



## WATER BIRDS OF HAWAII ISLAND

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The island of Hawaii is a member of the most isolated archipelago in the world. North America, the closest continent, is 3,800 km away. Unique flora and fauna have evolved as a result of this isolation.

Six species of nonmigratory water birds were reported by early ornithologists on Hawaii Island (Wilson and Evans 1890-1899, Henshaw 1902a, Perkins 1903). Of these species, the Hawaiian Rail (*Porzana sandwichensis*) is extinct (Berger 1981); the endangered Common (Hawaiian) Moorhen (*Gallinula chloropus sandvicensis*), although still found on Oahu and Kauai, is no longer present on Hawaii (Henshaw 1902a, Shallenberger 1981); and three other endemic water birds: Hawaiian Duck (*Anas wyvilliana*), Black-necked (Hawaiian) Stilt (*Himantopus mexicanus knudseni*), and American (Hawaiian) Coot (*Fulica americana alai*), are endangered species (USFWS 1983). One of these, the Hawaiian Duck, is present primarily as a result of reintroduction through a captive propagation program (Paton 1981). The indigenous Black-crowned Night-Heron's (*Nycticorax nycticorax hoactli*) population is probably reduced from former times (Shallenberger 1977). The endemic water bird decline has been attributed to factors including predation by introduced mammals, such as the mongoose (*Herpestes auropunctatus*) and cats and dogs, hunting by man, and loss of habitat (Schwartz and Schwartz 1953).

In addition to the endemic and indigenous resident species that use the wetlands of the island, other waterfowl and shorebirds regularly migrate to Hawaii. There are also accidental stragglers and non-native resident species (Scott et al. 1978, Pyle 1983a). The number of waterfowl coming to the island has diminished, but little has been written about their dwindling numbers (Medeiros 1958). In this paper we have completed a list of water birds that have been reported on Hawaii Island up to December 1983, using information gathered from the literature, unpublished observations, and our own census data.

### STUDY AREA

Hawaii is the southernmost and largest of the Hawaiian Islands. Its 10,500 sq. km are 63% of the total land mass of the archipelago. At its extremes, the island is 150 km long and 120 km wide. The major topographic features of Hawaii are five shield volcanoes. The highest point of the island is the summit of Mauna Kea (4205 m) which is also the highest point in the State. Average yearly rainfall varies from 23 cm at Puako to more than 760 cm near Makahanaloa. The climate is mild, with an average daily maximum temperature range in Hilo varying by only 2.7° C throughout the year. The state's highest temperature (37.8° C) was recorded at Pahala and the lowest was on the summit of Mauna Kea (-12.8° C). The prevailing winds throughout the year are the northeasterly

trade winds, which are more persistent in summer (90% of the time) than winter (50%). Between October and April the island comes under the influence of southerly and northerly winds associated with occasional Kona storms and winter cold fronts (Armstrong 1973).

Since Hawaii is the youngest member of the archipelago, the effects of erosion on the volcanic slopes of this island are much less evident than on the older islands. Wetlands on the island are few and scattered and restricted mainly to the east and west central coastal regions. Therefore, in most of these wetlands, the water level fluctuates with the tide. Some marshlands and taro fields are found in the valleys of the Kohala Mountains (Shallenberger 1977). The amount of inland water on the island is 260 ha; the largest pond is Waiakea at 10.9 ha (Armstrong 1973).

Five major wetland areas are used by waterbirds on the island (Fig. 1) (descriptions follow Shallenberger 1977):

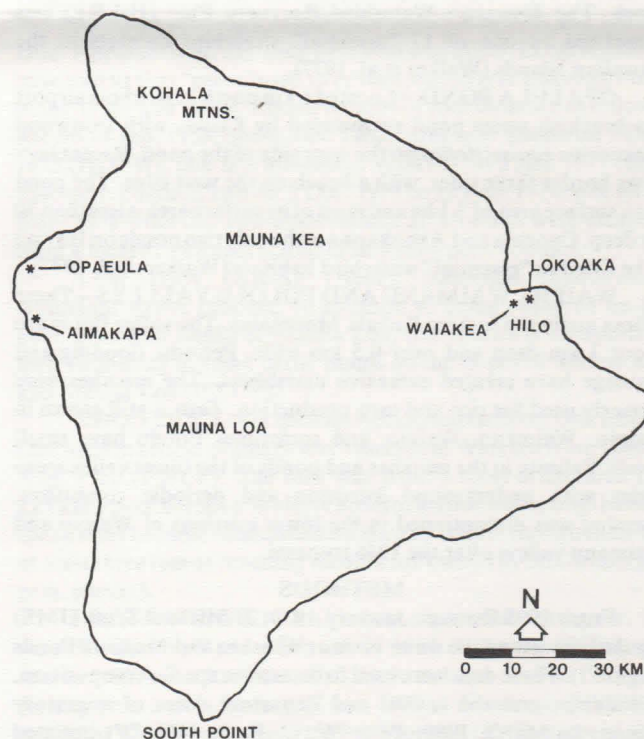


Figure 1. Map of Hawaii Island showing major wetland areas.



**WAIAKEA AND MOHOULI PONDS**—Located in Hilo, these two estuarine ponds at the mouth of the Wailoa River were once separated, but are now connected by a narrow channel. Manicured lawns surround the edges of the ponds, with hotel developments bordering two sides of the pond complex. Waiakea is about 3 to 4 m deep, and Mohouli is about 2 to 3 m deep. The area is now a state park managed for public fishing and is heavily used by people in small fishing boats. Fish caught include Mullet (*Mugil cephalus*), Milkfish (*Chanos chanos*), Aholehole (*Kuhlia sandvicensis*), and Papio (*Caranx sp.*).

**LOKOAKA (NAKAGAWA) AND KIONAKAPAHU (AHN) FISHPONDS**—Located in Hilo, these two spring-fed ponds are connected to the ocean by a series of underground channels. Both are still privately managed by local residents for aquaculture of Mullet and Milkfish. Kionakapahu is infrequently visited by water birds. The dominant vegetation is Para grass (*Brachiaria mutica*), with patches of Great Bulrush (*Scirpus validus*). A paved road borders the north sides of the ponds, and a dense forest of African Tulip (*Spathodea campanulata*), Hala (*Pandanus odoratissimus*), and other large trees surround their east and south sides. Cattle graze regularly around the edges of Kionakapahu.

**AIMAKAPA FISH POND**—Located 1 km north of Honokohau Harbor on the west central Kona coast, Aimakapa is a brackish water pond separated from the ocean by a narrow, sandy beach. This 8.1 ha pond was formerly a Hawaiian fish pond and is less than 60 cm deep for most of its surface area. Kiawe (*Prosopis pallida*) trees surround the pond, except the west side which is a beach. The Hawaiian Waterbird Recovery Plan (HWRP) lists Aimakapa as one of 17 "essential" waterbird habitats in the Hawaiian Islands (Walker et al. 1977).

**OPAEULA POND**—Located 6 km north of Keahole airport is a brackish water pond surrounded by Kiawe, with Ironwood (*Casuarina equisetifolia*) on the west side of the pond. Recent lava flows border three sides, with a beach on the west edge. The pond has a surface area of 3.1 ha and most of its surface area is less than 30 cm deep. Opaepula and Aimakapa are the only two ponds on Hawaii to be listed as "essential" waterbird habitats (Walker et al. 1977).

**WAIPIO, WAIMANU AND POLOLU VALLEYS**—These valleys are in the eastern Kohala Mountains. The valley floors are about 3 km deep and over 0.5 km wide. Periodic flooding and drainage have created extensive marshland. The marshes were formerly used for rice and taro production. Taro is still grown in Waipio. Waimanu, Waipio, and sometimes Polulu have small ponds. Salinity in the marshes and ponds of the lower valley areas varies with underground intrusion and periodic conditions. Farming was discontinued in the lower portions of Waipio and Waimanu valleys after the 1946 tsunami.

#### METHODS

From 1975 through January 1979, J. Michael Scott (JMS) regularly censused the water birds at Waiakea and Mohouli Ponds (Figure 1). These data were used to determine species composition, abundance, and the arrival and departure dates of migratory species. In March 1980, Peter W. C. Paton (PWCP) initiated opportunistic censuses of the major wetlands of the island. Census work centered on the Hilo ponds, but wetlands on the west side of the island (Aimakapa and Opaepula) were visited at approximately two month intervals. Systematic surveys, censusing on days with the same weather conditions, similar tide levels, and the same time of day, would have been desirable. This type of data was not

obtained, but we feel the information gathered can be used as an index to species richness and gross population trends.

Another source of information used to compile this annotated list was Hawaii Division of Forestry and Wildlife censuses (HDFW, formerly the Division of Fish and Game; unpubl. data on file, Dept. of Land and Natural Resources, Hilo and Honolulu, Hawaii). HDFW and the U.S. Fish and Wildlife Service (USFWS) initiated censuses of migratory waterfowl in 1950. This statewide count is conducted one day every January. Eight observers usually participate in the count on Hawaii Island, with individual observers censusing the same areas from year to year whenever possible (Ron Bachman pers. comm.). Native species were added to the count in 1958 and a summer census (in either July or August) was initiated in 1968 to monitor coot and stilt populations during the critical summer months when water is scarce (E. Kridler pers. comm.). During the 1950's, the major areas censused included Waiakea and Mohouli Ponds, Lokoaka and Kionakapahu Fish ponds, and Waipio Valley (Fig. 1). Aimakapa Fishpond was added to the count in 1959 and Opaepula Pond was added in 1963.

Various minor wetlands have been added or deleted throughout the years since 1963, although these ponds have not significantly affected the total number of waterbirds counted on the island. Some areas no longer exist, such as the Kohala Sugar Mill ponds near Hawi, while the area surrounding other ponds has been developed, causing birds to cease visiting them due to human disturbance, as at Punaluu.

Study design flaws exist in HDFW surveys (see Shallenberger 1977), but these data still provide valuable baseline data on the water birds of Hawaii. Questionable identifications by HDFW personnel were noted in the annotated list, as observer experience with migratory water birds was limited in some cases (e.g., 355 unidentified ducks in 1962).

Additional information used to compile the annotated list included: periodic censuses by the USFWS during the 1960's and 1970's (Division of Refuges, Honolulu), a thorough search through available literature (e.g., 'Elepaio 1939-1983, Henshaw 1902a, Perkins 1903), and correspondence with birders known to have recorded water birds on Hawaii Island.

#### ANNOTATED LIST OF THE WATER BIRDS OF HAWAII ISLAND

The present status and distribution of each species on Hawaii Island is given. Species have been categorized as: resident [nonmigratory species, which are divided into native or non-native (i.e. introduced by man)], visitant (migrants spending the winter in Hawaii), or stragglers (unexpected and unpredictable migrants). Nomenclature and phylogenetic order follow the AOU check list (1983) and Pyle (1983a). Abundance categories are: abundant (averages more than 100 individuals recorded on the island per year), common (averages 25-99 individuals recorded on the island per year), uncommon (averages 5-24 individuals recorded on the island nearly every year), rare (six to 20 records overall for the island), accidental (five or less records overall for the island), and extinct (no longer exists within this portion of the range of the species). "Non-native" means it was intentionally released on the island; "escapee" means it was unintentionally released on the island.

Averages for the categories "abundant," "common," and "uncommon" are based on data from 1975 to 1982 (HDFW, PWCP, JMS pers. obs.). Each bird observed counts as one record (i.e., a flock of four birds counts as four records). The same bird seen



on several occasions during the winter is considered to be just one record. Unless otherwise noted, abundance categories are similar to the statewide distribution of the species (Pyle 1983a). An asterisk (\*) indicates that a photograph is on file with the Hawaiian Audubon Society Rare Bird Documentary Photo File. Hawaiian language names are given in parentheses after the common name.

**PIED-BILLED GREBE.** *Podilymbus podiceps*. Accidental straggler. One record. One bird observed from 19 Nov. 1978 to 23 Jan. 1979 at Waiakea (JMS). Two birds were possibly observed on 23 Nov. 1978, one at Waiakea and one at Lokoaka (Pyle 1979a).

**GREAT BLUE HERON.** *Ardea herodias*. \* Accidental straggler. One record. One bird was seen at Opaepa from 19 July to 12 Sep. 1981. (Ashman et al. 1982).

**LITTLE OR SNOWY EGRET.** *Egretta garzatta* or *thula*. \* Accidental straggler. Two records. One bird was observed and photographed at Mohouli from 20 Jan. to 15 Feb. 1975 (JMS). This was the first state record for this species pair. This immature bird could not be identified to species (JMS). Another bird at Aimakapa from 13 Dec. 1980 to 12 Apr. 1981 was possibly a Snowy Egret (PWCP). See Scott et al. (1983) for a full account of the status of this species pair in Hawaii.

**CATTLE EGRET.** *Bubulcus ibis*. Abundant non-native resident. Thirty-two birds were released on the island in 1959 by the Hawaii Department of Agriculture (20 at Mahukona and 12 at Shipman Ranch) to help control insect pests of cattle (Breese 1960). By Jan. 1982, the egret population had reached 550 birds at Lokoaka Pond. An eradication program initiated in June 1982 reduced the population to 150-160 birds, but the roost built up after this program ceased in Apr. 1982. The Lokoaka roost was estimated to be 506 birds on 17 Jan. 1984 (P.Q. Tomich pers. comm.).

**GREEN-BACKED HERON.** *Butorides striatus*. \* Accidental straggler. One record. One bird was seen periodically at Lokoaka from 18 Dec. to 19 Jan. 1982, and was the first documented state record (Paton and MacIvor 1983).

**BLACK-CROWNED NIGHT-HERON.** ('Auku'u). *Nycticorax nycticorax hoactli*. Common native resident. Ranges throughout the coastal wetlands around the entire perimeter of the

island. The largest concentration is at Lokoaka Pond, where as many as 13 birds can be observed. Other areas frequented by this species are: the Shipman Ranch near Keaau, Opaepa and Aimakapa ponds, and the streams of Kohala Mountains.

**WHITE-FACED OR GLOSSY IBIS.** *Plegadis chihi* or *falcinellus*. Accidental straggler. One record. One bird was reportedly seen in Hilo in the 1930's, though not identified to species (Munro 1946).

**MUTE SWAN.** *Cygnus olor*. Former non-native resident. Introduced in Hilo in 1920; persisted for a short period (Bryan 1941a).

**GREATER WHITE-FRONTED GOOSE.** *Anser albifrons*. Rare straggler. Six records. Two birds were observed at Aimakapa and one collected on 18 Dec. 1891 (Perkins 1893); one at Waiakea on 14 Oct. 1962 to 14 Jan. 1963 (Walker 1963, HDFW); two on 7 Dec. 1973 at Shipman Ranch near Keaau (HDFW); and one at Lokoaka from Nov. 1980 to Apr. 1981 (PWCP).

**EMPEROR GOOSE.** *Chen canagica*. \* Rare straggler. Six records. Four birds were captured near Kalapana on 12 Dec. 1902 (Henshaw 1903); and two were seen at Anaehoomalu, North Kona, from 16 to 20 Apr. 1978 (Nichols 1978).

**BRANT.** *Branta bernicla*. Rare straggler. Six records. One bird was seen at Aimakapa on 10 Jan. 1961 (Walker 1962a); one at Hilo Bay from Feb. to July 1961 (Baldwin 1961); one at Waiakea on 13 Jan. 1966, one near Keaau on 15 Jan. 1976 (HDFW); one at Lokoaka from Nov. 1980 to Apr. 1981 (PWCP); and one at Aimakapa on 13 Nov. 1983 (Pyle 1984).

**CANADA GOOSE.** *Branta canadensis*. \* Rare straggler and escapee, formerly an uncommon migrant. Henshaw (1902a) stated that two flocks totaling 15 birds were observed in 1901 and 1902 in Hilo. Apparently all the birds were shot and killed. Local residents have told us that "geese" used to be seen regularly at Lokoaka Pond in the 1930s and 1940s. Recent records of wild birds are as follows: one on 14 Jan. 1958, one in Jan. 1962, three near Keaau on 7 Dec. 1973 (HDFW); one *B.c. minima* at Waiakea on 3 Jan. 1977 (R.L. Pyle pers. comm.); two on 5 Dec. 1977 to 12 Feb. 1978, one on 17 Nov. 1978—the last two observations at Mohouli were escapees from a local aviculturist (Donald LeValley pers. comm.).

**HAWAIIAN GOOSE (Nene).** *Nesochen sandvicensis*. Abundant native resident. In addition to being observed on the open grassland flanks of Mauna Loa, this species is occasionally seen swimming in small cattle ponds on the slopes of Mauna Kea and Mauna Loa (PWCP).

**WOOD DUCK.** *Aix sponsa*. Accidental escapee. One record. One male in eclipse plumage was observed at Waiakea from 12 to 20 Aug. 1980 (PWCP). The bird was from a local aviculturist (D. LeValley pers. comm.). We have no information indicating that this species has become established on Hawaii Island, though there are at least three recent breeding records for Oahu (R. Shallenberger, pers. comm.).

**GREEN-WINGED TEAL.** *Anas crecca*. Rare straggler. 15+ records. One bird was observed in 1954 (Udvardy 1961a); this species was seen "occasionally" at Aimakapa in the 1960s (E. Kridler pers. comm.); one on 7 Jan. 1972 at Aimakapa (USFWS); one from 10 Oct. to 28 Nov. 1975 at Mohouli (JMS); three in Dec. 1977 at Aimakapa (USFWS); one seen at Opaepa in 1977-78 (Pyle 1978b); three on 29 Dec. 1980 at Opaepa (USFWS); one on 9 Dec. 1980 and another bird on 9 Jan. 1981 at Lokoaka, and three were seen at the Puna Sugar Mill settling ponds on 17 Oct. 1981 (PWCP).

**MALLARD.** *Anas platyrhynchos*. Accidental straggler and uncommon non-native. A flock of more than 30 domestic Mallards



Immature 'Auku'u (Black-crowned Night-Heron) at Lokoaka Pond, Hilo, Hawaii. September, 1977.

Photo by Greg Vaughn



roost and breed at Waiakea and Mohouli ponds. These domestic birds are free-flying, so it is extremely difficult to distinguish them from wild birds. Domestic Mallards have also been observed at Lokoaka, and Aimakapa (PWCP pers. obs.). This species is considered to be an occasional visitant to the state (Pyle 1983a). The only records of birds thought to be wild are: one in 1954, one in 1956 (HDFW); and one at Aimakapa on 20 Sept. 1977 (Pyle 1978a).

**HAWAIIAN DUCK** (Koloa-maoli). *Anas wyvilliana*. Common native resident. Regularly seen in the Kohala Mountains, where they use stock ponds and irrigation reservoirs extensively. The island-wide population in 1981 was estimated to be more than 100, although only 25-50 individuals are reported each year (J. Giffin pers. comm.). This species is occasionally observed at Puu Kapa Reservoir east of Waimea (PWCP pers. obs.). Three individuals were seen on the southeast flank of Mauna Kea on 7 Oct. 1980 (Paton 1981). They were occasionally seen at Opauala in the early 1970's [E. Kridler (EK) pers. comm., Shallenberger 1977], and two were observed at the Puna Sugar Mill Settling Ponds on 28 Nov. 1981 (PWCP).

**NORTHERN PINTAIL** (Koloa-mapu). *Anas acuta*. Common visitant. Pintails were at one time the most abundant species of migratory waterfowl on the island according to HDFW census data, with a mean of 165 birds annually (range = 35-425; S.D. = 122.9) (HDFW unpub. data, 1970-1980). Since 1980, our censuses indicate the number of pintails reaching the island have declined dramatically, with a mean of 11 birds annually (range = 3-21; S.D. = 4.0) (PWCP, 1980-1982). This species is most commonly observed at Aimakapa, but is also found in the Hilo area (PWCP).

**GARGANEY**. *Anas querquedula*. Accidental straggler. Two records. One seen at Lokoaka from 23 Feb. to 29 Apr. 1961 (King 1961), and one was observed at Mohouli from 6 Nov. 1978 to 11 Jan. 1979 (JMS).

**BLUE-WINGED TEAL**. *Anas discors*. Uncommon visitant. Two seen in the winter of 1977 at Aimakapa and Opauala. (HDFW, JMS and C.F. Zeillemaker (CFZ) in Pyle 1977b); six adults observed in 1978 (HDFW), 1981, 1982, and 1983 (PWCP). Seven young were produced in 1982 and 11 more in 1983 at Aimakapa for the first breeding records of a migrant waterfowl species in the Hawaiian Islands (Paton et al. 1984).

**CINNAMON TEAL**. *Anas cyanoptera*. Accidental straggler. Two records. One male and one female were seen at Aimakapa on 27 Feb. 1973 (Kridler 1973).

**NORTHERN SHOVELER** (Koloa-moha). *Anas clypeata*. Common visitant. This species is the second most numerous migratory duck to the island according to HDFW census data, averaging 63 birds annually (range = 18-135; S.D. = 39.1) (HDFW unpub. data 1970-1980). Our censuses indicate that shovelers were the most common migratory duck on Hawaii from 1980-1983 (mean = 104, range = 79-130; S.D. = 19.5) (PWCP). This species is most abundant at Aimakapa and Opauala, but also occurs in small flocks of three to ten on the east side of the island (PWCP).

**EURASIAN WIGEON**. *Anas penelope*. Accidental straggler. Two records. Two birds were seen at Aimakapa on 13 Nov. 1983 (Pyle 1984).

**AMERICAN WIGEON**. *Anas americana*. \* Uncommon visitant. Observed in seven of the last eleven years (HDFW, and pers. obs.). A high count of 32 birds were recorded at Mohouli on 17 Jan. 1976 (JMS). The average count has been 23 birds per year on Hawaii Island from 1975 to 1981. Wigeon are most frequently found in the Hilo area, but are also observed on the Kona coast. On 9 Feb. 1979, 35 were seen at Opauala (USFWS).

**CANVASBACK**. *Aythya valisineria*. Rare straggler. Seven records. At Waiakea, one was observed on 18 Dec. 1967 (HDFW); one on 18 Dec. 1968 (Donagho 1969); one on 13 Jan. 1972, and another in Dec. 1977 (HDFW); one at Aimakapa from Dec. 1977 to Feb. 1978 (Pyle 1978b); one at Mohouli from Nov. 1978 to Feb. 1979 (JMS); and one at Aimakapa on 13 Nov. 1983 (Pyle 1984).

**REDHEAD**. *Aythya americana*. Rare straggler. Seven records. One weakened bird was caught by a skin diver near Kailua on 30 Oct. 1961 and is now a mounted specimen (Walker 1962b); at Lokoaka one was seen in Jan. 1962 (no details); four on 12 Jan. 1971 (HDFW); and one at Mohouli from 27 Jan. to 7 Feb. 1979 (Pyle 1979a). Although one bird was identified as a female of this species on 13 Jan. 1981 at Lokoaka (HDFW), two female Ring-necked Ducks were seen in the pond just before and after this observation suggesting mis-identification by HDFW personnel (PWCP pers. obs.).

**RING-NECKED DUCK**. *Anas collaris*. \* Rare to uncommon visitant. Observed in four of the last six winters during our censuses, with a median of four ducks per year. The high count of eight birds was made on 1 Jan. 1979 at Waiakea (Pyle 1979a). The species is most often found on the ponds in Hilo. They are probably overlooked on HDFW censuses and recorded as scaup or Redhead since this species has not been recorded in any HDFW count on Hawaii Island.

**TUFTED DUCK**. *Aythya fuligula*. Accidental straggler. One record. One male was observed at Mohouli on 10 Mar. 1977 (JMS).

**GREATER SCAUP**. *Aythya marila*. \* Accidental straggler. Four records. Although individuals of this species have been reported only four times, it is probably overlooked, since HDFW censuses lump both scaup species together. Of the 88 scaup we observed during our field work, 61 were identified as Lesser Scaup, 4 as Greater Scaup, and 23 were unidentified. Greater Scaup are considered accidental in the state (Pyle 1983a). Records for this species on Hawaii Island are: one in 1902 (Henshaw 1902a); one in Nov. 1976, one on 5 Feb. 1978, and two on 3 Jan. 1979 and all were seen at Mohouli Pond (JMS).

**LESSER SCAUP**. *Aythya affinis*. \* Uncommon visitant. These birds were seen every year from 1975 to 1981, ranging from 4 to 20 birds per year. It is the fourth most numerous migratory duck observed on the island.

**BUFFLEHEAD**. *Bucephala albeola*. Rare straggler. One bird was seen at Waipio on 7 Jan. 1959, two at Waiakea on 13 Jan. 1966, four on 15 Jan. 1970, and two on 23 Jan. 1975 (HDFW); one at Mohouli on 24 Nov. 1978 (JMS); and one in the reservoir above Waimea in Dec. 1980. (Phil Henderson pers. comm.).

**HOODED MERGANSER**. *Lophodytes cucullatus*. Accidental straggler. Five records. One bird was observed at Lokoaka on 13 Jan. 1966, three at Kehena on 13 Jan. 1977 (HDFW, Zeillemaker 1977), and one female at Aimakapa from 12 to 18 Dec. 1981 (PWCP and P. Ashman).

**RED-BREASTED MERGANSER**. *Mergus serrator*. Accidental straggler. Four records. Two birds were shot near Hilo in Apr. 1893 (Henshaw 1902a); and two were collected in Hilo in Nov. 1899 (Rothschild 1893-1900).

**RUDDY DUCK**. *Oxyura jamaicensis*. Accidental straggler. Three records. Two birds were seen on Hawaii in 1952 (HDFW), and one observed, with no supporting details, in 1966 (Berger 1981).

**OSPREY**. *Pandion haliaetus*. Accidental straggler. Five records. One bird was collected in Kealahakua Bay in the 1860s (Dole 1869); one observed in Hilo on 9 Mar. 1975 (Northwood 1975); one on 2 May 1976 in Hilo (Mull 1976); one at Halape on 30



Aug. 1979 (PWCP); and one in Hilo in late 1983 (JMS). An Osprey seen at Hauula Beach, Oahu was incorrectly listed as being seen on Hawaii Island in Udvardy (1961b:86).

**HAWAIIAN RAIL** (Moho). *Porzana sandwichensis*. Extinct native resident. The rail formerly ranged on both sides of the island (Perkins 1903), but by the late 1800s its range was restricted to the area from Keaau to Kilauea Crater. The last verified sighting of this species in the state was near Kilauea Crater in 1893 (Henshaw 1902a).

**COMMON (HAWAIIAN) MOORHEN** ('Alae'ula). *Gallinula chloropus sandvicensis*. "Extinct" on Hawaii Island; native resident. The gallinule used to "abound" in the Hilo area, but the last confirmed sighting of this species on the island was about 1900 (Henshaw 1902a). Although Bryan (1958) stated that the species still persisted on the island in the mid-1930's, he presented no direct evidence. In 1959, seven gallinules were released in Waipio Valley by HDFS in cooperation with the Honolulu Zoo but did not become established (David Woodside pers. comm.). One individual was reported at Opaepa on 8 Aug. 1982, though this sighting was not confirmed (Pyle 1983b).

**AMERICAN (HAWAIIAN) COOT** ('Alae-ke'oke'o). *Fulica americana alai*. Abundant native resident. This species is found on ponds along the coast; most frequently at Aimakapa and Opaepa on the west side of the island. There are breeding records for the coot at Lokoaka, Waiakea, Opaepa, and Aimakapa. Our censuses placed the Hawaii Island population at over 110 birds on 12 Dec. 1982: 94 at Aimakapa, 11 at Opaepa, 5 at Waiakea, and 6 at Lokoaka. A record count of 158 coots was seen at Aimakapa in Aug. 1983 (Pyle 1984). The Big Island accounts for approximately three percent of the Hawaiian Islands' total coot population (HDFS unpub. data).

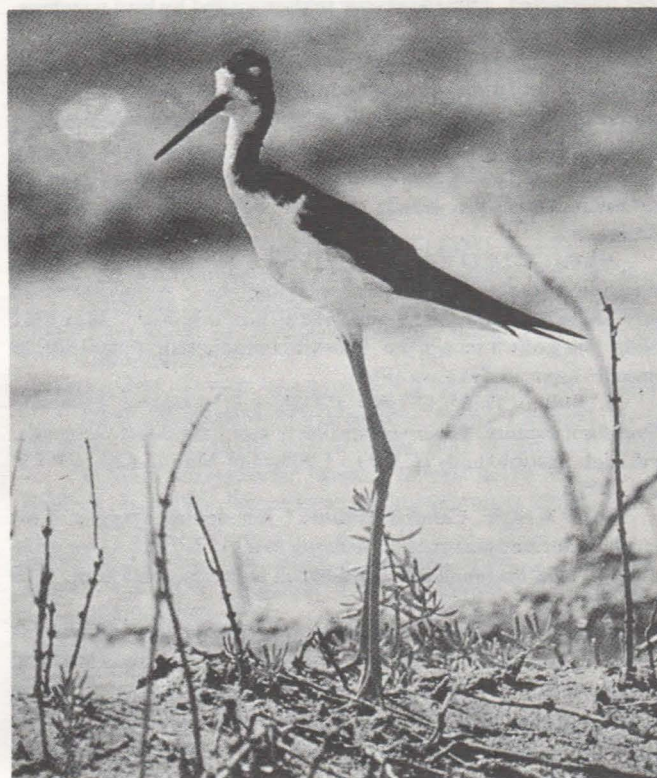
**BLACK-BELLIED PLOVER**. *Pluvialis squatarola*. Accidental straggler. Two records. One bird was collected in 1900 at Kaalua (Henshaw 1902a), and one was observed near Waiakea Pond from 15 Jan. to 6 Mar. 1982 (PWCP).

**LESSER GOLDEN-PLOVER** (Kolea). *Pluvialis dominica*. Abundant visitant. This species is by far the most numerous migrant to the island; it can be found from sea level to 2,150 m, in areas with open grassy expanses. Plovers are also observed frequently in wetland areas. More than 150 have been observed at the Puna Sugar Mill settling ponds in the fall, but they are most abundant in the high pastureland of Mauna Kea and Mauna Loa where flocks of up to 300 birds congregate (PWCP).

**SEMPALAMATED PLOVER**. *Charadrius semipalmatus*. Rare straggler. Sixteen records. One bird was seen at Kawaihae Harbor on 10 Sep. 1957 (Walker 1962b); one at Opaepa on 27 Feb. 1973 (EK); one each at Aimakapa on 15 Jan. 1974 and 13 Jan. 1976 (HDFS); four on 22 Feb. 1975 at Mohouli (JMS), two on 11 Feb. to 10 Mar. 1976 at Opaepa (USFWS); one from 17 May to 29 Sep. 1976 at Opaepa (EK) and probably the same bird on 16 Mar. 1977 at Opaepa (JMS and CFZ in Pyle 1977b); one at the Puna Sugar Mill settling ponds on 13 Sep. 1981; and one summered at Aimakapa in 1983 and was joined by two others in Sept. 1983 [Pyle 1984, PWCP, Avery Taylor (AT) pers. comm.].

**KILLDEER**. *Charadrius vociferus*. Accidental straggler. Four records. Four birds were seen at the Puna Sugar Mill settling ponds on 24 Jan. 1981 (PWCP).

**BLACK-NECKED (HAWAIIAN) STILT** (Ae'o). *Himantopus mexicanus knudseni*. Common native resident. The first documented record we could find of this species on Hawaii Island occurred in 1961 at Aimakapa (Walker 1962a). The highest



Hawaiian Stilt.

Photo by R.J. Shallenberger

recent census was a total of 32 birds at Aimakapa and Opaepa on 28 Feb. 1982 (PWCP). Both Aimakapa and Opaepa have breeding records (EK and R. Shallenberger pers. comm.). One bird seen flying at Lokoaka on 11 Apr. 1981 is the only reported record for the east side of the island (PWCP). Stilt on Hawaii account for three percent of the Hawaiian Archipelago's total stilt population (HDFS unpub. data).

**GREATER YELLOWLEGS**. *Tringa melanoleuca*. Accidental straggler. One record. A single bird was seen at Opaepa on 10 Feb. 1977 (EK).

**LESSER YELLOWLEGS**. *Tringa flavipes*.\* Accidental straggler. Five records. One bird was observed at Aimakapa and one at Opaepa on 24 Aug. 1977 (Pyle 1978a); at Opaepa, one on 29 Dec. 1980 (USFWS), one from 12 Sept. to 3 Oct. 1981, and another one from 10 Oct. to 12 Dec. 1982 (PWCP). This species is considered a regular migrant to Hawaii (Pyle 1983a).

**SOLITARY SANDPIPER**. *Tringa solitaria*.\* Accidental straggler. One record. One was observed at the Puna Sugar Mill settling ponds on 14 Sep. 1983 by AT for the first state record (Pyle 1984).

**WANDERING TATTLER** ('Ulili). *Heteroscelus incanus*. Abundant visitant. Found frequently along the rocky coastal regions of the island throughout the winter months. They sometimes feed in the wetlands; up to 20 individuals have been observed together at the Puna Sugar Mill settling ponds (PWCP).

**BRISTLE-THIGHED CURLEW** (Kioea). *Numenius tahitiensis*. Present status uncertain; possible uncommon visitant. This species probably occurs in open grassy areas on the island, such as South Point and Waimea area, in small numbers each year but



goes undetected. These areas are seldom visited by bird watchers. On 6 Oct. 1965, 20 to 30 curlews were observed near the canoe landing at South Point (Nelson Santos fide R. Walker pers. comm.). One bird was seen on a trip on 26 Sep. 1981 to South Point to look specifically for this species (PWCP). Five individuals had been seen the previous week in the same area [Steve Mountspring (SM) pers. comm.]. They are sometimes found in the wetlands of the island: one was seen on 9 Nov. 1968 at Honaunau.

**BAR-TAILED GODWIT.** *Limosa lapponica*. Accidental straggler. Two records. One bird was observed at Aimakapa on 26 Nov. 1978 (Pyle 1979a); and one at the airport in Hilo on 7 May 1981 (SM). One godwit seen in the 1930s was not adequately identified to place it to species (Munro 1944).

**RUDDY TURNSTONE** ('Akekeke). *Arenaria interpres*. Abundant visitant. Observed regularly along the coast, wetlands, and high pasture lands (1,300 to 1,900m) of Mauna Kea (PWCP and JMS).

**RED KNOT.** *Calidris canutus*. \* Accidental straggler. Two records. One bird was seen at Mohouli from 13 Nov. to 4 Dec. 1975 (JMS, David Marshall, EK) and one at Opaepa on 25 Sept. 1982 (PWCP).

**SANDERLING** (Huna-kai). *Calidris alba*. Abundant visitant. This species is mainly found on the white sandy beaches on the west side of the island, the mudflats of wetlands, and the flat grassy area adjacent to the coast at South Point (JMS and PWCP). There is one unusual record of a Sanderling observed at 1,980 m in the saddle between Mauna Kea and Mauna Loa (Walker 1962a).

**WESTERN SANDPIPER.** *Calidris mauri*. Accidental straggler. One record. One was seen at Opaepa on 16 Mar. 1977 (JMS and CFZ in Pyle 1977b). Listed as an occasional to frequent migrant to the state (Pyle 1983a).

**LEAST SANDPIPER.** *Calidris minutilla*. Accidental straggler. Three records. One bird was observed on 19 Apr. 1977 at Opaepa (JMS and CFZ in Pyle 1977b); one at Aimakapa in Oct. 1981 (PWCP); and one wintered at Aimakapa in 1982 (PWCP).

**PECTORAL SANDPIPER.** *Calidris melanotos*. Rare visitant. Nineteen records. Two birds collected in 1900 (Henshaw 1901); one at Kawaihae Harbor on 10 Sep. 1957 (Walker 1962a); at Opaepa one on 25 Aug. 1976 (Zeilemaker 1976); and three on 29 Sep. 1976 (USFWS); one at South Point on 25 Nov. 1978 (Pyle 1979a); two at Opaepa on 29 Dec. 1980 (USFWS); one at Aimakapa on 10 May 1981, one at Opaepa on 3 Oct. 1981, three at Puna Sugar settling ponds on 10 Oct. 1981 (PWCP); and six at Aimakapa on 17 Oct. 1982 (AT). Listed as a regular visitant to the state (Pyle 1983a).

**SHARP-TAILED SANDPIPER.** *Calidris acuminata*. Accidental straggler. Four records. One bird was seen in the early 1900s (Bryan and Greenway 1944); two at Opaepa on 10 Oct. 1976 to 5 Nov. 1976 (Zeilemaker 1977); and one at Aimakapa on 23 Feb. 1978 (Pyle 1978b). The species is listed as a regular visitant to the state (Pyle 1983a).

**DUNLIN.** *Calidris alpina*. \* Rare straggler. Six records. Three birds were observed on 4 Feb. 1976 at Mohouli (JMS); one at Aimakapa on 19 Apr. 1977 (USFWS); one at Honokahau from 26 Jan. to 8 Feb. 1981 (PWCP); and one on 22 Aug. 1981 at the Puna Sugar Mill settling ponds (PWCP). Listed as regular migrant to Hawaii in small numbers (Pyle 1983a).

**LONG-BILLED DOWITCHER.** *Limnodromus scolopaceus*. Rare straggler. Six records. One bird at Aimakapa on 2 Nov. 1976 (Zeilemaker 1977); two in breeding plumage at Aimakapa on

19 Apr. 1977 (USFWS); two at Opaepa on 29 Dec. 1980 (USFWS); and one at Aimakapa in Oct. 1981 (PWCP and P. Ashman).

**SHORT-BILLED OR LONG-BILLED DOWITCHER.** *Limnodromus griseus* or *scolopaceus*. Rare straggler. Six records. Four at Aimakapa on 12 Jan. 1974, one at Opaepa on 15 Jan. 1976 (HDFW); one at Aimakapa on 25 Nov. 1978 (Pyle 1977a). The Short-billed Dowitcher is considered to be an accidental straggler to the state, whereas the Long-billed Dowitcher is an occasional to frequent migrant (Pyle 1983a).

**COMMON SNIPES.** *Gallinago gallinago*. Accidental straggler. Two records. One bird was collected in 1900 near Naalehu and another bird observed later in the same area (Henshaw 1902a). Listed as an occasional to frequent visitant to the state (Pyle 1983a).

**RED-NECKED PHALAROPE.** *Phalaropus lobatus*. Accidental straggler. One record. One bird was seen at Aimakapa on 19 Apr. 1977 (Pyle 1977c).

**RED PHALAROPE.** *Phalaropus fulicaria*. Accidental straggler. One record. One bird was collected on 6 Apr. 1900 (Henshaw 1902a).

**LAUGHING GULL.** *Larus atricilla*. Accidental. One record. One bird wintered at Lokoaka Pond from Jan. through 22 Mar. 1983 (Pyle 1983c).

**FRANKLIN'S GULL.** *Larus pipixcan*. Accidental straggler. Four records. One bird was seen in Hilo on 21 May 1966 (Berger 1966); one at Aimakapa on 5 Nov. 1976 (Zeilemaker 1976); and two were observed in Jan. 1976 at Mohouli (JMS).

**BONAPARTE'S GULL.** *Larus philadelphia*. Accidental straggler. Two records. One bird was seen in Waipio on 7 Jan. 1959 (HDFW); and one immature at Honokohau Harbor from Dec. 1977 to Feb. 1978 (Pyle 1978b).

**RING-BILLED GULL.** *Larus delawarensis*. Rare straggler. Seven records. Two birds which were probably this species were seen on the island in Jan. 1957, one at Waipio on 7 Jan. 1959 (HDFW); one at South Point on 26 Nov. 1974 (JMS and CFZ); one at Aimakapa on 30 Dec. 1978 (Pyle 1979a); one immature in Hilo from 16 Nov. 1980 to 15 Mar. 1981; and one in Kailua-Kona in Nov. 1982 (Pyle 1983b).

**CALIFORNIA GULL.** *Larus californicus*. Accidental straggler. One record. One bird was observed at Kawaihae Harbor on 14 Jan. 1958 (HDFW).

**HERRING GULL.** *Larus argentatus*. \* Accidental straggler. Three records. One adult and one immature were observed at Hapuna Beach in Nov. 1958 (Dunmire 1959); and one second-winter plumage bird in Hilo from 26 Sept. to 18 Oct. 1981 (PWCP).

**WESTERN GULL.** *Larus occidentalis*. Former non-native resident. This species was introduced in Hilo in the early 1900's but did not become established (Caum 1933). This species is considered accidental in the state. (Pyle 1983a).

**GLAUCOUS-WINGED GULL.** *Larus glaucescens*. Accidental straggler. Four records. One bird was seen in Hilo with no details (Munro 1944), one probable immature at Honaunau on 26-28 Nov. 1969 (Vaughn 1970), and two at Waiakea on 14 Jan. 1974 (HDFW). King (1967) lists 13 records for Glaucous-winged Gulls in the Hawaiian Archipelago.

**GLAUCOUS GULL.** *Larus hyperboreus*. Accidental straggler. Four records. Two immatures were collected in Hilo on 26 June 1892 (Rothschild 1893-1900); one on the island in 1936 (Munro 1944); and one in Hilo on 7 Dec. 1969, which was incorrectly listed (Donaghy 1969) as a Glaucous-winged Gull (Donaghy pers. comm.). King (1967) cited six records for the Glaucous Gull in the Hawaiian Archipelago.



**UNIDENTIFIED GULLS.** *Larus* sp. Accidental stragglers. Three records. One on 19 Dec. 1977 at Aimakapa (USFWS); one on 12 Jan. 1978 at Waiakea (HDFW); and one at Honokohau Harbor in Oct. 1979; one at Waipio Valley from 21 Dec. 1980 to 12 Jan. 1981 (D. Bussen fide R.L. Pyle, HDFW). In view of the large numbers of hybrid gulls on the west coast and the overall difficulty in correctly identifying gulls (Hoffman et al. 1978) observers should not be reluctant to place birds in the unidentified category.

**CASPIAN TERN.** *Sterna caspia*. \* Accidental straggler. One record. One at Aimakapa from 12 to 19 Dec. 1981 (Ashman et al. 1982).

**COMMON TERN.** *Sterna hirundo*. \* Accidental straggler. One record. One immature bird was at Lokoaka from 14 Dec. 1980 to 19 Mar. 1981 (PWCP). A Common Tern which appeared on Oahu in Apr. 1981 may have been the same individual (R.L. Pyle pers. comm.). This species is a "rare to accidental straggler" in Hawaiian waters (King 1967).

**ARCTIC TERN.** *Sierna paradisaea*. Accidental straggler. One record. One bird was found on the beach in Hilo on 9 May 1891 (Henshaw 1902a). King (1967) states that this species occurs in "moderate" numbers in Hawaiian waters in April and May on its northward migration.

**LEAST TERN.** *Sterna antillarum*. Accidental straggler. One record. One bird was observed on 2-3 Sep. 1982 in Hilo Bay at the Wailuku River outlet (JMS and PWCP).

**BLACK TERN.** *Chlidonias niger*. \* Accidental straggler. Two records. One bird was at Waiakea on 6 Sep. 1979 (PWCP) and another in immature plumage stayed at Aimakapa from 10 Feb. 1982 to Apr. 1983 (JMS, AT).

**BELTED KINGFISHER.** *Ceryle alcyon*. Accidental straggler. Four or possibly five records. Two birds were seen in Nov. 1901, 20 km north of Hilo (Henshaw 1902b); one in Hilo and the same or possibly another bird in Waipio Valley in 1955 (Berger 1981); and one at Lokoaka on 3 Jan. 1978 and later at the Shipman Ranch near Keaau (fide David Woodside from HDFW).

#### DISCUSSION

One of the primary purposes of this paper is to stimulate further activity in monitoring the wetlands of Hawaii Island. But, more importantly, we have tried to provide some baseline information on the water birds of the island. The coot and stilt populations appear to be doing well on Hawaii Island, probably due to the fact that no major loss of wetland habitat has occurred on Hawaii Island. On Oahu, the loss of wetland habitat has been significant, which is reflected in the annual HDFW census data. In the 1950's, several thousand ducks used to winter on Oahu, but now only several hundred are recorded (HDFW unpub. data).

Hawaii Island has the smallest acreage of wetland habitat, with the exception of Lanai and Molokai, in the islands. Yet, seventy percent of the water bird species recorded in the islands have been observed on Hawaii (76 of 108) (Pyle 1983a). Every bit of suitable habitat becomes vital in island ecosystems. We should continue to monitor the wetlands habitat closely, but also begin to ensure their protection.

#### ACKNOWLEDGMENTS

We would like to thank the Hawaii Division of Forestry and Wildlife and the U.S. Fish and Wildlife Service, Division of Refuges for access to their unpublished data. Ron Walker, C. Fred Zeilemaker, Jon Giffin, Rick Coleman, Rob Shallenberger, Marie Morin, Robert Pyle, Tim Burr, Sheila Conant and especially Eugene Kridler made many helpful comments on early drafts of the manuscript.

#### LITERATURE CITED

- American Ornithologist Union. 1983. Check-list of North American birds. 6th ed. Allen Press, Lawrence, Kansas.
- Armstrong, R.W. 1973. Atlas of Hawaii. Univ. Press of Hawaii. Honolulu.
- Ashman, P.R., P.W.C. Paton, and J.S. MacIvor. 1982. Second Hawaii State record of a Great Blue Heron. 'Elepaio 42:61-62.
- Ashman, P.R., A. Taylor, and S. Doyle. 1982. Records of Caspian Terns in the Hawaiian Islands. 'Elepaio 43:11-12.
- Baldwin, H.S. 1961. Three distinguished visitors to Hawaii Island. 'Elepaio 22:11-12.
- Berger, A.J. 1966. Field Notes. 'Elepaio 27:54-55.
- Berger, A.J. 1981. Hawaiian birdlife. (2nd ed.) Univ. Press of Hawaii. Honolulu.
- Breese, P. 1960. Information on Cattle Egret, a bird new to Hawaii. 'Elepaio 20:33-34.
- Bryan, E.H. 1941. Checklist of Hawaiian birds. 'Elepaio 2:3-5.
- Bryan, E.H. and J.C. Greenway. 1944. Contributions to the ornithofauna of the Hawaiian Islands. Bull. Mus. Comp. Zool. 94:77-145.
- Bryan, E.H., Jr. 1958. Checklist and summary of Hawaiian birds. Books About Hawaii, Honolulu.
- Caum, E.L. 1933. The exotic birds of Hawaii. Occ. Pap. Bernice P. Bishop Museum. 10:1-55.
- Dole S.B. 1869. Birds of the Hawaiian Islands. Pro. Boston Soc. Nat. His. 12:1-15.
- Donagho, W.R. 1969. Field notes on Hawaii. 'Elepaio 29:72-73.
- Dunmire, W.W. 1959. Herring Gulls sighted on Hawaii. 'Elepaio 19:52.
- Henshaw, H.W. 1901. The occurrence of *Tringa maculata* and other American birds in Hawaii. Auk 18:202.
- Henshaw, H.W. 1902a. Birds of the Hawaiian Islands. Thos. G. Thrum, Honolulu.
- Henshaw, H.W. 1902b. Belted Kingfisher on the island of Hawaii. Auk 19:199.
- Henshaw, H.W. 1903. Occurrence of the Emperor Goose in Hawaii. Auk 20:164-167.
- Hoffman, W., J.A. Wiens, and J.M. Scott. 1978. Hybridization between gulls (*Larus glaucescens* and *L. occidentalis*) in the Pacific northwest. Auk 95:441-459.
- King, B. 1961. Field notes in Hawaii. 'Elepaio 22:1-3.
- King, W.B. 1967. Seabirds of the tropical Pacific Ocean. Smithsonian Instit. Washington, D.C.
- Kridler, E. 1973. Bird observations at Opauala and Aimakapa ponds. 'Elepaio 33:107.
- Medeiros, J.S. 1958. Present status of migratory waterfowl in Hawaii. J. of Wildl. Managm. 22:109-116.
- Mull, M.E. 1976. Osprey in Hilo. 'Elepaio 36:139.
- Munro, G.C. 1944. Birds of Hawaii. Charles E. Tuttle, Inc., Rutland, Vermont, and Tokyo.
- Munro, G.C. 1946. The Hawaiian bird survey of 1935-37. 'Elepaio 7:11-14.



- Nichols, W.F. 1978. Emperor Geese on Big Island. 'Elepaio 39:9.
- Northwood, R.P. 1975. Field notes. 'Elepaio 35:140-141.
- Paton, P.W.C. 1981. The Koloa (Hawaiian Duck) on the island of Hawaii. 'Elepaio 14:131-133.
- Paton, P.W.C. and L.H. MacIvor. 1983. Green Heron in Hawaii. Am. Birds 37:232-233.
- Paton, P.W.C., A. Taylor, and P. Ashman. 1984. Blue-winged Teal nesting in Hawaii. Condor 86:219.
- Perkins, R.C.L. 1893. Notes on collecting in Kona, Hawaii. Ibis 1893:110-114.
- Perkins, R.C.L. 1903. Vertabrata (Aves). David Sharp (ed.), in Fauna Hawaiiensis. 1(4):368-465. The Univ. Press. Cambridge, England.
- Pyle, R.L. 1977b. Recent observations of birds—August 1976 to February 1977. 'Elepaio 38:2-5.
- Pyle, R.L. 1977c. Recent observations of birds—March to July. 'Elepaio 38:56-58.
- Pyle, R.L. 1978a. Recent observations of birds—August to November. 'Elepaio 38:101-106.
- Pyle, R.L. 1978b. Recent observations of birds—December 1977 to February 1978. 'Elepaio 39:15-20.
- Pyle, R.L. 1979a. Hawaii bird observations—August 1978 through February 1979. 'Elepaio 40:13-16.
- Pyle, R.L. 1979b. Preliminary list of the birds of Hawaii, Amendment No. 1. 'Elepaio 40:55-58.
- Pyle, R.L. 1981. Hawaii bird observations—August 1979 through July 1980. 'Elepaio 41:72-78.
- Pyle, R.L. 1983a. Checklist of the birds of Hawaii. 'Elepaio 44:47-58.
- Pyle, R.L. 1983b. Hawaiian Islands region. Am. Birds 37:226-228.
- Pyle, R.L. 1983c. Hawaiian Islands region. Am. Birds 37:914-916.
- Pyle, R.L. 1984. Hawaiian Islands region. Am. Birds 38:249.
- Rothschild, W. 1893-1900. The avifauna of Laysan and the neighbor islands, R.H. Porter, London.
- Schwartz, C.W. and E.R. Schwartz. 1953. Notes on the Hawaiian Duck. Wilson Bull. 65:18-25.
- Scott, J.M., R.L. Pyle, and C.F. Zeilemaker. 1978. Similar species of migratory waterbirds in Hawaii. 'Elepaio 39:1-5.
- Scott, J.M., R.L. Pyle, and R. Coleman. 1983. Records of small white egrets in Hawaii and Samoa with notes on identification. 'Elepaio 43:79-82.
- Shallenberger, R. 1977. An ornithological survey of Hawaiian wetlands. U.S. Army, Engineer District, Honolulu.
- Shallenberger, R. 1981. Hawaii's birds. Hawaiian Audubon Society.
- Udvardy, M.D.F. 1961a. Unusual waterfowl observations. 'Elepaio 21:79-80.
- Udvardy, M.D.F. 1961b. Additions to the checklist of Hawaiian birds. 'Elepaio 21:83-90.
- United States Fish and Wildlife Service (USFWS). 1983. Republication of the lists of endangered and threatened species and corrections of technical errors in final rules. Fed. Reg. 50 (99):33767-33781.
- Vaughn, T.G. 1970. Field notes. 'Elepaio 30:88.
- Walker, R.L. 1962a. Field notes from the island of Hawaii. 'Elepaio 22:7.
- Walker, R.L. 1962b. Field notes from Hilo, Hawaii. 'Elepaio 23:8-9.
- Walker, R.L. 1963. Field notes from Hilo, Hawaii. 'Elepaio 23:31.
- Walker, R.L., E. Kridler, J.S. Medeiros, R.S. Saito, P. Sekora, G. Swedberg, T. Telfer, D. Woodside, C.F. Zeilemaker. 1977. Hawaiian Waterbirds Recovery Plan. U.S. Fish and Wildlife Service. Endangered Species Program. Portland, Oregon.
- Wilson, S.B. and A.H. Evans. 1890-1899. Aves Hawaiiensis; The birds of the Sandwich Islands. R.H. Porter, London.
- Zeilemaker, C.F. 1976. Field notes from Kauai, Maui, Molokai, and Hawaii; Dec. 1975 to Aug. 1976. 'Elepaio 37:63-65.
- Zeilemaker, C.F. 1977. Field notes from Kauai, Maui, Molokai, Hawaii and Midway, Sep. 1976 to Feb. 1977. 'Elepaio 38:5-7.

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## KAPIOLANI PARK FIELD TRIP REPORT - NOVEMBER 1984 -

The Society's November 1984 field trip took place on the 18th at Kapiolani Park, Oahu. After meeting the trip leader, Mike Ord, at 7:30 a.m., the group of about 12 birders set forth to explore the environs of the park. We were able to closely observe the usual exotic species in preparation for December's Christmas Count. These included Zebra and Spotted Doves, Pigeons (Rock Doves), House Sparrows, House Finches, Mynas, Red-Vented Bulbuls, and Red-Crested and Northern Cardinals.

Among the more unusual exotic species seen were Java Sparrows and Yellow-Fronted Canaries. Several Shama Thrushes were sighted in the trees at the base of Diamond Head and at least two Gray Francolins were heard calling from the slopes. A flock of parrots flew over the park several times, consisting of seven Amazon Red-Headed and one Double Yellow-Headed Parrots. Two Rose-Ringed Parakeets were also visible for a short time along the north edge of the park.

The native White Terns and wintering Golden Plovers were also seen throughout the park.

Although the sun rarely showed itself, there was hardly any rain, and we enjoyed a cool, pleasant morning.

Paul and Janice Sweet



## JANUARY MEETING REPORT

The 21 January 1984 membership meeting was a real blockbuster, featuring the former native of the Sacramento Valley, Andrew Engilis, Jr., now of the Vertebrate Zoology Division of Bishop Museum. He presented a slide and talk show: "A Change of Seasons in the Sacramento Valley of California".

With two slide projectors working simultaneously, he showed and described the 450-mile Central Valley of California with its diversity of climates and habitats, ranging from hardwood to chaparral to riparian, savanna, and marsh, and its myriad of plants, birds, and other animals, migrant and native. While 90% of the native vegetation is gone, the Valley is still rich in its biota. Winter offers an influx of migrant waterfowl, from Snow Geese and two species of Canada Geese, to 250,000 Pintails. Spring ushers in shore birds of many varieties, Marsh Hawks, and yellow flowers which cast a golden glow over the Valley. Summer migrant or native song birds of many species abound, from hummingbirds to the endangered Yellow-billed Cuckoo. Mammals weren't overlooked either, from the rare bobcat to the opossum, beaver, raccoon, and river otter. Snakes, skinks, and tree frogs were also pictured. While the fall harvest season wreaks havoc on many birds and other animals, many survive.

This was an absorbing program with anecdotes (did you know that mistletoe propagates only through its seeds passing through the digestive system of birds?) and little known facts about the pictured plants, birds and mammals.

Betty L. Johnson

## WAIKIKI AQUARIUM

## "SPRING INTO LEARNING"

The Waikiki Aquarium announces its spring 1985 educational offerings for adults and families. "SPRING INTO LEARNING" and enjoy fascinating day and night reef walks, courses on sharks, Hawaiian seaweeds, marine aquarium set-up, miniature reef life, the biology of Hawaiian fishes, and more. Brochures and registration information are available; please call or write the Waikiki Aquarium Education Section, 2777 Kalakaua Ave, Honolulu, Hawaii 96815; phone (808)923-9741.

## PAY YOUR 1985 DUES

All local and subscriber memberships expired on 31 December, 1984. Dues for local Hawaii members or non-resident subscribers should be paid immediately, in order to retain 1985 membership and to continue receiving the 'Elepaio. Mail your \$6.00 1985 dues to: Hawaii Audubon Society, P.O. Box 22832, Honolulu, Hawaii 96822.

Do not send us a check if you have paid 1985 joint membership dues (\$30.00) to National Audubon, since our local chapter dues are included in that amount.

## MAUI FIELD TRIPS:

## KANAHA AND WAIKAMOI

There will be two field trips in early 1985 on Maui. The first will be on February 10 to Kanaha Pond. Dr. Cameron Kepler, U.S. Fish and Wildlife representative on Maui will lead the group into the refuge between Kahului and the Kahului Airport. The meeting place will be at the observation hut at 9 a.m. The second outing will be into the Nature Conservancy's Waikamoi Preserve, "Maui's Forest Bird Heartland". Reservations are required for this March 10 trip, as the number of participants must be limited. Call Terry Quisenberry, Preserve Manager 575-2747 or Mary Evanson 572-9724 to save a spot.

## 5-YEAR INDEX

## NOW AVAILABLE!

The 5-year 'Elepaio index (for Volumes 36-40) is now available. It may be obtained by sending a \$2.00 check or money order (made out to "Hawaii Audubon Society") to: Hawaii Audubon Society, P.O. Box 22832, Honolulu, Hawaii 96822. This small fee covers the cost of reproducing the index and also includes postage.

A big "Mahalo" to Sol Cushman, who compiled this 5-year index, and did such an expert job. Also our thanks to Susan Schenck, who compiles our yearly indices, without which there would be no 5-year index!



## FEBRUARY PROGRAM: WILDLIFE IN EAST AFRICA

Craig Harrison, a biologist who has studied seabirds in the Northwest Hawaiian Islands and who is now also a Honolulu attorney, will present "Wildlife in East Africa", a slide-illustrated talk on the natural history of a region whose wildlife has fascinated the world and has been a focus of some international conservation efforts. The program will include a discussion of changes that Mr. Harrison has observed in that region between the early 1970's and 1984.

The meeting will be held at the McCully-Moiliili Library, at 2211 S. King St., Honolulu, beginning at 7:30 p.m. on Monday, 25 February 1985. Everyone welcome!

## FEBRUARY FIELD TRIP: NATIONAL WILDLIFE REFUGE

The Sunday, 10 February field trip will be a volunteer effort to clean unwanted weeds off of the endangered Hawaiian Stilt nesting ponds at James Campbell National Wildlife Refuge near Kahuku.

Participants should bring lunch, water, a hat, sunscreen, old clothes, tabs or old sneakers, and hand tools (e.g., machete, hoe, shovel, or garden tools). YOU WILL GET WET AND DIRTY, so come prepared.

Meet at the State Library at 7:30 a.m. for carpooling, or at the entrance to the Old Sugar Mill at Kahuku at 8:30 a.m.

The leader for this trip is Jim Krakowski; for more information call him at 545-5608 (work) or 537-4633 (home).

## BACK ISSUES OF 'ELEPAIO

Current prices for back issues of *'Elepaio* are listed below. Actual postage charges for shipping will also be added on to these prices.

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## HELP WITH 'ELEPAIO

The March issue of the *'Elepaio* will be put together the 23rd of February (Sat.) at 1415 Victoria St., beginning at noon. Call Marie at 533-7530. Help is always needed and welcome! Proofreaders and typists are especially needed to help out prior to the 23rd.

## PUBLICATIONS OF THE SOCIETY

HAWAII'S BIRDS by the Society (1984). This is the best field guide to our birds, and includes colored illustrations of all native and well-established nonnative species..... \$4.95 plus postage: 85¢ (surface mail) or \$1.03 (air). Hawaii residents only: add 20¢ for tax.

FIELD CHECKLIST OF BIRDS OF HAWAII by R. L. Pyle (1976). A pocket-size field card listing 125 species found in Hawaii with space for notes of field trips.  
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GUIDE TO HAWAIIAN BIRDING by members of the Society and edited by C. J. Ralph (1977). Where to go and some idea of what you are likely to see. For the islands of Kauai, Oahu, Lanai, Molokai, Maui and Hawaii  
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# CALENDAR OF EVENTS

- Feb. 10 (Sun.) Field trip to work at the Nat. Wildlife Refuge in Kahuku. See page 78. Call Jim Krakowski (546-5608) for info.
- Feb. 10 (Sun.) MAUI. Field trip to Kanaha Pond. See page 77. Call Cam Kepler (878-1418) for information.
- Feb. 18 (Mon.) Board meeting at the home of Sheila Conant, 7:00 p.m., 3663 Alani Drive (Telephone 988-3960).
- Feb. 25 (Mon.) General meeting at McCully-Moiliili Library, 2211 S. King St. Speaker will be Craig Harrison, on *Wildlife in East Africa*. See page 78. Meeting starts at 7:30 p.m.
- Mar. 10 (Sun.) MAUI. Field trip to Waikamoi Preserve. See page 77.

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HONOLULU, HAWAII 96822

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