



Daily Activity Cycles of Introduced Hawaiian Birds at an Urban Roost

by Jeffrey E. Lovich

INTRODUCTION

In most areas of the Hawaiian Islands, particularly those near urban centers, introduced birds completely replace endemics. Their presence permits a unique opportunity to examine interactions among species that were formerly widely separated geographically. Yet, in spite of their conspicuous abundance, little is known regarding the biology of Hawaii's introduced birds. This study sought to determine daily movement patterns and behavior of several species of introduced birds in relation to a single banyan tree.

METHODS AND MATERIALS

Observations were conducted between 11-22 January, 1983 during daylight hours extending from approximately 0645 to 1845 hrs. This 12-hour period was divided into 24 half-hour intervals. During these intervals all birds arriving and departing from a large banyan tree (*Ficus*) were identified and enumerated. The tree, located in the parking lot of the Honolulu Police Station, had a broad spreading canopy approximately 24 m in diameter. All branches were densely foliated. Another banyan identical in size to the first was located about 80 m away. In addition to these large trees, there were also several smaller trees and shrubs nearby. Large buildings defined two sides of the parking lot, and the ground surface for many blocks around was concrete or asphalt. Throughout the study period the weather remained clear and relatively calm with temperatures ranging from about 18 to 26° C.

RESULTS AND DISCUSSION

During the course of this study eight species of exotic birds were observed utilizing the banyan tree for roosting, feeding, nesting, and concealment. It is estimated that more than 1500 birds roosted in the tree between dusk and dawn. Several species utilized the tree only during well defined intervals of the day. The activity cycles and behavior of the most abundant species are discussed below (also see Table 1).

The Common Myna (*Acridotheres tristis*) occurred in the greatest numbers. They became active just before daylight and their raucous calling produced a din that could be heard for many blocks. By 0645 hrs. they began leaving the tree in great numbers and by 0700 hrs. nearly 1000 had left. Mynas were rarely seen for the rest of the day until 1700 hrs. when they began returning to the tree to roost.

During the day mynas were very conspicuous in nearby parks and yards where they spent most of their time feeding (Frings and Conant 1965). This type of roosting behavior, with large

aggregations and sharply defined dispersal periods, is typical for mynas (Anon. 1965; Frings 1965; Frings and Conant 1965; Berger 1981).

As the mynans returned in the evening, they were frequently seen to perch on nearby buildings before flying to the banyan tree. Ward and Zahavi (1973) observed that incoming birds frequently gather at such prominent "assembly points" before landing at the roost. When they flew to areas of the tree that were already occupied, squabbles often ensued. This was usually followed by avoidance and the intruder would either move to another branch or fly to the other banyan tree. Berger (1981) noted that mynas frequently return to their roost singly and in small flocks. During the course of this study they were rarely observed returning alone, but instead returned in pairs and small flocks, which agrees with observations made by Frings (1965).

The House Sparrow (*Passer domesticus*) also utilized the tree, primarily for roosting. Their daily activity pattern was very similar to that of the mynas in that they left the tree in great numbers very early and then returned before dark. By 0700 hrs. more than 450 departed, which was one-half hour later than the vast majority of mynas. The largest number of incoming birds was observed one-half hour before large numbers of mynas began to fly in for the night. Small numbers of sparrows were observed in the tree during all intervals between dawn and dusk in contrast with the conspicuous absence of mynas during the day.

Activity cycles for the two species of doves that utilized the tree were not as sharply defined. The Spotted Dove (*Streptopelia chinensis*), which is the larger of the two, was seen in the banyan



Common Mynas at Kailua, Oahu.

Photo by Greg Vaughn

| Time | Common Mynas | | House Sparrows | | Spotted Doves | | Zebra Doves | |
|------|--------------|-----|----------------|-----|---------------|---|-------------|---|
| | A | D | A | D | A | D | A | D |
| 0630 | 10 | 949 | — | 19 | — | — | — | — |
| 0700 | 5 | 37 | 9 | 455 | 5 | 2 | — | — |
| 0730 | — | — | 2 | 15 | 1 | 5 | — | — |
| 0800 | — | — | 5 | 2 | 2 | 2 | 2 | — |
| 0830 | — | — | — | 1 | 5 | 4 | 7 | 2 |
| 0900 | — | — | — | 1 | 10 | 4 | 7 | 6 |
| 0930 | — | — | 1 | 5 | 1 | 3 | 4 | 4 |
| 1000 | — | — | 6 | 1 | — | 1 | 3 | 1 |
| 1030 | — | — | 6 | 7 | 2 | 2 | 8 | 4 |
| 1100 | — | — | 5 | 3 | 6 | 4 | 7 | 2 |
| 1130 | — | — | 1 | 3 | 2 | 2 | 3 | 4 |
| 1200 | — | — | — | — | — | — | 2 | — |
| 1230 | — | — | 1 | 3 | 2 | 2 | — | 3 |
| 1300 | — | — | — | 3 | 1 | 3 | 1 | — |
| 1330 | — | — | — | — | 2 | 1 | — | — |
| 1400 | — | — | — | — | 3 | 1 | — | — |
| 1430 | — | — | 2 | — | 1 | 6 | 3 | 1 |
| 1500 | — | — | — | — | 4 | 3 | — | — |
| 1530 | — | — | 1 | — | 4 | 1 | 1 | — |
| 1600 | — | — | 6 | — | 1 | 4 | — | 1 |
| 1630 | 1 | — | 30 | 10 | 2 | 1 | — | — |
| 1700 | 16 | 1 | 432 | 16 | 4 | 5 | — | — |
| 1730 | 1261 | 40 | 78 | 1 | — | 3 | — | — |

Table 1. Daily activity cycles of the birds observed in this study as shown by the numbers arriving at (=A) and departing from (=D) an urban roost.

throughout the day. It was also the only bird observed returning to the tree with nesting material. Many were also seen, along with Zebra Doves (*Geopelia striata*), feeding beneath the tree. Since these doves are primarily ground feeders, they are exposed to terrestrial predators such as feral cats. The banyan would thus serve as a convenient refuge in the event of danger. Both species were seen to fly into the tree when pedestrians or automobiles frightened them. Feeding activity resumed when the disturbance had passed. Zebra Doves were observed in greatest numbers during morning hours.

Several other birds were occasionally seen in or near the banyan tree. Red-vented and Red-whiskered Bulbuls (*Pycnonotus cafer* and *P. jocosus*, respectively) were observed chasing insects in the trees. Red-crested Cardinals (*Paroaria coronata*) were sometimes seen foraging beneath the banyan. The Japanese White-eye (*Zosterops japonicus*) was only observed three times in the vicinity of the banyan. Ward and Zahavi (1973) summarized data which indicated that some species of white-eyes form communal roosts only during parts of the year when fruit is plentiful. For the rest of the year they roost singly and feed on insects.

Most previous studies concerning roosting behavior of introduced Hawaiian birds deal with single species (Anon. 1965; Frings 1965; Frings and Conant 1965; Eddinger 1967; Bremer 1977). In addition, interactions among Hawaii's introduced birds have been poorly documented. Data collected during the present study suggests strong temporal partitioning among several species of introduced birds in this urban environment. The different activity cycles may lessen competitive interactions between the various species of birds that utilize the banyan tree.

ACKNOWLEDGMENTS

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WAIPIO, O'AHU, CHRISTMAS BIRD COUNT -1985-

David Bremer

The 1985 Waipio CBC was conducted on Saturday, 12 December, with clear skies, mild temperatures, and light winds. An overall record of 8699 birds tallied was offset by an unusually low waterbird count, apparently due to insufficient water in the Waipio Peninsula ponds. A well-documented account of the first Waipio CBC observation of the O'ahu Creeper, *Paroreomyza maculata*, highlighted the day.

Two O'ahu Creepers were seen feeding in leaf axils of a flowering Koa tree about 50 to 60 feet from the party. The 1-2 minute, 08:15 AM sighting occurred in excellent light at about 1500 ft. elevation an hour from the trail head with the birds situated on the side of a ravine about 15 feet below the trail. The two birds remained together and flew up the canyon out of sight. Their movements were described as deliberate but quick, creeping up the dead Koa branches probing the bark.

Although only one observer, Wayne Gagne, in the Poamoho Trail party had previously seen the O'ahu Creeper, which is quite similar to and often confused with the 'Amakihi, the thorough field notes and sketch by Andy Engilis attest to the reliability of the sighting: "Crown, head, olive-green/grey; auricular lighter olive-green/grey; did not see forehead well; no malar markings; eye was dark; superciliary line whitish beginning with white lores trailing to auricle; eye-line dark behind eye only; no olive or black on lores; no eye-ring; mandibles straighter and appeared lighter than 'Amakihi's, color not seen. The entire upperparts were of an olive-green/grey fading into lighter underparts; chin, throat whitish; upperbreast, belly, and flanks dingy white; definite two toned bird; there may have been a hint of yellow on the crissum and belly, but could not be sure. Wing - basic color darker olive-green/grey; two bold wing bars on both birds, one bird's bars were bolder; bars connected at bottom; no black between bars; no other markings on wing. Rectrices - short, same color as back; fine notch, but for the most part squared; no markings. Legs and feet - dark and longish; noticed leg length when bird fed on Koa branches. Vocalization not heard."

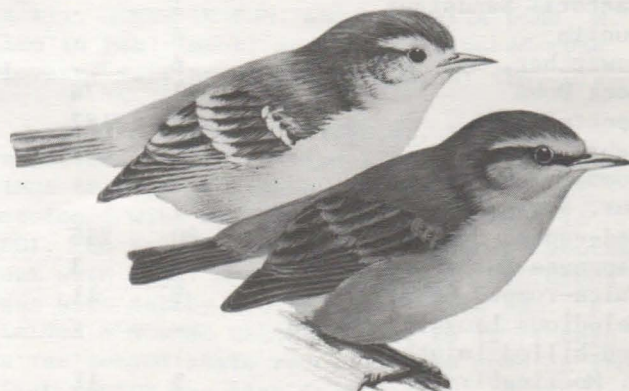
Compared with the 'Amakihi (the party counted 14 'Amakihi), the Oahu Creeper "had a very distinct look about them, plump, long-legged, thin-billed. 'Amakihi look bigger headed and their bill curves deeply. We saw 'Amakihi in the same Koa grove; they were different. When young the 'Amakihi have wing bars, but they are also dark on the chin and throat. There is an olive-yellow wash on the entire underparts of the 'Amakihi. These birds (Creeper) were clearly two-toned. Coupled with the white lores ('Amakihi do not have white lores) and superciliary line and wing bars and behavior, we all decided these birds were O'ahu Creeper."

Other notable observations by the Poamoho party included a Red-billed Leiothrix, a Melodious Laughing-thrush, and 83 'Apapane. Six of the 'Apapane were found before reaching the trail and were included in the Sector 4 count. The 'Elepaio has not been observed on the Poamoho CBC since 1980. Because neither Kipapa nor Palehua trails were covered this year, the 'Elepaio was absent from this year's count.

The Manana trail party observed 5 Yellow-faced Grassquits, noting that the crown and belly were not as dark as pictured in Hawaii's Birds. The party also heard what they suspected was the Red-billed Leiothrix, but not being certain, the bird was not included in the official count.

The west pond area of Waipio Peninsula was nearly dry this year with only two ducks (N. Pintail), no American Coots, and 5 Black-necked Stilts, but several species of shorebirds were seen. Eight Koloa, 8 stilts, and 3 coots were found in the south and east portions of the peninsula. At Honouliuli, more ducks (28 N. Shoveler, 1 N. Pintail, and 9 Koloa), 2 coots, 2 moorhens, and 8 stilts were counted. The Waiawa refuge had 6 coots, 10 stilts, the Osprey, and, at night, a Common Barn-Owl. The Joao's found 14 more stilts in wetlands adjacent to residential areas in south Waipahu. Ten coots, a Common Moorhen, a Koloa, and a scaup were present on two small reservoirs in the area scheduled to be developed as Waikele and Waiola housing tracts.

Among urban birds, increased numbers of Red-vented Bulbuls, Eurasian Skylarks, Java Sparrows, Chestnut and Nutmeg Mannikins, and Common Waxbills were reported. Two Java Sparrows were found at Schofield, the remaining 192 were in the Pearl Ridge and Pearl City area.



Oahu Creeper - male (foreground) and female.

Painting by H. Douglas Pratt

Observers

- Party A: Mike Ord, Robert Pyle
- Party B: Eugene, Peter, and Rita Donaldson
- Party C: Margaret Floyd, Jay Munns, Maura O'Connor, Jan Rensel, Jill Sondeen
- Party D: Andrew Engilis, Wayne Gagne, Cynthia and Jim Krakowski, Carl McIntosh
- Party E: David and Sarah Bremer
- Party F: John O'Brien, Nani Parker
- Party G: David Cooper, O.K. and Rhonda Anderson
- Party H: Arthur and Betty Joao

1985 WAIPIO, OAHU, CHRISTMAS BIRD COUNT

| SPECIES OBSERVED IN 1985 | 1985 SECTOR COUNTS | | | | | | ANNUAL TOTALS | | |
|---------------------------|--------------------|------|-----|------|-----|-----|---------------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 1985 | 1984 | 1983 |
| Cattle Egret | 53 | 57 | 1 | 19 | 8 | 25 | 163 | 285 | 215 |
| Black-crowned Night-Heron | 4 | . | . | . | . | 1 | 5 | 22 | 25 |
| Hawaiian Duck | 17 | 1 | . | . | . | . | 18 | 20 | 8 |
| N. Pintail | 3 | . | . | . | . | . | 3 | 6 | 12 |
| N. Shoveler | 28 | . | . | . | . | . | 28 | 46 | 51 |
| scaup, sp. | . | 1 | . | . | . | . | 1 | . | . |
| Osprey | 1 | . | . | . | . | . | 1 | . | 1 |
| Erckel Francolin | . | . | . | . | 1 | . | 1 | 6 | . |
| Ring-necked Pheasant | 1 | . | . | . | . | . | 1 | 1 | 1 |
| Com. (HI.) Moorhen | 2 | 1 | . | . | . | . | 3 | 6 | 3 |
| Am. (HI.) Coot | 11 | 10 | . | . | . | . | 21 | 61 | 118 |
| Lesser Golden-Plover | 123 | 106 | . | 112 | 93 | 17 | 451 | 508 | 416 |
| Semipalmated Plover | 1 | . | . | . | . | . | 1 | . | . |
| Black-necked (HI.) Stilt | 31 | 14 | . | . | . | . | 45 | 173 | 191 |
| Lesser Yellowlegs | 2 | . | . | . | . | . | 2 | . | . |
| Wandering Tattler | 9 | 5 | . | . | . | . | 14 | 14 | 9 |
| Ruddy Turnstone | 58 | 8 | . | . | 2 | . | 68 | 74 | 30 |
| Sanderling | 97 | . | . | . | . | . | 97 | 74 | 57 |
| Pectoral Sandpiper | 1 | . | . | . | . | . | 1 | 2 | 1 |
| Dunlin | 4 | . | . | . | . | . | 4 | 2 | 4 |
| dowitcher, sp. | 6 | . | . | . | . | . | 6 | 4 | . |
| Rock Dove | 11 | 74 | . | 7 | 21 | 3 | 116 | 104 | 73 |
| Spotted Dove | 58 | 187 | 24 | 64 | 18 | 51 | 402 | 447 | 444 |
| Zebra Dove | 88 | 248 | . | 212 | 32 | 66 | 646 | 1054 | 875 |
| Common Barn-Owl | 1 | . | . | . | . | . | 1 | . | 4 |
| Eur. Skylark | 21 | . | . | 7 | 21 | 1 | 50 | 38 | 18 |
| Red-vented Bulbul | 80 | 256 | 44 | 109 | 32 | 20 | 541 | 467 | 409 |
| Japanese Bush-Warbler | . | 3 | 26 | 14 | 10 | . | 53 | 29 | 17 |
| White-rumped Shama | 9 | 11 | 30 | 25 | 2 | 1 | 78 | 78 | 88 |
| Melodious Laughing-thrush | . | . | 1 | . | . | . | 1 | . | . |
| Red-billed Leiothrix | . | . | 1 | . | . | . | 1 | 2 | . |
| N. Mockingbird | 5 | 11 | . | 5 | 2 | . | 23 | 7 | 2 |
| Com. Myna | 98 | 568 | 2 | 345 | 185 | 36 | 1234 | 1475 | 1333 |
| Japanese White-eye | 29 | 183 | 204 | 139 | 32 | 46 | 633 | 657 | 606 |
| N. Cardinal | 23 | 52 | 28 | 19 | 18 | 4 | 144 | 124 | 144 |
| Red-crested Cardinal | 35 | 128 | 1 | 53 | 23 | 14 | 254 | 285 | 268 |
| House Finch | 53 | 150 | 74 | 75 | 27 | 3 | 382 | 484 | 209 |
| Com. (Oahu) 'Amakihi | . | . | 14 | . | . | . | 14 | 59 | 15 |
| Hawaii (Oahu) Creeper | . | . | 2 | . | . | . | 2 | . | . |
| 'Apapane | . | . | 77 | 6 | . | . | 83 | 114 | 116 |
| House Sparrow | 24 | 879 | . | 294 | 72 | 116 | 1385 | 1419 | 1208 |
| Com. Waxbill | 110 | 85 | . | 4 | . | . | 199 | 56 | 18 |
| Red Avadavat | 25 | 22 | . | 11 | . | . | 58 | 67 | 58 |
| Nutmeg Mannikin | 70 | 91 | 3 | 140 | . | . | 304 | 131 | 163 |
| Chestnut Mannikin | 279 | 495 | . | 111 | . | 77 | 962 | 94 | 364 |
| Java Sparrow | . | 192 | . | . | 2 | . | 194 | 68 | 5 |
| Yellow-faced Grassquit | . | . | 5 | . | . | . | 5 | . | 5 |
| TOTAL INDIVIDUALS | 1471 | 3838 | 537 | 1771 | 601 | 481 | 8699 | 8589 | 7612 |
| TOTAL SPECIES | 37 | 27 | 17 | 21 | 19 | 16 | 47 | 48 | 49 |

Sectors Covered

1. Waipio Peninsula and Honouliuli National Wildlife Refuge (Party A); Waiawa National Wildlife Refuge (Party B)
2. Pearl Ridge-Pearl City (Party B); Seaview-Crestview (Party E); Waipahu (Party H)
3. Manana Trail (Party C); Poamoho Trail (Party D)
4. Mililani (Party E); Wahiawa (Party F)
5. Schofield-Wheeler (Party G)
6. Kunia Plain (Party H)

There were 24 observers in 8 parties. Total party-hours were 56: 29 by foot, 27 by car, plus 1.5 hours owling. Total party-miles were 246: 23 on foot, 223 by car.

Habitat coverage (% of party-hours): low-land woods, scrub 30%; parks, residential 27%; mountain forests 27%; wetlands 9%; and agricultural 7%.

RECENT OBSERVATIONS

DECEMBER 1985 - FEBRUARY 1986

This article is excerpted from Bob Pyle's record of bird observations for the Hawaiian Islands. Refer to future issues of American Birds for a full account.

ABBREVIATIONS - FFS=French Frigate Shoals; H.=Hawaii I.; K.=Kauai I.; M.=Maui I.; Mo.=Molokai I.; O.=Oahu I.; JCNWR= James Campbell National Wildlife Refuge, O.; KMCAS=Kaneohe Marine Corps Air Station, O.; PHNWR=Pearl Harbor NWR, O.; PMRBS=Pacific Missile Range Facility at Barking Sands, K.

SEABIRDS - The invasion of Laysan Albatross colonizing Kauai and Oahu continued unabated this winter with 22 nests started at PMRBS in mid-Dec. and 9 near Kilauea, K. (DM). By the end of March these had been reduced to 7 and 3, respectively. Most nest attrition was blamed on the lack of experience of these presumably young parents, that are believed to have been forced out of saturated nesting colonies in the Northwest Hawaiian Islands. Up to a dozen birds were seen at Dillingham Airfield, O. during the spring, causing enough anxiety among pilots using the strip that some birds were eventually removed by State wildlife biologists to Sealife Park. This species also visited Kaena Point and KMCAS. A pair that may have been nesting was seen at Ilio Pt., Mo. (MS).

Leach Storm-Petrel, a species rarely recorded from Hawaii, turned up twice at FFS. One was found freshly dead on the morning of Feb. 17 aboard a small boat off Disappearing Is. (KM); the other, grounded on Tern I., was identified before being released (RV, *et al.*).

Seven gulls were recorded this winter: an adult Laughing Gull at Kanaha Pond, M., Nov.-Mar. (m.ob); 2 Ring-billed Gulls at Kanaha Pond in early Feb.-Mar. (m.ob) and a third, in first winter plumage, at Kealia Pond, M. on Feb. 4 (RD) disappeared after its discovery; 2 *Larus* sp. at Waita Res., K. on Jan. 15 (TT); and another unidentified gull observed at Tern I., FFS in Dec. (RV,JS) and later found dead awaits species confirmation.

The Caspian Tern at KMCAS remained at least until the end of Jan. (DD,RLP). A Least/Little Tern appeared at Waiawa, PHNWR on Jan. 10 (JK).

SHOREBIRDS - Two uncommon shorebirds seen this winter were lone Black-bellied Plovers at Kii, JCNWR in Feb. and at Kealia Pond, M. also in Feb. (m.ob) and 2 Semipalmated-type Plovers visiting Aimakapa Pond, H. (RD,JL).

GREBES, HERONS, WATERFOWL, AND RAILS - The breeding pair of Pied-billed Grebes continue to nest at Aimakapa Pond, H. A nest was found with at least one egg on Dec. 14 (RD). On Feb. 15 an adult was seen on another nest with eggs, and 2 immatures of different ages were nearby (RD,PD,RLP). Mana Res., K. yielded a HORNED GREBE on Jan. 15 (TT); this is the second state record of the species (the first record was also from Kauai).

A Great Blue Heron, sighted earlier this season on Hawaii and Maui Is., turned up at Kakahaia NWR, Mo. on Dec. 12 and Jan. 15 (DW, JK). Later, Feb. 28, one was reported at Kealia Pond, M. (GY). Whether these sightings represent one or more birds is unknown.

Molokai can now be added to the growing list of islands reached by the population of Fulvous Whistling-Ducks expanding from Oahu. One was seen at Kakahaia NWR on Jan. 15 (DW) and Mar. 1 (GY).

A small White-fronted Goose at Waiakea Park in Hilo, H. Jan. 11 and Feb. (RD) may have been an escape. Reports of Brant included single birds wintering at Aimakapa Pond, H. (RD) and at Kakahaia NWR, Mo. (Dec. 5 into Mar. DW, *et al.*); 2 found at KMACS Dec. 5 (DD), and one there Jan. 16 (DD); and 2 at a small ephemeral pond on Kalaupapa Pen., Mo. Jan. 9 (AE). Whether these geese were moving between islands is not known. Six Canada Geese wintered at

Amorient Ponds, O. (PB, *et al.*). Five were identified as belonging to the Cackling and Taverner subspecies, while the sixth might be the endangered Aleutian Is. race. A lone Cackler was discovered on Jan 3 (JL) and Jan. 10 (RD) at Whittington Park, H., but it had disappeared by Jan. 22 (JL).

Unusual sightings of ducks included 9 Ring-necked Ducks at Punamano, JCNWR on Feb. 7 (PD, RLP), and a female-plumaged COMMON GOLDENEYE, the first state record for the species, at Kealia Pond, M. Feb. 4, 14, and 23 (RD, PD, AE, *et al.*). A goldeneye seen earlier, Dec. 5, at Paialoa Pond, Mo. but not identified to species (JK), was probably the same individual.

RAPTORS AND GAMEBIRDS - Sandgrouse, though common on the Waimea Plains of the Big Island, seldom provide opportunities for observation. The usual view is of single birds, pairs, or small parties flying at 50m altitude over the Mamalahoa Highway on their early morning or late afternoon trips to some distant source of water. These thirsty commuters have long been assumed to be Chestnut-bellied Sandgrouse, the identification placed on the large number of sandgrouse released on the Big Islnd by the Division of Fish & Game in the early 1960's. This species resembles the Black-bellied Sandgrouse, with which it shares its native range in Asia and Africa. Recent observations by at least five different observers suggest that both species may be present on Hawaii. Birders wishing to join the search should refer to "The Birds of Britain and Europe" by Heinzel, Fitter, and Parslow for excellent comparative illustrations and descriptions of these two sandgrouse.

A Mourning Dove at Pohakuloa, H. Jan. 29 (FD) was far from this species' main range in S. Kohala and N. Kona.

A Short-eared Owl was seen at Laysan I. Feb. 27 (MM *fide* KM).

NATIVE SONGBIRDS - An 'Elepaio at Pohakuloa, H. Dec. 3 (FD) was a rare occurrence in this flat shrubland generally outside the range of the Mauna Kea population.

Two lucky hikers (AN, AW) sighted a Kama'o quietly foraging in a shrub along the Pihea/Kawailoa Trails, K. on Feb. 16. This is the fourth report of this critically endangered species from this area in recent years.

The semiannual count of Palila on the slopes of Mauna Kea Feb. 25-27 yielded a population estimate of 2,221 birds, up from the estimate of 1,317 last winter (SM).

After last November's observation of the critically endangered NUKUPU'U in upper Hanawi, M., the species was sighted there on two more

surveys. ME and JW studied a brightly plumaged male as it joined a foraging flock of 'Amakihi, Maui Creeper, and Maui Parrotbills on Jan. 7. A second male, also in a mixed species flock, was spotted by BG on Mar. 6; this may have been a different bird as it was on a separate ridge.

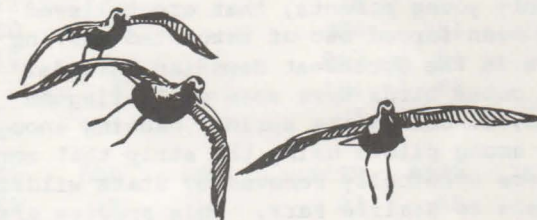
During the Palila Survey Feb. 27, a family of 'Akaipola'au was observed for 45min while they foraged through mamane parkland at Kanaka-leonui (TP). The family included an adult male, adult female, and a juvenile that, although it could feed itself, begged unsuccessfully from its mother. This sighting may indicate that 'Akiapola'au still breed in the relict forest on the upper eastern slopes of Mauna Kea.

INTRODUCED SONGBIRDS - A EUROPEAN STARLING found Dec. 22 on this year's CBC at Sand I. Park adjoining Honolulu Harbor (PD) was at the same locality where PD found Oahu's first reported starling on the 1980 Honolulu CBC.

Two uncommon estrildids, the Red-cheeked Cordonbleu and Lavender Waxbill, continue to hang on at Puuanahulu, H., where RD saw 1 and 2, respectively, on Jan. 19. Another 3 Lavender Waxbills showed up at RD's feeder in Kailua, Kona Jan. 17. The Honolulu CBC yielded 6 Warbling Silverbills in Niu Valley and 4 in Palolo Valley; silverbills had not been seen on Oahu since the first sighting in 1984.

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Robert L. Pyle



NO NA LEO 'OLE

PROPOSED CHANGES IN STATE WILDLIFE REGULATIONS

Editors' Note: Big Island Representative Mae Mull presented the following testimony at the public hearing held in Hilo, Hawaii on April 28, 1986 by the Department of Land and Natural Resources, Division of Forestry and Wildlife on proposed amendments to Chapter 124, Rules Regulating the Management and Protection of Indigenous Wildlife, Endangered and Threatened Wildlife and Plants, and Introduced Wild Birds.

The Hawaii Audubon Society recognizes that certain wild birds become obnoxious and constitute a threat to agricultural and aquacultural crops, a threat to human safety and a threat to endangered Hawaiian waterbirds.

The Society agrees that control of obnoxious wild birds is necessary. We firmly support a strictly-regulated permit process for such wildlife control under the Division of Forestry and Wildlife (hereafter "Division").

The Society is strongly opposed to the proposed amendment (Chapter 13-124-7(5)) of the existing regulations that would allow the destruction of certain wild birds without a permit of any kind. To allow open shooting or any other uncontrolled destruction of wild birds is to put indigenous wildlife and native birds at great risk. A basic problem is bird identification. Who among the shooters or trappers will know, or care, or distinguish between destructive bulbuls or noisy mynas and the native thrushes?

Another undesirable consequence of allowing shooting without a permit is that, in effect, you give a free and unfettered license to the ignorant, the uncaring and the unscrupulous to shoot any wildlife. This must not happen.

The proposed amendment would allow free shooting of a two-page-long list of Department of Agriculture "prohibited entry" birds without the knowledge or advice of any State official. For example, all species of falcons, all species of hawks ("except for exhibition") and all species of "Honey Creepers" are on that list of birds that could be shot without a permit. Yet falcons, hawks and honeycreepers are among Hawaii's indigenous wildlife. The migratory Peregrine Falcon, Marsh Hawk and Osprey have been observed a number of times in Hawaii. Yet, under the proposed amendment, anyone could shoot these raptors with impunity.

Four different species of crows are listed that could be shot without a permit. Could a Kona shooter kill the last Hawaiian Crow and claim he thought it was a Common Crow -- which would be perfectly legal to kill?

These illustrations of potential tragedy demonstrate how essential it is that State Wildlife and Enforcement officers keep strict control over all shooting of any wildlife. For public safety, as well as for native wildlife protection, Division officers need to know WHO is shooting wildlife, WHAT wildlife is being shot, WHERE the shooting is taking place, WHEN, HOW MANY individuals are shot, and HOW the kill is disposed of. Wildlife control is public health and safety business and it must be strictly regulated -- so that Division officers can educate and advise those who come seeking permits for obnoxious wildlife control.

The Hawaii Audubon Society was founded in 1939 in Honolulu by a band of citizens outraged at the free shooting of wild birds. Cardinals were the targets of BB guns aimed by boys in residential areas. Ducks, plovers, other migratory birds, coots and gallinules were being shot openly. Through the Society's persistent efforts, the Territorial Legislature passed laws giving all wild birds full protection. Pestiferous birds could be controlled through the permit process. Continuing public support of these sound regulations for forty-five years should not be easily dismissed. They give the public and native birds the protection they require.

Concerning the native Black-crowned Night Heron, or 'Auku'u, the Society agrees that the Kahuku, Oahu prawn farmers should be given relief from the predations of 'Auku'u at the prawn ponds. Apparently, the 'Auku'u population has dramatically increased at that location because of the bounteous food supply. But the stringent permit process should continue, with careful attention given to the recommendations of knowledgeable wildlife biologists on the methods used and the number of 'Auku'u to be destroyed. No farmer should get an open-ended permit to kill whatever number he wants. The take must be strictly regulated, based on the impact on the 'Auku'u population size of the region.

The endangered Hawaiian Stilt is also a visitor to those ponds, so special care must be taken that none is shot.

Cattle Egrets at Hilo Airport and at other island airports are a continuing safety hazard as potential aircraft strikes. Also, in some coastal habitats these alien egrets threaten the Hawaiian Stilt by predation on eggs and young. Division wildlife officers should give eradication advice and assistance to land managers at affected locations.

The Society recommends the retention of the permit process for control of all noxious wildlife, but the process for control of na-

tive wildlife should be far more stringent than for control of alien wildlife.

Thank you for the opportunity to present this statement.

FISHERIES EXPLOITATION AT FRENCH FRIGATE SHOALS

Recently, interest has intensified to expand exploitation of fisheries in the Northwestern Hawaiian Islands through development of a fisheries support base. HAS Conservation Committee Chair Wayne Gagné testified against related bills introduced to the State House and Senate. Excerpted below is his testimony on S.C.R. 54 & S.R. 77 entitled "REQUESTING THE GOVERNOR OF THE STATE OF HAWAII TO TAKE IMMEDIATE ACTION TOWARD THE ACQUISITION AND RETURN OF TERN ISLAND AND ITS FACILITIES TO THE STATE OF HAWAII."

The Hawai'i Audubon Society which is the state chapter of the National Audubon Society wishes to testify in opposition to these resolutions. In my former capacity as a research entomologist at the Bishop Museum I have visited most of the Northwestern Hawaiian Islands several times since 1971, both by sea and air.

These resolutions are premature and moot. The State's, Federal and, we might add, City and County of Honolulu's jurisdictions over certain land and water areas in the Northwestern Hawaiian Islands have not yet been legally resolved.

Tern I. and the surrounding French Frigate Shoal are exceptionally sensitive, environmentally. Its islands and sand spits are the last significant nesting area of the threatened Hawaiian green sea turtle. They are also the most important pupping area for the endangered Hawaiian monk seal. Hundreds of thousands of pelagic birds nest there. All of these are vulnerable to intentional and unintentional introduction of weeds, rats, insects, and other vermin as well as to pollution and fouling. Rats have caused the extinction of the Laysan rail on Midway. Human disturbance has virtually eliminated the seals and sea turtles from the beaches of Midway. Thus, increased human activity at Tern I. associated with fishing activity could run directly counter to the purpose and function of the National Wildlife Refuge. A near-shore fishery would be in direct competition for the food resources of many of the birds and animals there.

The claims in these resolutions of great sea mount fishing potential needs your close examination with supporting documentation. What is the near potential of overfishing this resource? The lobster fishery around Necker I. appears to have been quickly depleted. If the resource claims have foundation and there is economic justification for great expansion with the establishment of a leeward island fishery support facility, attention might be better given to its establishment at Midway where there exists a large deep-draft harbor and an all weather airport capable of handling the largest of jet aircraft. Both structures have considerable existing support facilities which are presently sparsely utilized.

By contrast, the shipping channel to the dock at Tern I. is narrow and dangerous. Much dredging would surely be required to establish safe passage. Many of the shore facilities are crumbling and in a run-down state, really only sufficient to house refuge personnel. The airstrip is short and requires potentially hazardous landings and take offs through literally clouds of sea birds. In sum, the potential sacrifice of the quality of this nationally significant wildlife refuge outweighs the economic desires for its exploitation.

This concludes our testimony. Thank you for the opportunity to present it.

MORE ON H-3

Editors' notes: Testimony by Wayne Gagné on H.C.R. No. 119 & H.R. No. 185 entitled "URGING THE STATE ADMINISTRATION TO WORK WITH THE CITY ADMINISTRATION TO DEVELOP A LIST OF ALTERNATIVE PROJECTS TO H-3 IN THE EVENT THAT THE H-3 PROJECT IS WITHDRAWN", on H.C.R. No. 120 & H.R. No. 188 entitled "REQUESTING THE STATE DEPARTMENT OF TRANSPORTATION TO BEGIN WORKING WITH THE CITY AND COUNTY OF HONOLULU TO DEVELOP A LIST OF SUBSTITUTE PROJECTS WHICH QUALIFY FOR FEDERAL-AID INTERSTATE FUNDS CURRENTLY earmarked FOR THE H-3 INTERSTATE HIGHWAY," and on H.C.R. No. 191 & H.R. No. 291 entitled "SUPPORTING THE NEED FOR THE INTERSTATE H-3 FREEWAY PROJECT AND THE HAWAII CONGRESSIONAL DELEGATION'S EFFORTS TO SEEK A CONGRESSIONAL REMEDY TO ALLOW THE CONSTRUCTION OF H-3 TO PROCEED."

The Hawaii Audubon Society, which is the state chapter of the National Audubon Society, wishes to testify in support of HCR's Nos. 119 and 120 and HR's Nos. 185 and 188, but in opposition to H.C.R. No. 191 and H.R. No. 291.

The attempt by Hawaii's congressional delegation to exempt H-3 from federal laws has aroused intense opposition in Washington, D.C. In addition to our parent organization, the National Resources Defense Council, Sierra Club, Human Environment Center, National Resource Council of America, National Parks and Conservation Association, and Monitor, with a cumulative membership in the millions, have variously expressed dismay at this attempt to end-run the courts. About a dozen local environmental organizations have added their voice to the chorus.

All realize that it would be a dangerous precedent--if it can be done here, it can be done anywhere. Local and national organizations do not want their parks, wildlife refuges, recreational areas, historic or archaeological sites, endangered species, etc. trampled by the freeway juggernaut. That's why the so-called "4(f)" provisions in the federal transportation laws which protect such entities are so vigorously defended. Congress had never exempted a freeway from these provisions when the courts have identified "prudent and feasible" alternatives. They wouldn't even do it for Sen. Baker when he was chairman of the Senate/Environment & Public Works Committee.

That's why we support the resolutions which ask the State Dept. of Transportation to stop the foot-dragging and mental games-playing with windward commuters and get on with the task of working with the City to identify alternative projects to alleviate windward and leeward commuter traffic congestion.

HAS SUPPORTS ESTABLISHMENT OF HAKALAU REFUGE

Testimony Mae Mull gave at the Public Hearing on the Conservation District Use Application (CDUA) by The Nature Conservancy to subdivide and establish the Upper Hakalau National Wildlife Refuge in the Hilo Forest Reserve held by the Board of Land and Natural Resources on March 13, 1986 in Hilo, Island of Hawaii:

The Hawaii Audubon Society gives its wholehearted support to the establishment of the Upper Hakalau National Wildlife Refuge. The Society's Board of Directors has reviewed the CDUA and the environmental assessment for the acquisition of 33,500 acres of privately-owned lands in the mauka region of the Hilo Forest Reserve.

The proposal by The Nature Conservancy to purchase key parcels of native rain forest habitats, and the proposal by the U.S. Fish and Wildlife Service to establish the Upper Hakalau National Wildlife Refuge on those lands have

the full endorsement of the Society. The purposes of this project--to ensure the continued existence of endangered Hawaiian forest birds--coincide with the Society's primary goal of protection of Hawaii's native wildlife and their habitats.

The Board of Land and Natural Resources has made commendable progress in setting aside state-owned native forest lands in the Natural Area Reserves System on this island. The Society applauds those actions by the Board. Now, the public acquisition of the privately-owned Upper Hakalau forest lands for the purpose of a wildlife refuge is a further step--both necessary and welcome--in protecting the essential habitats of the endangered 'Akepa, Hawai'i Creeper, 'Akiapola'au, 'O'u, 'Io (Hawaiian Hawk), and the Hawaiian Hoary Bat.

The marvelous serendipity spin-off of this forest wildlife refuge for six endangered vertebrate animals is that the whole ecosystem wins out--including scores of species of unique Hawaiian plants and invertebrate animals. A permanent refuge here allows time and space for the natural processes of succession and adaptation to continue to produce the most remarkable flora and fauna of any oceanic islands in the world.

We look forward to the establishment of additional wildlife refuges in the remnants of native upland forests held in private ownership.

The Society expresses its appreciation to the Board of Land and Natural Resources for the swift processing of this CDUA, and we convey *mahalo nui loa* to you for further expediting this project.

Thank you very much for the opportunity to make these comments.

HAS SUPPORTS PROPOSED LAND ACQUISITIONS FOR HAWAII VOLCANOES NATIONAL PARK

At its April meeting, the Board of Directors of the Hawaii Audubon Society discussed the draft Land Protection Plan for the Hawaii Volcanoes National Park, and gave its unanimous support to the acquisition of the three abutting land parcels that need National Park protection. These parcels include (1) Tract 22, a 5,600 acre tract of rainforest lying along the north boundary of the Kilauea section of the national park (see 'Elepaio 46: 85-86); (2) the remaining coastal lands east of the Great Crack, placing the entirety of that unique geological feature within the park; and (3) a 144 acre parcel in Kalapana that includes remnant lowland native dry forest of special value, and certain archaeological sites.

APRIL MEETING

BILL MULL - STAR PHOTOGRAPHER

A near-capacity crowd was on hand for the April membership meeting in anticipation of Bill Mull's presentation on "Nature of Hawaii." Mull, an outstanding naturalist, and well known for his exceptional photographic skills, was introduced by Allen Allison.

Mull's program is presented in the popular idiom, rather than in scientific jargon. There are 10,000 organisms other than native birds in Hawaii, he said. How did they get here? Cave animals indigenous to the islands have been recently discovered, including wingless cave crickets. Other crickets, also new to scientists and related to the cave crickets, are nocturnal, live in salt water splash areas, and presumably rafted here on seaweed.

While giving generous credit to Frank Howarth, Wayne Gagné and Steve Montgomery for their research in entomology, Mull's slides are remarkable for their color, brilliance, and clarity of objects as small as 1 to 2 centimeters in length. Among his intriguing slides were those of big-eyed hunting spiders, nocturnal spiders adapted to live on lava flows; arboreal damselflies with huge, wide-spread eyes; and 2 species of tiny orchids which do not bloom every year but "when they feel like it." Many of Hawaii's plant species lack defenses against being eaten; such defenses are found in closely-related species living elsewhere. But in Hawaii, where there were few or no major herbivores, we find briarless briars, 130 species of mints with no minty essence, and nettleless nettles.

The Kamehameha Butterfly has artistically marked pupa and beautifully-marked red, white, and black adults. Females have white spots on the wings, but males have dark spots; this makes it easy to distinguish males from females. There are many species of lobelia, some with leaves 42" long. "Dancing Flies," members of the more than 800 species of Hawaiian *Drosophila*, lay their eggs on the lobelia. Some of these flies have territories, to which they attract females by going into a species-specific dance. Females can determine from his dance whether a male is her "special guy" to avoid hybridization. Killer or predaceous caterpillars feed on flies and other insects, and were found on the Big Island by Steve Montgomery in 1972. No other caterpillar in the world is known to capture live prey. They metamorphose into moths which feed on nectar and fruit.

The famous "Happy-Face" spiders (also discovered by Steve Montgomery) live on the undersides of leaves. There are several bright and varied species, distinguished by transparent abdomens with startling colored patterns, often shaped into the pattern of a "happy face." Males have feelers with "footballs," which distinguishes them from females (which have no "footballs"). The intriguing slides of these species are fascinating and almost beyond belief, enhanced by the original and interesting Mull narrative.

Equally famous are the native tree snails, with about 200 species in 3 genera. Eggs are carried by the female for a lengthy period, and the young are born alive. Here were spectacular slides of beautifully-marked shells, some pastel, some psychedelic, and others in designer colors and stripes, illustrating mama snail with her tiny, miniature "kid." These snails do not eat leaves, but clean them of fungi and detritus. Unfortunately, there has been heavy predation and collecting, so native tree snails have become rare and are listed as endangered species. Anyone who missed this blockbuster beauty of a program, presented in a light, humorous fashion, missed one of the best programs of the year.

Betty Johnson

ATTENTION ASPIRING JOURNALISTS! CONSERVATION COLUMNIST WANTED!

The Hawaii Audubon Society has a dedicated Conservation Committee whose members prepare and present testimonies for public hearings, review a wide variety of documents, including environmental impact statements, and endangered species recovery plans, and generally serve as enthusiastic advocates for the protection of Hawaii's native wildlife. These demanding tasks leave no time for committee members to prepare a news column to keep members abreast of conservation activities. The 'Elepaio seeks a person willing to receive written testimonies, letters and reviews from committee members and summarize them in a monthly or bi-monthly column for the membership. The person need not be a conservation expert, in fact, this would be an excellent way to learn the issues.

Help Hawaii Audubon help Hawaiian wildlife!
Call Thane Pratt (524-8464) if you're interested.

LIBRARIANS BEWARE!

LEAP YEAR FOR THE 'ELEPAIO

The 'Elepaio Committee has decided to extend the current Volume 46 through the 1985 calendar year, and to begin Volume 47 in January of 1987. The decision was prompted by the fact that most journal volumes begin and end with the start and finish of the calendar year. The Committee anticipates that this change will make citation of articles in future issues simpler and less confusing. So when you see Number 13 of the current volume, it's a good sign.

ERRATA

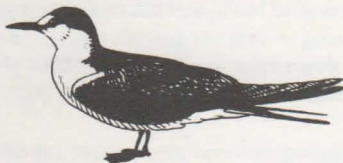
A number of errors were discovered in the report of the Honolulu Christmas Count - 1985 ('Elepaio 46:98). Corrected data are: Hawaiian Stilt, 9 birds in Sector 8 for a total of 118; Spotted Dove, 215 in Sect. 6, 1175 in Sect. 8; Red-whiskered Bulbul, 0 in Sect. 5, 21 in Sect. 6; Melodious Laughing-thrush, 4 in Sect. 10 for a total of 5. New sector totals are: Sect. 5 with 13 species; Sect 6, 35 spp.; Sect. 9, 28 spp.; and Sect. 10, 20 spp.

The title of the table should have read HONOLULU CHRISTMAS COUNT - 1985.

The 1984 Waipio CBC narrative ('Elepaio 45:115-117) correctly stated that "Yellow-faced Grassquits were not seen," but the accompanying table erroneously listed one grassquit in Sector 6.

NEW T-SHIRTS

Hawaii Audubon Society has printed a limited edition of T-shirts showing the emblem of our society. Colors are yellow, pink, green, and silver; sizes range from small to extra large. The T-shirts cost \$8; \$10 if ordered. Buy yours at our general meeting or order one via the HSA address.



JUNE 1986 FIELD TRIP

Sunday, June 8

Paiko Lagoon

Leader: Ed Arrigoni (536-4802)

This nature walk will stress birds, plant succession, tide zone life, beach erosion, and preservation efforts. Bring footwear that can get wet, water, and sunscreen. The walk will coincide with a good low tide (at 9:00 AM). Meet at 7:45 AM in front of the State Library on Punchbowl Street.

JUNE 17 PROGRAM

HAPPY-FACE SPIDERS:

MORE THAN PRETTY PICTURES

Dr. Samuel M. Gon III of the Departments of Entomology at the Bernice P. Bishop Museum and the University of Hawaii will present the program at the June 17th meeting. Hawaiian Happy-face Spiders were the subject of a four-year doctoral study of behavioral ecology by Dr. Gon. Far from uncommon, Happy-face Spiders inhabit the islands of O'ahu, Moloka'i, Mau'i, and Hawai'i, occurring in 'Ohi'a-dominated forests, where they live under solitary leaves. As predators, they display foraging behaviors that show remarkable sophistication, and intimate adaptation to their foliar habitats. Unlike the majority of spiders, Happy-face spiders show parental care, protecting and feeding their young, which they tolerate on their residence leaves. Happy-face Spiders are a fair representation of the wealth of biological phenomena to be documented in Hawaiian forest ecosystems.

Be sure to NOTE CHANGE in day (TUESDAY) and place - MANOA STATE LIBRARY.

MANY FLAVORS

Of ice cream will be served at next month's paste-up of the 'Elepaio at Thane Pratt's house at 954 Spencer St., on Saturday June 21 at 1:00 PM. Volunteers interested in helping with typing, proof reading, or paste-up are welcome. Call 524-8464 for more information. Authors of articles, notices, etc. are reminded to submit these by June 15.

Many thanks to Sheila Conant, Bob Pyle, and Rob Fleischer for help with the June issue's paste-up.

CALENDAR OF EVENTS

- June 8 (Sun.) Field trip to Paiko Lagoon.
See page 141 for more information.
- June 16 (Mon.) Board Meeting at Bishop Museum at 7:00 PM. Call Allen Allison at work, 848-4145.
- June 17 (Tues.) General Meeting at MANOA STATE LIBRARY at 7:30 PM.

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By-laws available by request.

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