged Teal | WR | SP | WR | SP | | | PR | WR | SP | | SP | PR |
| Canvasback | | SP | WR | | | | WR | WR | WR | | WR | PR |
| Redhead | | WR | | | | | WR | WR | WR | | WR | PR |
| Common Pochard | | PR | | | | | | | H | | | H |
| Ring-necked Duck | | WR | | | | | WR | WR | WR | | WR | PR |
| Tufted Duck | | SP | | WR | | | WR | WR | WR | | WR | PR |
| Greater Scaup | SP | SP | WR | WR | | | WR | WR | WR | | WR | WR |
| Lesser Scaup | | SP | WR | | | | WR | WR | WR | | WR | WR |
| Harlequin Duck | | SP | SP | | | WR | WR | WR | WR | WR | WR | PR |
| Surf Scoter | | SP | | | | | | H | | | | |
| Black Scoter | | SP | | | | | | SP | | | | |
| Oldsquaw | | SP | | | | | | | | | | |
| Bufflehead | | SP | SP | | | | WR | PR | WR | | WR | PR |
| Common Goldeneye | | H | PR | | | | | SP | WR | | PR | PR |
| Barrow's Goldeneye | | | | | | | WR | | WR | | | |
| Hooded Merganser | | | | | | | WR | PR | WR | | | PR |
| Common Merganser | | | | | | | WR | WR | | | PR | WR |
| Red-breasted Merganser | | H | WR | | | | WR | WR | WR | | WR | SP |
| Ruddy Duck | | | | | | | WR | WR | | | H | WR |

Abbreviations: Ku = Kure; Mi = Midway; Ly = Laysan; Fr = French Frigate Shoals - Tern Island; Nh = Nihoa; Ni = Ni'ihau; Ka = Kauai; Oa = O'ahu; Mo = Molokai; La = Lanai; Ma = Maui; Ha = Hawaii; SP = Specimen, PR = Photo Record, WR = written record; H = Hypothetical.

