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THE 'ALALA (Corvus tropicus) OF WESTERN HAWAII ISLAND

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From the late 1930's through the 1940's the Hawaiian Crow or 'Alala (Corvus tropicus) inhabited a diminished area compared to its range on leeward Hawaii as reported in the 1890's and early 1900's. Perhaps today, after three additional decades, the extent of occupied area in the Kona districts is even further reduced. It should be helpful in contemporary studies of the 'Alala to be able to reconstruct the course of the withdrawal. Records obtained during most of the years from 1938 to 1949 tell some of the steps in shrinkage of the range. I have summarized these records below in the hope they will facilitate further study of this extremely restricted native Hawaiian bird. I shall give records for each district and conclude with a discussion of changes in the crow population.

North Kona District

My first contact with the crow was on April 11, 1941, at Poohohoo, a cinder cone near Puu Waawaa in the North Kona District. A crow was heard to give a two-toned "caw", quite unlike the raucous "caws" of California crows. During a second visit to this locality, in which hikes were made into adjacent areas and up the north side of Hualalai (Nov. 16 to 21, 1944), many sightings were made of the crows. Crows were absent from the rather dry paddocks of Puuwaawaa Ranch west of Puu Waawaa between 2500 and 3500 feet elevation (annual rainfall approximately 30 inches, Doty and Mueller-Dombois, 1966), but they were conspicuously present from 3750 feet upwards in the vicinity of the cinder cone Poohohoo (rainfall of same order of magnitude, although it lessens to the east). The trail to Poohohoo passed through open country with much grass, forbs, and especially thimbleberry (Rubus rosaefolius Sm.). The thimbleberries bore abundant fruit and probably provided a principal food of the 'Alala here. Some trees with berries were present, notably kolea (Myrsine sp.) which was common, and 'olapa (Cheirodendron trigynum Gaud.) less common. At least four crows flew around overhead at 8 AM by twos and threes calling frequently. The trail continued upward and westward to the "tank" hill (4300 ft.) and emerged into dry koa (Acacia koa Gray) forest suddenly; here and to the northeast there was less thimbleberry, and the crows were lacking.

In company with Arthur L. Mitchell, I climbed Hualalai going up in a direction slightly west of south. Starting from Poohohoo, the forest was of koa, kolea and other native trees with much open grassy vegetation up to 4500 feet. Above this the fern ni'ani'au (Nephrolepis sp.) and 'akala or Hawaiian raspberry (Rubus hawaiiensis Gray) appeared. By 5500 feet, ni'ani'au and 'ohi'a-lehua (Metrosideros collina (Forst.) Gray) were dense. At 6000 feet the vegetation changed from the Puuwaawaa flora to Mauna Loa flora, with 'ohelo (Vaccinium sp.), pukiawe (Styphelia

sp.), kupaoa (Raillardia sp.), kukae-nene (Coprosma ernodeoides Gray), Geranium sp., Carex sp., and Luzula sp. This complex remained with gradual modifications up to the summit. Crossing the Puuwaawaa line we encountered a healthy population of 'apapane (Himatione sanguinea) and left behind the numerous 'i'iwi (Vestiaria coccinea) and, as it seemed at first, the 'alala. 'Alala, however, reappeared, and we saw six to eight on the way up. At the summit two crows flew up and over the cone immediately adjacent to Hainoa Crater, putting their range up to the top of the mountain at 8250 ft.

The 'alala were quite tame on the forested northern slope of Hualalai. They exhibited enough curiosity and lack of fear to come to trees 20 feet from us while we sat under 'ohi'a trees. They would retire then to 30 feet away and remain 10 minutes or so looking us over. Two did this - one at 5500 feet and one at 6300 feet. They originally caught sight of us while soaring over the trees, came down, and without hesitation dropped in close. Their manner expressed great curiosity, especially when we talked or handled carrots, notebooks or lunches. The one seen at 6300 feet erected his forehead and crown feathers when perched but flattened them when he took off in flight. The crows uttered no sounds while near us but screeched in air. Both 'alala pecked hard at 'ohi'a branches, seemingly breaking off bark. One appeared to eat some of the small pieces of bark andthe other to be searching for insects under it. Under the circumstances, however, this action might be regarded as displacement activity rather than foraging. Thimbleberry was not plentiful above 4000 feet, but kolea fruits were available in quantity and tasted sweet to us. It seemed to us this would be the place of choice to look for nests with eggs and young and study the 'alala, as the trees were smaller at 6000 feet than in 'alala range in South Kona and the crows far less wary.

Further records of the 'alala were obtained on the west flank of Hualalai on Sept. 9, 1949. The trip was made with Eugene Horner and for the purpose of collecting a crow for the Museum of Vertebrate Zoology, Berkeley. The specimen secured was an adult female with a weight of 567 grams and is now preserved as a skeleton; its gizzard contained hemispherical pits similar to those from Coprosma fruits. We proceeded by truck and foot above the Huehue Ranch to a cinder cone at 4121 feet in the land of Kaupulehu, where the bird was obtained. Then we went up the side of the cinder cone and saw the deep crater with its undisturbed vegetation of many kinds of native plants. On the surrounding terrain the forest was cattle grazed and had a grassy ground cover. On a very rough 'a'a lava flow to the west of the cone cattle did not penetrate and relatively undisturbed native vegetation occurred, perhaps with clues as to what the understory once was over a much wider area. A tall shrubby Clermontia with large white, pink and green flowers was numerous and subdominant on the 'a'a lava but completely absent from the grazed lands. Native birds predominated in the grazed forest. From the cone we could see 'i'iwi, 'amakihi (Loxops virens), 'elepaio (Chasiempis sandwichensis), 'apapane, and 'alala. About a dozen crows were heard in the surrounding forest. These crows flew over long distances; once four together flew past the cone and more by twos or alone. Mr. T. Vredenberg of Huehue Ranch told us that crows were fairly common in the 'ohi'a forest a couple of miles above the ranch headquarters. When a man is lost in the forest they listen for the crows as they gather around and "caw", and this indicates crows are not excessively shy here. He also said crows are less common along the telephone line above Waiaha Springs and you may have to go all the way up (i.e., probably close to Honuaula Forest Reserve) to find them.

I shall not list places in possible former range of 'alala where I failed to find the birds in uplands of Keauhou 2 (between Ahuaumi Heiau to the north and the Kealakekua lava flow to the south) during trips into the higher parts of the North Kona District. Three days of horseback trips covering 40 miles of trail through the moderately dry forests of 'ohi'a and koa, etc., between 4500 and 6500 feet (Nov. 19-21, 1942) did not produce even one record of the 'alala. Thus, I feel the crow was absent from the higher forests of the saddle area between Hualalai and Mauna

Loa and on the flank of Mauna Loa above North Kona in 1942. My guide, Nicholas, a ranch employee, had no knowledge of its presence in this expansive area.

Mr. H. W. Baybrook, who had lived in North Kona for some 20 years, told me on Nov. 19, 1942, that he once saw two crows "up here somewhere" on the Puu Lehua Ranch in Keauhou 2 and Kealakekua. This was years earlier. Mr. Frank R. Greenwell, resident of Honokohau, in 1943 confirmed the absence of crows from these lands. It is questionable that this area should be considered within original 'alala range at all, for G. C. Munro's journal (of which I saw typed excerpts on file at Hawaii National Park) tells of many days of collecting activity in the vicinity of Puu Lehua and Kikiacae (4850 to 5500 ft.) in October 1891, during which no crows were taken nor mentioned. Munro records 10 specimens collected between September 8 and November 10, apparently all of which came from forested localities from 1000 to 2000 feet elevation above Kaawaloa (Kealakekua Bay) and upwards to somewhat above Holokaalele at 2750 feet, crows being fairly numerous throughout this area in 1891.

The middle forests of North Kona between roughly 2500 and 3500 to 4000 feet were recently inhabited by 'alala, according to Mr. Greenwell, from somewhat southward of Kahaluu Forest Reserve northward through Honokahau and Kaloko. In 1943, however, Mr. Greenwell believed the crow to be confined to the northern part of this belt, i.e., from Honuaula Forest Reserve to the edges of Kaupulehu on the west flank of Hualalai, between 2000 and 5500 feet elevation. A record is available for October 1940, nevertheless, when Mr. Shiffert saw 'alala at Puu Laalaau, 6500 ft., above the Honuaula Forest Reserve. Mr. Greenwell explained changes in the range of the crow as due to the destruction of the native plants 'ie'ie (Freycinetia arborea Gaud.) and the lobelias (probably Clermontia).

South Kona District

The 'alala continued to be fairly common in some of the forested country of middle and upper elevations of South Kona through the decade of the 1940's. As I learned from Mr. Greenwell in 1943, the 'alala was present at that time in the Honaunau Forest Reserve (Honaunau and Keei). I confirmed this on a foot trip through the southeastern section of the forest reserve on March 2, 1944 between 4250 and 4800 ft., where the rainfall is an average 70 to 50 inches per year (Doty and Mueller-Dombois, 1966). Trees prominent were 'ohi'a, koa, manono (Gouldia terminalis (Hook & Arn.)). ho'awa (Pittosporum sp.), pilo (Coprosma sp.), kolea and kopiko (Psychotria sp.) while in the understory mamaki (Pipturus sp.) and puahanui (Broussaisia sp.) were evident. Some soil was laid bare with numerous tracks of wild cattle and pigs. Crows were rather silent in the heavy drizzle that day, but three were either seen in flight or heard. Five other kinds of birds were seen in this forest: 'i'iwi (many), 'apapane (many), 'elepaio (frequent), 'amakihi (frequent), Leiothrix (infrequent), and "possibly a few white-eye (Zosterops)".

The crow was still to be found over a much wider extent in the uplands of South Kona. On March 1, 1944, a trip was made on horseback from Hapuu Camp (4600 ft., on the Kiilae-Keanapaakai Trail) up to Keanapaakai (5293 ft.) and south to Lumiawai Waterhole (5859 ft.) in Honokua. Most of the trail was between 5300 and 6150 ft., and it traversed much open, pastured country as well as 'ohi'a forest. I heard crows in a few localities south of Keanapaakai, including Kaunene and Lumiawai. The guide, Joe Gans, claimed 'alala were often quiet and you wouldn't know they were around although many were in the forest. He said they all broke out into noise when a hawk (Buteo solitarius) came around. At Lumiawai, two crows moved around among the trees keeping at a respectable distance from us. They perched on tree tops, looked about and gave strident calls, loud and rather low pitched. The sound suggested a grossly magnified "meow" of a cat, as the relatively high resonant beginning dropped off to lower pitch.

I saw one nest, probably of the crow, about 10 ft. up in a large, then dead pukiawe shrub. It was circular and regular, 18 to 20 inches in diameter, depth

about 8 inches. The cup was shallow, about seven inches wide and $2\frac{1}{2}$ inches deep, and without special lining. The bulk of the nest was composed of twigs and branchlets, averaging about $\frac{1}{4}$ inch in diameter, thus not resembling a hawk's nest of crude, large branches. It was compact and solid and of good workmanship. The shrub may have died after this nest was built, as it afforded very little cover in its leafless state.

In the morning, at Hapuu Camp a crow perched at the top of a tall koa snag several hundred yards from the camp and called. In the South Kona District, all the crows seen kept at considerable distance, hence could be called "shy" in that region.

Kau District

In 1949 three days (March 15-17) spent along the 12 mile stretch at the upper boundary of the Kau Forest Reserve between Kipuka Akala (5372 ft.) and a point four miles northeast of Punaluu Kahawai (7000 ft.) was insufficient to confirm the presence of 'alala in that part of the Kau District. Forest ranger Otto Breithaupt, possessing life-long familiarity with the uplands of the southern regions of Kau, and acting as our guide on this trip, however, told me that 'alala still occurred near Kipuka Nene (Kahuku at 6000 ft.). A hike through this kipuka on March 16 revealed 'oma'o (Phaeornia obscurus), 'i'iwi, 'apapane, and 'elepaio but no 'alala; nor were crows found after considerable searching at Punaluu Kahawai and Kipuka Akala. Mr. Breithaupt said also that 'alala are now gone from the lands in Upper Manuka, where at an earlier time in his experience they were tame enough to come within 15 feet and follow him along. In September 1936, G. C. Munro saw one crow on the Mountain House Trail above Honuapo and heard crows calling while on the Kilokaa Keaa Trail northwest of Waiohinu (from a copy of his journal entries). In 1940, unconfirmed hearsay from local sources claimed that 'alala were present in the forests above Naalehu.

In the years around 1900, 'alala were seen in the forests of Kau District northeast of Pahala and earlier than this nested as far north as the forests above Kilauea Volcano (Henshaw, 1902), but I know of no records confirming their occurrence in northeastern Kau beyond those times.

Discussion

Through the 1940's, the geographic range of the 'alala remained as originally reported, namely, the Kona and Kau districts of Hawaii Island. Unquestionably, some areas within this range were vacated by the crow subsequent to the early 1900's. The withdrawal from lowest elevations was especially complete and probably was in progress in the early 1900's. Munro says the crows occurred from 1000 to 8000 feet elevation, noting in his journal on October 17, 1891 that crows were "pretty low down" in Kona. I have found no subsequent record that crows were as low as 1000 feet. Henshaw mentions their occurrence in the dry forests along the Kau road southwest of Kilauea caldera, and this would presumably be between 2500 and 3500 feet elevation. My lowest altitudinal record for North Kona was 3750 ft., west of Poohohoo, and my lowest for South Kona was 4300 ft., Honaunau Forest Reserve. Mr. Greenwell sketched on my topographic map the 1943 range of the 'alala in North Kona and indicated the 2500 foot contour as the lower limit.

The effects of avian malaria on populations of resident Hawaiian birds at low elevations, especially those below 600 m (approximately 2000 ft.) have recently been demonstrated by Warner (1968) and may have contributed strongly to an early disappearance of the 'alala from the Kona lowlands. One wonders if the crow might not have been found in numbers down to sea level prior to introduction of the mosquito responsible for transmitting avian malaria in 1827 (Warner, 1968); however, Peale's (1848) report for the U.S. Exploring Expedition holds that the crows frequented woody districts of the interior and seldom, if ever, visited the coast.

Shrinkage of the occupied areas in upland Kona and Kau certainly also occurred by the late 1940's. Nevertheless, crows could be found at 8000 feet and above on Hualalai and at 6000 feet on the south side of the mountain. In South Kona my highest record was 5958 ft., at Kaunene. The reputed population in Kau in 1949 may have been in the neighborhood of 6000 feet (lower Kipuka Nene). It may be assumed that reasons for change in distribution and in numbers at the upper elevations were in part different from the factors operating at the lower limits of 'alala range. It is not explained as yet why 'alala populations should not have maintained themselves satisfactorily at the upper areas in their original range.

Explanations for the disappearance of 'alala from previously occupied areas have made a main point of reduction or elimination of preferred foods (Munro, 1944; Henshaw, 1902; Greenwell, personal communication). Unfortunately, very little specific information is recorded on the plant and animal foods eaten by the 'alala. In the translation of an old 19th century manuscriptin the B. P. Bishop Museum Library, Honolulu, Kepelino recorded that 'alala ate ripe bananas. Munro and others have emphasized the bird's utilization of fleshy flower bracts and fruits of 'ie'ie. Rock (1913, and personal communication in 1944) maintained that oily black seeds obtained from fruits of ho'awa (Pittosporum hosmeri Rock) comprised a major food of the 'alala. Henshaw (1902) considered the crow "almost omnivorous," and Munro (1944) stated that its food habits changed to include imported berries and carrion. Probably terrestrial invertebrates were eaten, as Munro saw 'alala feeding on the ground at the deserted dairy, Holokaalele at 2750 ft. in N. Kona on October 29, 1891 (journal entry). The crow may have needed sources of soft fruits and berries, succulent vegetation, and perhaps moist open areas for hunting invertebrates.

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Field Notes from Mr. & Mrs. William P. Mull: Waipio Peninsula

Since the Society's August field trip we have been visiting the settlement basins in the cane fields and Walker's Bay at the airstrip on Waipio Peninsula three days a week, spending three to five hours on each trip, observing the bird populations of the fields, marshes, mudflats and open water. We're renewing an old hobby, established in the ten years (1950-60) we lived in the Northern Virginia suburbs of Washington, D.C., when we were active members of the Audubon Naturalist Society. Culled from the records we keep of each trip, here are observations, which may be of interest, of the uncommon species and the high counts of those species common to the area at this season.

Little Blue Heron - One on Sept. 28, west basin mauka of the radio signal tower (same area as seen on Sept. 14), observed rising into the air and flying toward the mountains. Seen again, same area, Oct. 5, for 20 minutes midday in bright sunlight as the bird perched among cattle egrets, occasionally preening and turning his head.

The uniform slate blue body color, dark bill and legs were well seen, but we did not observe the "maroon" or "warm brown" neck and head--perhaps because of the strong light, and, too, the bird kept his neck pulled in most of the time.

Cattle Egret - 180+ in the basins on Sept. 25.

Black-crowned Night Heron - 12 at the Bay, Oct. 4.

Mallard - The single "female" seen on the mudflats across the Bay on five trips (last Oct. 5), may be emerging from the eclipse plumage, and in another month we may find a well-marked male. The orange bill and legs and purple speculum bordered with white remain unchanged. We haven't seen this duck fly.

Pintail - Basins area: 200+ on Oct. 1 and Oct. 4. Three seen at the Bay on Sept. 28 for the first time. Some of the confusing molting plumages that were common in mid-September are being replaced by the distinctive field marks of the drake. The detailed descriptions of duck molting plumages in Bent's LIFE HISTORIES OF NORTH AMERICAN WILD FOWL are helpful in understanding the eclipse molt we see now.

Shoveler - Basins area: 100+ on Oct. 5. Bay area: 8 first seen here on Oct. 1; 28 on Oct. 5. Some may be emerging from the eclipse plumage. The glossy dark green head of the male was seen on one shoveler Oct. 8.

Ring-necked Pheasant - Basins area cane fields: 2 seen on Oct. 4 and Oct. 8.

American Coot - Basins area: 20+ on Sept. 17 (very wet then, with considerable standing water). Bay area: 6 on Oct 1.

Semipalmated Plover - 2 on Sept. 25 and Sept. 27; One on Oct. 5 and Oct. 8.

American Golden Plover - Basins area: 100+ on Oct. 5 and Oct. 8. Bay area: 25+ on Oct. 4.

Black-bellied Plover - Basins area: 4 observed on Sept. 17 and Oct. 5; 3 on Sept. 20 and Sept. 25; 1 seen on Sept. 21, Oct. 1 and Oct. 4. The larger size, stocky stance, whiter color and black "wingpits" in flight distinguish this plover from the Golden.

Ruddy Turnstone - Basins area: 184 feeding, by actual count, Sept. 27. Flocks of 20+ to 100+ on the ground common throughout the period (Sept. 17-Oct. 8). Mixed flocks of turnstones, sanderlings and a few plover observed in flight, as well as flying flocks of only turnstones or only sanderlings. Bay area: Not more than 5 seen at one time, Oct. 5.

Wandering Tattler - This self-sufficient shorebird seen on every trip, but rarely near another of his species. His distinctive "'ULILI" cry upon rising is well named by the Hawaiians. Basins area: 3 on Sept. 27. Bay area: 2 on Sept. 17, Sept. 20, Sept. 28 and Oct. 1.

Sharp-tailed Sandpiper - Basins area: One closely observed with 3 Pectoral Sandpipers on Oct. 4 in the mauka end of the west basin. The rusty crown, strong white eye stripe, richer brown back, slight breast streaking at the sides, and lack of the breast dividing line distinguished it from the Pectorals. Perhaps a new arrival, he remained almost motionless for 15 minutes, as the Pectorals fed around him. The erect stance is shared with the Pectorals. One seen again with 3 Pectorals in the east basin on Oct. 5, feeding in probing-style rather than picking. On Oct. 8 a pair was observed feeding in the east basin. One was noticeably larger (perhaps $\frac{1}{2}$ inch) with a rich tawny color on the neck, shoulders and breast, probably an immature (according to Peterson) in comparison with the duller buff breast of the smaller of the pair. Three were observed a half-hour later in the makai part of the large west basin, but the tawny one was not among them. Two were seen again at the mauka end of the west basin, for a minimum total of at least four individuals in the area on Oct. 8.

Pectoral Sandpiper - Basins area: 2 observed on Sept. 25, Sept. 27 and Sept. 28; 3 observed on Oct. 4 and Oct. 5. The division line between the brown streaked breast and the white underparts is distinctive. Observed feeding among plovers, turnstones, sanderlings and stilts.

Dowitcher (Long-billed?) - Basins area: One observed Sept. 21, Sept. 25, Sept. 27 and Sept. 28. The white rump and the whitish tail, and the unstriped head, distinguished it from the Common Snipe as it fed probing the mud with rapid jabbing motions with its long, straight bill. Although this western species

is more likely to reach Hawaii than the Short-billed, the body size, bill size and ranges do overlap. When only one individual is seen, specific identification appears difficult. On one occasion we observed the fine light barring on the tail with the bird in flight.

Western Sandpiper (probable) - One observed at length feeding in the east basin, Sept. 20, Sept. 21 and Sept. 25. The two-tone body-color contrast was striking, with rather uniform grayish head and back, and very-light-to-white chest and underparts; larger "peep" size, 6-7 inches; light eye stripe; long bill equaled the length of the head; moved rapidly feeding in quick, picking motions with a near-upright tail posture. Close resemblance to the Semipalmated Sandpiper makes specific identification of one individual difficult.

Sanderling - Basins area: 122 counted feeding on Sept. 27, the largest count. Flock sizes have been increasing, both feeding and in flight. 100+ seen on Oct. 8. The largest count at the Bay was 6 on Oct. 1.

Black-necked Stilt - Basins area: 243 counted at the large west basin, where most were concentrated at the flat, wet, mauka end, out in the open. Bay area: 24 on Oct. 4.

Least Tern - Not seen feeding over the Bay since Sept. 14, probably because we've been spending less time there in favor of the basins. We both observed this little tern flying over the basins area on Sept. 28, and Mae saw him again as he circled over near the east basin on Oct. 8. Viewed from underneath, the short white body with broadly-forked, short tail and the disproportionately long, tapered white wings are distinctive.

Mockingbird - One seen at the airstrip, Sept. 28.

Strawberry Finch - No flocks larger than 10 seen during the period. A few often seen feeding with the mannikins. In the basins area, 2 or 3 are usually observed feeding on the ground at the base of grass patches, apparently picking up seeds dropped by the mannikins stripping the seed heads.

Black-headed Mannikin - Large flocks totaling 200+ were observed throughout the period, feeding on the seed-heads of bunch-grass common to the area. Among them, a single Tri-colored Mannikin was seen on Sept. 27, Sept. 28 and Oct. 1; and two were seen on Oct. 4.

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From Harriet E. Linn: Cattle Egret

Sunday, September 28, 1969, friends and I were driving from the Pali along Kamehameha Highway past the HAWAII MEMORIAL PARK CEMETERY. It was early evening and the green lawn was as fresh and pretty as springtime. Suddenly, the green was intensified by fields of white. The sky was partially overcast and the wind blustery, so we drove into the Park to get a closer view of an immense flock of large birds.

For the most part, the flock of at least 150 cattle egrets were quietly standing or walking around. They were not easily disturbed and only the nearer fringe would rise and circle around to alight on the outer side of the flock.

They appeared to be about 20" from tip to feet, which looked black as did the bill, from our distance and in the waning light. To all appearances they were younger birds than adults, and pure white.

Research produced the facts that they were introduced from Florida in 1958 by the Hui Manu Society in cooperation with the cattle men of Hawaii. They determined that their eating habits would not interfere with birds already here.

Cattle egrets frequent cattle pens and ponds of water or swampy areas in search of insects, flies, grasshoppers and crawfish. They are often seen at West Loch, as well as the Marine Base and Kaneohe Bay. They are valuable birds to Hawaii.

People at Pohai Nani report that it is not uncommon to see huge flocks flying past from the direction of the Pali, and again at eventide seeing them flying in the opposite direction.

They are graceful in flight, they rise easily and fly leisurely, gliding and banking. The head and neck are tucked into the shoulder, with the legs stretch-out

behind in flight. A truck frightened them and they took off over the rise leaving us to the green grass and the overcast sky, but with pleasant after thoughts.

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From Hester Vanderburgh, 16 September 1969: Cattle Egret

Some of us "bird lovers" here at Pohai Nani have watched with great delight large flocks of cattle egrets flying across the valley, sometimes quite close to our building. We annot see where they go, as they swerve around our building and behind a hill.

Have you had any reports of these birds from people on the Kaneohe Bay Drive or the Marine Base as to where they might go for the night?

Every Sunday for a couple of years I have seen them with cattle in various places as I drive to Waimanalo, but have not seen such large groups as we are seeing now--there are more than 60 some evenings. They come anywhere from 5 p.m. to 6:20 p.m., depending on the degree of darkness.

If you have any information on their roosting area, please share your experiences with other members by writing to Kojima, 725-A 8th Avenue, Honolulu, Hawaii 96816.

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From Henry Yuen

16 Aug 69: Koko Head, Fairy Tern--3 adults, juvenile still downy
29 Aug 69: ditto --3 adults, juvenile - no down.
June 1969: Ulupau Head, Red-footed Booby--Juveniles - feather showing through down. Still in nest.
23 Sep 69: Off Barber's Point (158°22'W, 21°17'N)--15 Red-footed Booby, 30 Wedge-tailed Shearwater, 8 Frigatebird.
15 Aug 69: Paiko Lagoon--2 Black-crowned Night Heron, 14 Stilt.
19 Sep 69: Paiko Lagoon--1 Shoveler, 8 Stilt, 3 Wandering Tattler, 2 Ruddy Turnstone
June 1969: Kawainui Swamp--4 Gallinule, 4 Stilt
May 1969: Hamanae--1 'Amakihi, 1 'Elepaio.
4 Jul 69: Aiea Loop--3 'Elepaio
27 Jul 69: Mt. Kaala--5 'Elepaio
31 Jul 69: Koloualu Trail--1 'Elepaio, 4 Shama Thrush
7 Sep 69: Tripler Ridge--2 'Apapane, 8 'Elepaio
9-13 Aug 69: Molokai, Palaau Forest Reserve--7 'Amakihi, 5 'Apapane, 4 Francolin.

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From Charles G. Kaigler: Bristle-thighed Curlew

On 1 October my wife and I observed five bristle-thighed curlews feeding in the naupaka between the airstrip and the beach at Kahuku. The five stayed together both in flight and on the ground.

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Field Trip, 12 October 1969, to Hickam Harbor, Waipio and Walker's Bay: Shorebirds

The October outing for shorebirds started on a somewhat depressing note due to early morning rain that undoubtedly kept attendance down, but the fourteen members that did make the trip were well rewarded.

Hickam Harbor was the first stop and the walk along the Ft. Kam shore was interesting, as it always is--affording close views of stilt, ruddy turnstone, sanderling, golden plover and wandering tattler. Four brown boobies perched on offshore buoys, while three cattle egret, the first I have seen in Hickam, perched in trees along the shore. White-eyes, both species of cardinals and doves, and mynahs completed the count.

Waipio settlement basin held the real surprise of the day--over twenty sharp-tailed and pectoral sandpipers (mostly sharp-tailed but at least three pectorals). Shovelers, pintails, and cattle egret as well as plover, stilt, sanderling and tattlers were in good numbers. Black-headed mannikins and strawberry finches seem

to be increasing in numbers. We were unable to locate the semipalmated plover that my wife and I had seen on October 2.

Final stop was at the inlet (Walker's Bay) by the airstrip where we observed coots, black-crowned night herons and a pair of mallards as well as the usual complement of ducks and waders.

Charles G. Kaigler

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READERS' NOTES

ENVIRONMENT, Vol. 11, No. 6, page 30: Swedish Pesticide Ban. Dr. Miklos D.F. Udvardy's contribution.

The following excerpts from the statement by the National Poisons and Pesticides Board March 27, 1969, is a warning for all of us in Hawaii to look at our environment and take the necessary corrective action to improve the quality before it is too late.

"The Pesticides Board has decided today that further use of certain chlorinated hydrocarbon pesticides will not be accepted in Sweden. The decisions imply the following:

"1. Every use of aldrin and dieldrin will be forbidden from the 1st of January 1970.

"2. The use of DDT and lindane in household preparations and similar preparations for home gardening will be forbidden from the same date.

"3. Other uses of DDT will be forbidden for a test period of two years, from January 1, 1970. In exceptional instances there will be a possibility of an exemption. The Board assumes that during the test period research will be carried out aiming at getting the effect of the restriction elucidated.

"Today's decisions have been preceded by a conference, in which representatives of several authorities, institutions and organizations have participated....

"It has been clearly stated at the conference that there is no immediate health risk to man due to the present use of chlorinated hydrocarbon pesticides. As to the environment regarded a s an integrated biological system considerable risks have been shown.

"It has been stressed at the conference that every compound within the group of chlorinated hydrocarbons must be judged by itself when risks are being weighed against benefits. It has also been stressed that variations in types of climate and differences in other conditions influence both the need for and the risks of these preparations in different parts of the world. Among other things it has been pointed out that it is important to have an insecticide which is innocuous enough when handled and which has the necessary effectiveness for the use in campaigns against malaria and other vector-borne diseases in those parts of the world, where such diseases are of importance. According to the World Health Organization, it is not possible for the time being to do without DDT....

"It is insufficiently known to what extent and in what way, e.g. chlorinated hydrocarbons, used within a certain geographical area, are partially spread to other areas. That such a spreading takes place has been brought out clearly.

"The need for insecticides is rather small in Sweden compared to that in many other countries. This facilitates the possibilities here to do without the now forbidden preparations. The measures also facilitate a survey of the extent to which, on one side a spreading within Sweden, on the other side air and water borne particles from other areas, are of importance to the risk situation here as far as chlorinated hydrocarbon compounds are concerned. The Pesticides Board has been informed that the Research Council of the National Conservancy Board is prepa red to give priority to such research work as will contribute to an elucidation of possible changes of the residue quantities and of the pollution situation after the restrictions have come into force. Thus there will be a unique opportunity to study an important question which has not been sufficiently investigated. Research on alternative means of combatting pests, etc. ought also to be given increased support."

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NATIONAL WILDLIFE, October-November 1969, Vol. 7, No. 6, page 20: Wildlife Omnibus

Nature's Balance Really Upset--This actually happened in a village in Borneo!

DDT was used in a mosquito control program. Soon roofs of natives' huts caved in as they were being eaten by caterpillars which had not absorbed much DDT, but whose predators, the wasps, had been killed by it. The DDT was then brought indoors to kill houseflies. This it did, but it also infected little lizards that ate the flies. Cats which ate the lizards died in such numbers that rats began to invade the village, bringing threat of plague. So cats had to be flown into the area to restore the balance DDT destroyed.

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ALOHA to new members:

Mrs. George Laycock, 5944 Crittendon Drive, Cincinnati, Ohio 45244
Barbara J. Steffee, 1720 Ala Moana Blvd, Apt B-803, Honolulu, Hawaii 96815
Mrs. Nina Dean Steffee, 112 S. Clyde Ave, Kissimmee, Florida 32741
Junior: Mark Schroeder, 544 Uluhala St, Kailua, Oahu 96734

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The following Bishop Museum publications are now abailable:

MAMMALS IN HAWAII: A SYNOPSIS AND NOTATIONAL BIBLIOGRAPHY. P. Quentin Tomich. Bishop Museum Press, Special Publication 57. 238 pp. Illus. An up-to-date, well-documented summary of Hawaii's mammals. Hard bound. $5.00

"The Breeding Season of the Hawaii 'Amakihi." Andrew J. Berger. OCCASIONAL PAPERS, Vol XXIV, No. 1, pp. 1-8. Bishop Museum Press.

September 1969 KA 'ELELE describes the paper as "Short paper that not only reports study of relatively unknown breeding and nesting habits of an endemic Hawaii bird, but also incorporates four 'firsts': The first paper in the E. H. Bryan, Jr., honorary volume (Beginning of what will be a full volume of scientific papers dedicated to Mr. Bryan in recognition of his half a century of distinguished service to Bishop Museum. It is one of five read at a symposium on 'Aspects of Natural History in the Pacific,' held at the Museum for Mr. Bryan's 70th birthday on April 13, 1968.); the first OCCASIONAL PAPER in a new and modernized format, and first to have color plates; and the plates are first ever published of 'AMAKIHI nest and eggs, and 'AMAKIHI nestlings in color. $1.50"

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HAWAII'S BIRDS, a field guide for $2.00, is an excellent gift for mailing to friends. Send in your orders to: Book Order Committee, Hawaii Audubon Society, P.O. Box 5032, Honolulu, Hawaii 96814.

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NOVEMBER ACTIVITIES:

Nov. 9 - Field trip to study shorebirds. Bring lunch, water, and if possible your car. Transportation cost ($1.00) to be paid to the drivers. Meet at the Library of Hawaii at 8:00 a.m.
Leader: Charles G. Kaigler, telephone 988-3195.

Nov. 10 - Board meeting at the Zoo entrance bldg at 7:30 p.m. Members welcome.

Nov. 17 - General meeting at the Waikiki Aquarium Auditorium at 7:30 p.m.
Speaker: Dr. Alison Kay, Dept. of Marine Zoology, Univ. of Hawaii
(Because of unforseen circumstances, Dr. Kay who was scheduled to speak on 15 Sept. will be speaking to the Society this month.)
Topic: Would you believe it!--Some thoughts on the marine environment.

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