

# 'ELEPAIO

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## RECENT OBSERVATIONS AND FIELD IDENTIFICATION OF THE OAHU CREEPER (LOXOPS MACULATA MACULATA)

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and H. Douglas Pratt

Avifaunal surveys have recently been completed in the Koolau Range to provide data for preparation of an Environmental Impact Statement on the proposed H-3 highway through North Halawa Valley (Shallenberger 1978). The study involved 200 man-days of field work by several investigators surveying valleys and ridge trails from Moanalua to Poamoho. Detailed results of the study will be published in the *'Elepaio* at a later date, but we wanted to provide new information on the mysterious Oahu Creeper as soon as possible.

Perkins (1903) reported that he found "all species of *Oreomyza* [now *Loxops maculata*] to be abundant" on their respective islands. Yet he indicated that the Oahu race "is less numerous than any of these [other races], though a common enough species, and is found on both mountain ranges, but it seems to have disappeared from the mountains in the immediate neighborhood of Honolulu, where it formerly occurred". In a letter to Munro (1950), Perkins noted that between 1892-1912 he did not find any creepers in the mountains from Waialae to Kalihi. Palmer (*in* Rothschild 1893-1900) noted that he found Oahu Creepers "only in the upland region of Wailua" between 1500' and the summit. Wilson (also in Rothschild *op. cit.*) reported the species as "fairly common in the district of Halemanu, where there is still some forest remaining".

Munro (1960) noted that Oahu Creepers were "fairly common in the 1890's," but that he had "tramped many miles of newly made C.C.C. trails on Oahu in 1935 and did not see a single individual, but other observers report having seen it since, commonly, thus promising a prospect of survival". The disparity between Munro's observations and

those of others suggests to us that the problem of distinguishing creepers from 'Amakihi was already in the literature. Actually even early investigators had recognized the difficulty in identification of the Oahu Creeper (Wilson and Evans 1890-1899, Bryan 1905).

There are 41 published records of Oahu Creeper "sightings" in the *'Elepaio*, beginning in 1940. Based on what we have learned on this study, and after a thorough examination of museum specimens, we are convinced that some of the earlier records were incorrect, and many are suspect. Examination of the earlier records underlines the need for observers to be far more rigorous in recording data in the field, and to be certain that they are fully aware of the pertinent field marks. We know so little about the behavior of the Oahu Creeper that any additional information would be an important contribution. Many of the early *'Elepaio* records of creeper "sightings" have no data on field marks or behavior, and several "sightings" were made by inexperienced observers, unaware of the extreme similarity between the creeper and the 'Amakihi on Oahu. Unfortunately, even the 1975 edition of *Hawaii's Birds* (Hawaii Audubon Society 1975) is misleading as to field cues.

We have reviewed the *'Elepaio* records of Oahu Creeper in detail, and have somewhat arbitrarily assigned categories of probability as to the validity of these sightings (Table 1). We tried to take into account the observer's experience and knowledge of field marks, location of the sightings, reported behavior of the bird(s), field marks used for identification, and the duration and clarity of observation.

The records were divided into four cate-



gories: (A) virtually certain, (B) probable, (C) possible, (D) highly unlikely. The large number of "possible" records includes most of those with little or no data. The most frequent name to appear with 'Elepaio reports of Oahu Creeper is that of Unoyo Kojima. Few people have had more field experience on Oahu than this avid birder and devoted former editor of the 'Elepaio. Yet, when questioned recently about her earlier creeper records, Unoyo indicated that many of the birds were identified by behavioral observations. When she was told of the frequent recent observations of creeping behavior of 'Amakihi, she stated that several of her own sightings could be questioned. She also indicated that in some of the Aiea Trail reports of creeper in which her name appears, she had not actually confirmed identification or even seen the birds observed by others. She admits being skeptical of many creeper "sightings" reported to her during her many years as 'Elepaio editor, but her policy was to accept all the reports and publish them as written.

One observation of creepers on Poamoho Trail was not published in the 'Elepaio and deserves further mention. Gerald Swedberg (personal communication) and Walter Donaghho reported observing *flocks* of creepers, estimated to number in total between 30 and 50 birds, on 9 September 1968. One creeper was collected from a flock. Although uncertain whether all of the birds in that flock were creepers, Swedberg made no attempt to collect a particular bird. This record remains an anomaly when compared to the long list of other reports, all but one (in 1948) of which have involved 1-3 birds. However, Perkins (1903) reported that creepers on all islands often were seen "several together". More recent observations of creepers on other islands (e.g. Pratt, Berrett, and Bruner 1977) confirm the fact that small flocks are not uncommon.

Most of the 41 'Elepaio records of Oahu Creeper are from Aiea and Poamoho trails. This fact almost surely reflects the comparative frequency of hikes in these areas, rather than a greater abundance of birds in these areas. Creepers are reported on 10 of 55 Poamoho Trail hikes (18%) and 16 of 42 Aiea Trail hikes (38%). The greater frequency of sightings on Aiea may indicate actual abundance of the bird, as records of 'Amakihi on the two trails show similar trends. The frequency of creeper "sightings" on Aiea Trail may also reflect some wishful thinking by overzealous birders on annual Christmas Bird Counts. We know one can be easily

tempted to "see" an Oahu Creeper where only a dull-plumaged 'Amakihi exists.

During the H-3 study, conducted between 19 December 1977 and 9 March 1978, only three Oahu Creepers were positively identified. Sightings of individual birds were made in Moanalua Valley, North Halawa Valley, and in a valley south of Manana Trail. One additional sighting of a "possible" creeper was noted for Aiea Trail. We were alarmed and saddened by the scarcity of creepers on this survey and fear that yet another unique Hawaiian bird is closer to the brink of extinction than we had believed. Our data make many reported observations in the 'Elepaio suspect, considering the intensity of this survey and the extensive experience of the observers. Clearly, a renewed effort to document the distribution of this rare bird, with a commitment to careful observation, is needed.

#### DISTINGUISHING 'AMAKIHI FROM THE OAHU CREEPER

##### Habitat:

The three confirmed sightings on this study were made on side ridges into valleys. All were in mixed 'ohi'a-koa forest between 1000 and 2000' elevation. Perkins (1903) confirms the frequency of early sightings in koa forest, but also indicated that birds were seen in forests without koa. Compounding the difficulty in identification, the sightings on this study were made in habitat where 'Amakihi were common. Our creeper, 'Amakihi, and 'I'iwi data for the Koolau Mountains suggest a preference for mid-elevations, and indicate that more observation time in the future should be spent off the ridge trails, in spite of the greater difficulty in access.

##### Feeding Behavior:

Early reports and our data verify a preference in feeding by Oahu Creepers on trunks and large limbs, where birds move methodically up and down, probing in the bark for insects. Creepers are generally among the branches and rarely in the foliage at the canopy. 'Amakihi prefer to search for nectar and insects among the leaves and flowers, but sometimes creep on trunks and branches. Creeping by an 'Amakihi is typically less methodical and more rapid than that of the Oahu Creeper. Active probing by both species complicates observation of the bill.

##### Flocking Behavior:

Early writers indicate flocking occurs in the Oahu Creeper, and this appears substantiated by Swedberg's 1968 observations on Poamoho Trail. In contrast, 'Amakihi are



Table 1. Evaluation of Oahu Creeper Sightings Published in the 'Elepaio. See Appendix for listing of all sightings.

	No. of records	Validity				No. of birds observed	Dates
		virtually certain	probable	possible	highly unlikely		
Koolau Mountain Range							
Poamoho Trail	10	1	3	4	2	*1-2	1940-1974
Kipapa Trail	1	.	.	1	.	?	before 1942
Opaeula Trail	1	.	.	1	.	1+	1968
Aiea Trail	16	1	1	12	2	1-3	1950-1976
Waahila Ridge	2	.	.	2	.	1-2	1973
Manoa Valley	1	.	1	.	.	1	1970
Makiki	1	.	.	.	1	1	1947
Waianae Mountain Range							
Kalena	4	1	.	3	.	2+	1948-1961
Palehua	2	.	1	.	1	1	1946-1961
Ohikilolo	1	.	.	1	.	1	1976
DuPont Trail	1	.	.	1	.	1	1972
Bowman Trail	1	.	.	1	.	1	1975
Total	41	3	6	26	6	-	1940-1978

\* except 1948 = 8

rarely found in close-knit flocks, although a number of birds may be seen feeding independently in the same large tree.

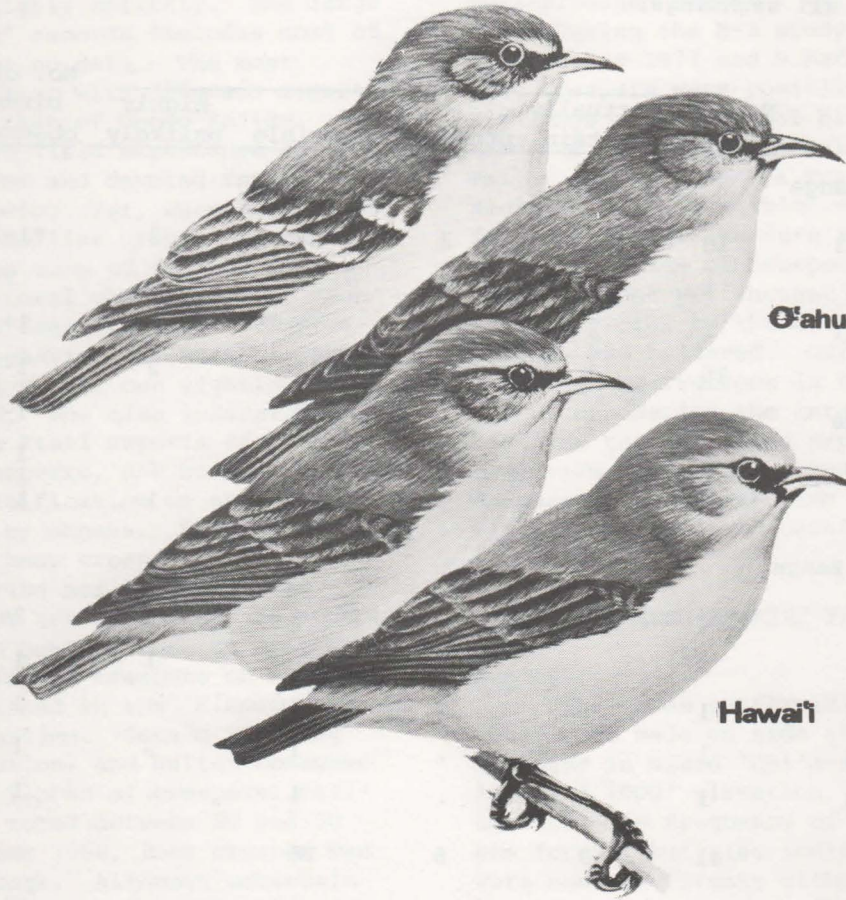
#### Vocalizations:

Creepers on all islands have a short call note, but the note is louder and more frequently uttered by the Maui, Molokai (Bryan 1908), and Oahu forms (Perkins 1903), which are morphologically similar. The loud call has been variously described as "chip," "chick," and "chirk," and is often given in response to the presence of an intruder.

The morphologically similar creepers of Kauai and Hawaii both sing a quavering descending trill. On Hawaii, the creeper's trill is almost always distinct from the slower, more uniformly pitched trill of the 'Amakihi, but on Kauai the two songs can be virtually identical. The Maui Creeper's song is entirely different: a lively, whistled "whurdy-wheese-wurdy-check" inter-

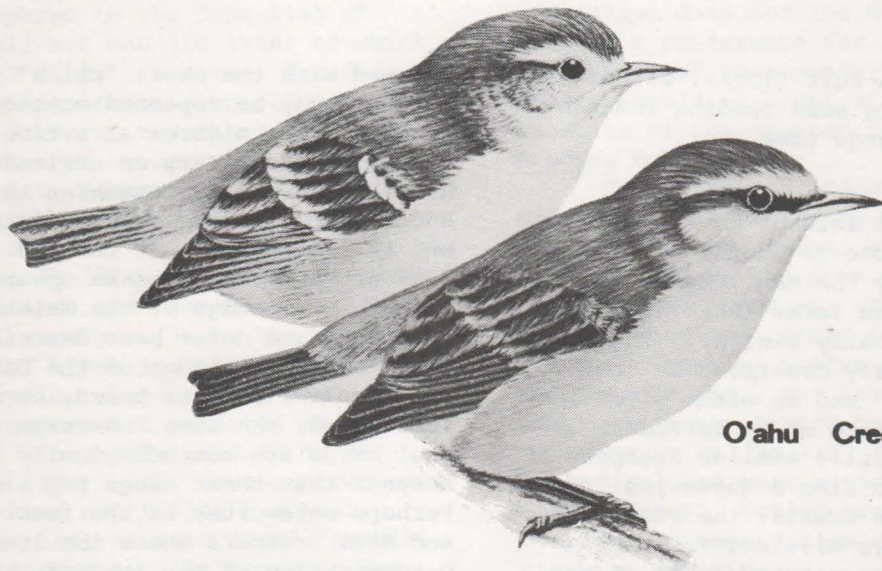
spersed with the short "chick" call note. The song may be repeated monotonously and regularly for minutes at a time. Sometimes the Maui bird utters an excited jumble of notes that closely resembles the song of the House Finch (*Carpodacus mexicanus*) but without the buzzy notes at the end. This latter song often accompanies an upward display flight. The songs of the Molokai and Oahu Creepers have never been described. In hundreds of observations of the Oahu Creeper, Perkins (1903) never heard, or at least never identified, the song. Because the Oahu and Maui birds are morphologically similar, we suspect that their songs may also be similar. Perhaps noteworthy is the fact that the Oahu and Maui Creepers share the loud "chip" call. Determination of the song of the Oahu Creeper is one of the most pressing problems facing ornithologists working in the islands today. Accurate censusing of the bird is impossible until its vocalizations are known.





**O'ahu 'Amakihi**

**Hawai'i 'Amakihi**



**O'ahu Creeper**

**paintings by H.D. PRATT**



Plumage Color:

Body color is not a good field mark to distinguish the Oahu races of 'Amakihi and creeper, as they are identical or nearly so. The adult males are olive green above and bright golden yellow below. The females and immatures are gray to grayish-green above and yellowish-white below. Our comparison of numerous museum specimens of both species revealed broadly overlapping variability in body color.

Wingbars:

Traditionally, wingbars have been an important cue for identification of Oahu Creepers, although examination of specimens and our recent observations of both Oahu 'Amakihi and Oahu Creepers show that this field mark is of little use in identification. Wingbars are absent in adult males of both species. They are variably present in adult female and immature 'Amakihi. Some particularly gray Oahu 'Amakihi with wingbars are very easy to confuse with creepers. Wingbars are *usually* prominent in the adult female and immature Oahu Creepers, and they are characteristically broader and whiter than those of the 'Amakihi.

Facial Features:

The lores of the Oahu 'Amakihi are black, particularly in the adult male. On the Oahu Creeper, the lores are dark, but not black. The prominent but pale superciliary stripe of the Oahu Creeper is absent in the 'Amakihi. The dark stripe that begins with the lores does not extend past the eye in the 'Amakihi but clearly does in the creeper. The dark top of the head shades gradually into the light of the throat in the 'Amakihi but is sharply contrasting with the light cheeks and throat of the Oahu Creeper. In male Oahu Creepers, and less so in females, a distinct light "forehead" separates the bill from the darker upper head color. This feature is obvious in a bird facing the observer, but is less so in profile. The upper head color of the 'Amakihi begins at the bill, with no distinct lighter forehead.

Bill:

The difference in bill shape between Oahu 'Amakihi and Oahu Creeper is the most certain field mark for distinguishing the birds, but because of the feeding habits of the birds, poor light conditions, and brevity of observations, this character is difficult to use. The bill of the 'Amakihi is clearly decurved and almost black except for a pale blue base of the lower mandible. The bill of the Oahu Creeper is straight, with the gonys (lower mandible) often slightly upcurved. The creeper's upper mandible is usually brown,

and the lower is dull yellow, but the difference is often difficult to notice in the field.

## SUMMARY:

When one considers that most observations of individual forest birds are brief, and rarely in ideal light, the difficulty in distinguishing these two species on Oahu is apparent. The best approach is to rank the field marks by priority and make as complete an observation as possible. Data should be recorded *immediately*. When several observers are present, each should make separate notes of both visual and auditory observations. One should be aware of the most confusing field marks, but not so eager to spot a creeper as to jump to conclusions. Concentrate on the bill curvature and color, face coloration, and distinctive vocalizations. The best places to look for the Oahu Creeper appear to be the side ridges, rather than the ridge trails, and at mid-elevations, rather than near the summit. One should spend less time overlooking the tops of flowering 'ohi'a trees and instead, spend half a day or even a whole day reclining in the crotch of a branch in an old koa tree. Pick a spot with a wide field of view, and glass *every* green bird that you see. You may tire of White-eyes and 'Amakihi, but you will increase your chances of seeing the elusive Oahu Creeper.

## ACKNOWLEDGMENTS:

We would like to thank the numerous people that assisted representatives of Ahui-manu Productions in completion of the Koolau bird survey, for the contract under Parsons, Brinckerhoff-Hirota Associates. Some of those who contributed their time and ideas include Stan Kawaguchi, Cam Kepler, Michael Scott, Eugene Kridler, C. J. Ralph, David Woodside, and Alan Ziegler. Other biologists participating in field work on this Koolau bird survey included Carter Atkinson, Delwyn Berrett, Phillip Bruner, Timothy Burr, Mark Collins, Sheila Conant, C. Robert Eddinger, Lawrence Hirai, Maile Stemmermann, and Avery Taylor. Greg Vaughn was largely responsible for the organization and timely completion of field work.

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## APPENDIX

References in the 'Elepaio for Hawaiian (Oahu) Creeper records (Volume, number and page

*Koolau Range:* Aiea (n=16): 11(3)15; 16(8)38; 17(8)35; 18(8)48; 19(1)2; 19(8)49; 20(8)53; 20(9)66; 21(3)17; 22(8)58; 25(1)4; 29(8)65; 35(12)146; 36(8)93; 37(8)83; and 37(9)97.  
Poamoho (n=10): 1(10)6; 8(3)15; 8(8)42; 18(12)83; 27(3)26; 27(10)97; 29(8)73; 33(3)29; and 35(3)31(two records). Kipapa (n=1): 4(4)14.  
Opaepa (n=1): 12(8)70. Waahila Ridge (n=2): 34(2)18; and 34(4)43. Manoa Valley (n=1): 30(11)108. Makiki (n=1): 8(2)10.  
*Waianae Range:* Kalena (n=4): 9(1)3; 9(6)32; 19(4)26; and 22(5)41. Palehua (n=2): 6(12)83; and 21(10)76. Ohikilolo (n=1): 38(1)5.  
Dupont (n=1): 33(11)126. Bowman Trail (n=1): 35(12)146.

## HAWAII ISLAND SITES RECOMMENDED FOR NATURAL AREA RESERVES SYSTEM

by Mae E. Mull

Taking a momentous step forward, the Natural Area Reserves System Commission has recommended that seventeen Hawaii Island areas be added to the State-wide reserves system. At a public hearing held in Hilo on 28 March 1978 on the commission's rules of practice and procedure, Dr. P. Quentin Tomich, commission chairman, announced that ten Big Island sites have been selected for immediate processing. Public hearings on these areas may be held as early as May. Action on the seven other recommended areas will be deferred until a later date.

The Natural Area Reserves System was created by the State Legislature in 1970, but only two sites have been established thus far: 'Ahihi-Kīna'u Natural Area Reserve (2,045 acres) on Maui in August 1973, and Wai-'ākea 1942 Lava Flow Natural Area Reserve (640 acres) on Hawaii in March 1974.

The eleven-member commission conducts studies of potential natural area reserves and recommends sites and policies to the Governor and the Department of Land and Natural Resources (DLNR). A site recommended by the commission is established as a natural area reserve following a public hearing, adoption of the land use regulation for the area by the Board of Land and Natural Resources, and a Governor's executive order setting aside land for that purpose. The DLNR controls and manages areas in the reserves system.

The commission defines these goals in a March 1978 document, "Program Description and Objectives":

"The need to protect natural areas, as cultural and scientific assets, against intense population and economic pressures on a limited natural environment was recognized by the 1970 State Legislature. . . ."

"The purpose of establishing Natural Area Reserves is to preserve for present and future generations irreplaceable examples of all aspects of the unique and varied, original Hawaiian ecological system. To be maintained so as to allow natural processes to prevail over human influences, the relatively undisturbed natural area



would be a living example of a natural heritage. It would serve as a long-term control against which to measure man-introduced stresses in adjacent or similar ecosystems elsewhere. It would provide an environmental and natural heritage education and appreciation site for the general public. It would provide a research site for scientists studying the natural environment, its components and the particular type of undisturbed ecosystem it represents. It would preserve a gene pool of native plant and animal species, particularly of rare and endangered species."

"In formulating use regulations, the guiding principle is the prevention of unnatural encroachment. Passive activities in the form of hiking, observing and nature study, by which the protected natural heritage can be enjoyed and appreciated, are encouraged. The only consumptive recreation allowed is hunting, subject to applicable regulations of the Division of Fish and Game. . . ."

Hawai'i Island areas recommended for immediate action -- with district, acreage and natural features identified -- are:

- 1) Pu'u-o-'Umi, South Kohala-Hāmākua: 9,500 acres of 'ōhi'a rain forest, mixed hala (*Pandanus odoratissimus*) forest and montane bog.
- 2) Kohala Koai'a, South Kohala: 100 acres of dryland forest, featuring a stand of endangered koai'a (*Acacia koa*) trees. (under lease to Parker Ranch)
- 3) Lau-pāhoehoe, North Hilo: 6,020 acres of 'ōhi'a rain forest in upland Hāmākua.
- 4) Mauna Kea Ice Age, Hāmākua: 4,000 acres of alpine scrub, Lake Wai-au and ice age terrain.
- 5) Pi'i-honua, South Hilo: 3,000-10,000 acres of 'ōhi'a rain forest.
- 6) Pu'u Maka'ala, Puna: 8,000 acres of mature, diversified 'ōhi'a-hāpu'u rain forest south of Stainback Highway.
- 7) Wao Kele 'O Puna, Puna: 6,500 acres of lower elevation rain-belt forest on the east slopes of Kī-lau-ēa volcano.
- 8) Manukā, Ka'ū: 5,500-22,000 acres of dryland, mixed mesophytic forest and rain forest on the southwest slopes of Mauna Loa from sea level to about 5,000 feet elevation.
- 9) Kī-pāhoehoe, South Kona: 5,500 acres of mixed mesophytic forest and 'ōhi'a rain forest on the southwest slopes of Mauna Loa.
- 10) Pu'u-wa'awa'a, North Kona: undetermined acreage of dryland, mixed and koa forest in several separated small parcels on the slopes of Hualālai volcano. (under lease to Pu'u Wa'awa'a Ranch)

The following areas are also recommended for the reserves system, but action on them is deferred at the present time:

- 1) Pu'u-o-Kauha, Hāmākua: about 9,550 acres of the māmane-naio ecosystem on the southwest slopes of Mauna Kea.
- 2) Malama-kī, Puna: about 1,000 acres of coastal forest ecosystem in southeast Puna.
- 3) Ka-pāpala, Ka'ū: about 4,550 acres of upland forest, including koa, on the southern slopes of Mauna Loa.
- 4) Kea'ā, Hāmākua: about 100 acres of lowland rain forest west of Honoka'a.
- 5) Ka-'alu'alu Bay, Ka'ū: about 100 acres of a marine ecosystem east of Ka Lae (South Point).
- 6) Lua-o-Pala-hemo, Ka'ū: about 5 acres to include the brackish pond at Ka Lae.
- 7) Pihā, North Hilo: about 3,840 acres of 'ōhi'a-koa forest in upland Hāmākua.

All of the listed sites are on State-owned lands, and eight of them had been nominated originally by the Division of Forestry.

This fresh burst of recommendations came on the heels of a February 1978 "Memorandum of Understanding" between the commission and DLNR -- which was approved by the Land Board -- that delineates functions, procedures and responsibilities for natural areas. The formalized mutual agreement has accelerated cooperative efforts among the participating agencies. The interest and encouragement of the new DLNR chairman, William Y. Thompson, and the new State Forester, Libert Landgraf, in designating protective status to significant natural systems provide impetus for filling out the reserves system on all major islands in the months ahead.

The six scientist members appointed to the commission by the Governor are P. Quentin Tomich, Dieter Mueller-Dombois, Robert A. Kinzie, Kenneth Kaneshiro, and Derral Herbst -- with one unfilled position. The five ex-officio commission members representing State agencies are William Y. Thompson (DLNR), Judith Pool (Department of Education), Mike Munekiyo (Department of Planning and Economic Development), Sheila Conant (University of Hawaii), and John Farias (Department of Agriculture).

The reserves system lost a dedicated, energetic, highly knowledgeable field biologist last December when Steven L. Montgomery left his position as part-time natural areas



specialist to resume full-time graduate studies in biology. Fortunately, the commission now has a full-time executive officer in Dr. Robert K.S. Lee, a botanist, and a student helper, Jacqueline F. "Snookie" Mello.

The monthly meetings of the commission are open to the public, and persons interested in receiving meeting notices may address a request to be on the mailing list to: Natural Area Reserves System Commission, Department of Land and Natural Resources, 1151 Punchbowl Street, Room 313, Honolulu, Hawaii 96813.

Acknowledgment: P. Quentin Tomich kindly made public papers of the commission available to me.

*Island of Hawai'i Representative*  
14 April 1978

#### WAIMANO VALLEY FIELD TRIP

April 9, 1978

Upon learning that access into Halawa Valley had been denied, a small group of ambitious bird watchers unanimously decided on Waimano Trail as the site of that morning's adventure. Under the leadership of Maile Stemmermann, the party began its hike escorted by a slow drizzle from a very grey sky and the calls of some domestic Jungle Fowl from below in the valley. That slow drizzle developed into a healthy rain that was to stay with us throughout the hike.

Aside from the Jungle Fowl cries, a bulbul was perched on the telephone wire at the trail entrance. Further along, a few Northern Cardinals and Japanese White-eyes were seen as well as heard. As it was a day unfit for man or bird, we were accompanied throughout the three miles in and out by the songs of the Japanese Bush Warbler and Shammas, but were unable to spot any of them. Even a song contest between a few members of the group and a lively Shama did not lure the bird into our sight.

With the increase in rain and wet clothes we turned back for our cars. The drive down Waimano Home Road produced two more birds to add to the list of those sighted; an American Golden Plover in full breeding plumage, and a Black-headed Munia.

--Carmelle Crivellone

#### HAWAIIAN PLANT ON ENDANGERED SPECIES LIST

One of the rarest plants in the world, found only on the higher slopes of Mauna Loa, has been proposed for the endangered species list of the U.S. Fish and Wildlife Service. The Hawaiian Vetch (*Vicia menziesii*), also known as the Hawaiian Wild Broad-bean, was listed in the Federal Register on April 26, and will be given official endangered status on May 27, 1978, 30 days after publication. The species was discovered in the 1800's, and was virtually unrecorded since then until three colonies were found on Bishop Estate land. In 1972 Wayne Gagne and Mae Mull found a colony of about a dozen plants in the Kilauea Forest Reserve about 5 miles above Volcano. Since then, Jim Jacobi and Rick Warschauer, working for the University of Hawaii and the U.S. Fish and Wildlife Service, have found a few more plants about a half mile away on Keauhou Ranch. Last summer, U.S. Forest Service personnel working on the Native Forest Ecosystems project discovered several small colonies totalling some 85 plants in a 5 hectare area. Thus, probably less than 100 living individuals are presently known, all within an area of about 500 acres.

The plant is an attractive member of the pea family, and one of the very few in the genus with reddish flowers (Fig. 1). It grows as a vine up to 40 feet long into the sub-canopy of the forest, mature individuals often branching laterally and prolifically producing clusters of attractive flowers. Some of the larger plants found by the U.S. Forest Service research team are estimated to be possibly as much as 20 to 30 years old. The flowers are very popular with native birds. Forest Service biologists recorded both 'I'iwi and 'Amakihi commonly visiting them this past summer. Unfortunately the foliage and stems are also popular with herbivores, such as cattle, pigs, and rats.

Threats to the plant are largely the results of man's activities. Within the Kilauea Forest Reserve high pig densities are apparently a threat, and outside the Reserve, in Keauhou Ranch, cattle grazing is probably the main limiting factor. The colonies in Keauhou Ranch are found only in areas where fallen trees have provided a natural, cattle-proof enclosure; none are found where the plants could be exposed to grazing. Aside from introduced herbivores, another factor



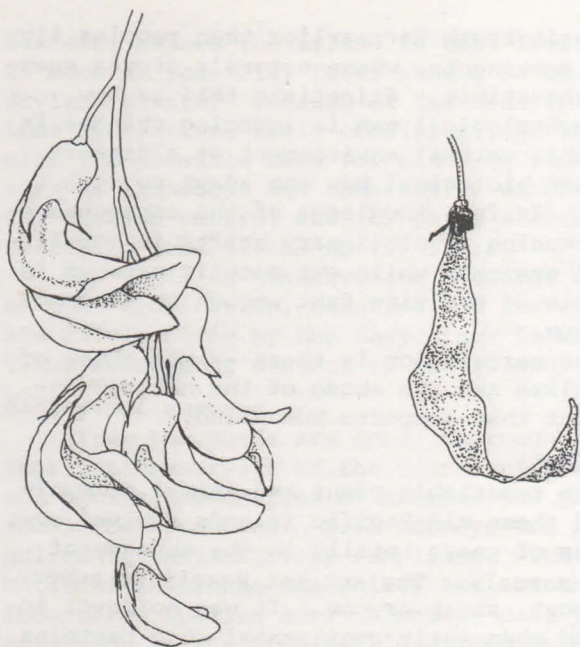


Fig. 1. Open bloom (on left) of Hawaiian Vetch (*Vicia menziesii*). At this stage the petals are slightly greenish, beginning to turn red. On the right is a fully mature pod containing seeds.

Drawing by  
Alison P. Pearson  
U.S. Forest Service

that may affect the species is the Koa Regeneration Project, a venture of the Bishop Estate. This project is being conducted between the three presently known colonies and possibly contains some individuals, although no plants have yet been found in this area. The project involves removal of all vegetation on 200 acres of 'ohi'a-lehua and koa forest which was logged in 1969-1970 and has since been grazed. This project began in 1977 with the fencing off of 200 acres and the clearing of the first 50 acres. These 50 acres are now occupied by a dense stand of young koa trees (2600 trees per acre). Another 50 acre increment has just been cleared. Within the past month, the Agricultural Stabilization and Conservation Service, on the recommendation of the Hawaii Division of Forestry and the U.S. Forest Service, has authorized financial help to the Bishop Estate on this project under the Forestry Incentives Program. With the new endangered status of the plant, and the possibility of its being within the remaining project area, a joint survey effort is now being mounted with the blessings of the Bishop Estate. The Fish and Wildlife Service, Division of Forestry, and the

U.S. Forest Service will send biologists early this summer into the 100 acres of remaining forest to determine if the plant is present, and to plan future actions. Based on their findings, joint management recommendations will be made to the Bishop Estate to protect and hopefully increase the species. Bishop Estate has indicated a willingness to work with the various agencies involved to do whatever is necessary to protect the plant.

C. J. Ralph

#### PUBLICATIONS OF THE SOCIETY

HAWAII'S BIRDS by the Society (1975). This is the best field guide to our birds, and includes colored illustrations of all native and well-established exotic species.  
(Postpaid, add 27¢ for airmail)..... \$3.30

FIELD CHECK-LIST OF BIRDS OF HAWAII by R. L. Pyle (1976). A pocket-size field card listing the species recorded in Hawaii with space for notes of field trips.  
(Postpaid) . . . . . .25  
(ten or more, 10¢ per copy)

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#### ALOHA TO NEW MEMBERS

We welcome the following new members and encourage them to join in our activities.

Regular: William Bustard, Kailua; Dept. of General Science, University of Hawaii.  
Subscribers: Walter Protzman, Hopewell, NJ; Thea Shonberg, Scottsdale, AZ; John Van Den Akker, Boring, OR; Golden Odysseys, Snowmass Village, CO.

MAHALO NUI LOA to Sheila Conant for a generous donation to the Society.



## KA-HO'OLAWE EIS COMMENTS

Comments on the DRAFT SUPPLEMENT (1977) to the FINAL EIS on the KAHOOLOAWE ISLAND TARGET COMPLEX, HAWAIIAN ARCHIPELAGO, US NAVY (1972) for the public hearing held in Hilo, Hawaii on 20 April 1978.

For almost forty years the Hawaii Audubon Society has been concerned with wise use of the natural environment in these islands, with emphasis on the protection of Hawaii's native wildlife and their habitats.

After review of the final EIS (Environmental Impact Statement) on the Ka-ho'olawe Island Target Complex and the 1977 Draft Supplement released by the US Navy, we offer these comments:

The tragic history of Ka-ho'olawe in modern times is a classic example of abuse of an oceanic island by continental man. The original people of the land were island-adapted people. The ancient Polynesians had learned how to live on islands. They knew how to use nature's resources without using them up. They harvested in moderation and allowed nature to replenish their needs for another season and for another generation. Their survival depended upon living with the land. The ancient Hawaiians understood well that to destroy the land was to destroy themselves.

Aloha 'āina, or love of the land, is not a nebulous, mystical concept. Living with nature, rather than as masters over nature, respect for the 'āina functioned as a dynamic life-giving and life-preserving force that permeated early Hawaiian life. In effect, it was long-range practical conservation of the race. It meant: if the land lives, we live.

Some would imply that the present-day Hawaiian expression of caring for the land is an emotional frivolity that technological man can brush aside. But put this island message into a larger framework and it is of vital consequence to us all. Truly, the key to survival of humankind hinges on whether we respect the natural environment of Earth -- the environment in which we were created and to which we are adapted. The natural life-supporting systems, the intertwined ecosystems of Earth, sustain biological man. To destroy the diversity and stability of the ecosystems that we need for survival is to endanger our own species -- that means us. This is not a new idea, but it is a pertinent truth.

The Polynesians, as an isolated-island people with no cargo culture or "supermarket" continents close by, seem to have grasped

this basic truth far earlier than peoples living on continents, where nature's stores seemed inexhaustible. Scientists tell us now that technological man is inducing changes in the global natural environment at a faster rate than biological man can adapt to such change. In full knowledge of the consequences, we're causing revolutionary shifts in our life-support systems, while our genetic make-up is incapable of evolving fast enough to accommodate them.

The correlation is there -- the abuse of Ka-ho'olawe and the abuse of the natural environment that supports humankind.

### *Feral Goats*

The remarkable plant and animal communities of these mid-Pacific islands evolved over millions of years totally in the absence of hoofed mammals. The ancient Hawaiians never saw a goat, sheep or cow. It was no favor to the land when early continental ship captains set loose these domesticated continental mammals, including European pigs, to run wild in the island forests. The native forests with their unique birds, plants and insects had no defenses against these foreign animals. The invaders multiplied rapidly. Large herds devastated native plants, eliminated ground cover, girdled trees and disturbed the soil with their sharp hoofs. Soon, as on Ka-ho'olawe, erosion became a serious problem, with wind and rain wasting away the soils laid bare by goats, sheep and cattle.

Sheep and cattle have been removed from the island; wild pigs apparently have not been present in this century, but the omnivorous goat remains. Field biologists who see the damage on inhabited islands agree that the feral goat is a most destructive animal in the Hawaiian ecosystem. Its continued presence on Ka-ho'olawe prevents natural revegetation of the land, as well as any rehabilitation through planting.

Irregular control by shooting parties (Suppl. 9G-H) is ineffective in the long run when a nanny can be bred at five months and drop kids every five months thereafter. The military use problem may defy quick solution, but the senseless, useless degradation of Ka-ho'olawe by feral goats can be halted immediately. We urge the Navy to promptly institute an effective action program for complete eradication of the goats. In co-operation with the Hawaii Department of Land and Natural Resources, set a target date for getting the last goat off the island -- like January 1979?

Extensive planting (Suppl. 9G-H) would be



wasteful before the island is goat-free. Then, as much as possible, focus should be on native dryland plants. Because of the drastic soil loss and extreme xeric conditions, we recognize the possible need for planting such exotics as ironwoods and tamarisk as windbreaks for erosion control and for early success in restoring some of the native flora.

The costs of conservation measures such as goat eradication, planting and surveys are fairly borne by the Navy since it maintains autonomous control of the island.

#### *Biological surveys*

After the goats are gone, thorough, authoritative surveys of the terrestrial, reef and marine communities of animals and plants should be conducted. Such surveys are required for satisfactory compliance with the National Environmental Policy Act and the Endangered Species Act. Also, we call your attention to the President's directive on 23 May 1977 to the Secretary of Defense (among others) to identify "lands under your jurisdiction or control" which appear to be critical habitat of endangered and threatened species.

The presence on the island of the endangered 'Ua'u (Hawaiian Petrel) and the threatened 'A'o (Newell Shearwater) are distinct possibilities during the nesting season. Even a survivor among the five endangered plants that are endemic to Ka-ho'olawe cannot be discounted until a thorough search is made (Suppl. 9F).

No doubt many species that occurred only on Ka-ho'olawe are lost forever, but whatever is left of the native biota is worth saving. We can't write-off the remnant plants surviving in gulches or the dormant seeds in crevices awaiting favorable germination conditions.

Previous surveys made under time constraints, and when the island was under high stress from feral livestock, must be viewed as inadequate. With the stress of mammals removed, there is the likelihood that previously unrecognized endemic plants will appear. Such was the case when goats were removed from the dry lowlands of Hawaii Volcanoes Park and an unknown native legume sprouted up in numbers, apparently from dormant seeds.

Recent advances in the art and skills of biological and archeological investigations must be recognized too. A case at hand is the contrast between the skimpy results of the McAllister archeological survey in 1933 (Suppl. A-5/6), and the rich discoveries by

modern archeological teams on Ka-ho'olawe within the past two years (Honolulu Advertiser 4 Sept. 1976 and 23 Jan. 1977).

Hawaii bird specialists are perplexed to see only four indigenous birds listed in the EIS (C-11/13) -- Koa'e-'ula (Red-tailed Tropicbird), Kōlea (Golden Plover), Noio-kōhā (Common Noddy), and Noio (Hawaiian Noddy) --and no mention at all of birdlife in the 1977 Supplement.

The species list of seabirds and shorebirds that use the inshore waters, rocky coasts, cliffs, beaches and gullies for feeding, resting or nesting will undoubtedly increase by many fold following comprehensive surveys covering all seasons. We can anticipate such substantial additions to the known Ka-ho'olawe bird fauna because of our knowledge of what species occur on or around other islands in the Hawaiian chain.

Shore and reef habitats for birds and marine life may be more hospitable now, since the Navy declares that "the use of shoreline targets for practice has been discontinued in favor of inland targets" (Suppl. 9D). However, there is no evaluation of the impact of this increased bombing and shelling on interior resources.

The Navy bears clear responsibility for upgrading its compliance with federal regulations on environmental protection and conservation practices in the management of the natural resources of Ka-ho'olawe.

*Mae E. Mull*  
*Island of Hawaii Representative*

## MAUI POND PROPOSED FOR REFUGE

25 April 1978

Mr. Roland R. Schulz, Acting Chief  
Branch of Environmental Coordination  
U.S. Fish and Wildlife Service  
Department of the Interior  
Washington, D.C. 20240

Re: Draft EIS on A PROPOSAL FOR ACQUISITION,  
DEVELOPMENT AND OPERATION OF THE KEALIA POND  
NATIONAL WILDLIFE REFUGE, HAWAII

The degradation and direct loss of water-bird habitat on the main islands has been a major continuing concern of the Hawaii Audubon Society since its founding almost forty years ago. It is a rare and refreshing occasion to respond to a comprehensive environmental statement for a proposed project that aims to protect and preserve the critical habitat of endangered Hawaiian birds.



The Society gives its enthusiastic endorsement to the proposal for aquisition and improvement of Kealia pond as part of the National Wildlife Refuge System. We offer a few suggestions to strengthen the final statement.

Should greater emphasis be given to the vital importance of the two Maui ponds for the survival of the Hawaiian Stilt and the Hawaiian Coot? Supporting significant proportions of surviving populations, both Kanaha Pond and Kealia Pond are critical habitat for these endangered species--the only such acreage on Maui and the largest remaining year-round habitat state-wide. Yet both ponds are threatened by encroaching industrial or commercial developments. These threats are understated in the draft document. The fact that Kanaha Pond is a State wildlife sanctuary has not protected it from the construction of an adjacent sewage treatment plant and the placement of wastewater injection wells under the pond. The impact of this facility will not be fully known until it is in operation. Industrial development almost encircles Kanaha, and the risk of pond contamination by toxic substances puts the long-term viability of that essential habitat under a cloud.

If Kanaha becomes inhospitable habitat, could Kealia Pond alone meet the needs of Maui's endangered and indigenous birds, even with its enhancement as a wildlife refuge? The waterbird populations would almost surely be reduced. A similar reduction seems likely if Kanaha survives and Kealia succumbs to development. The two ponds compliment each other in providing security as temporary retreats and exchange feeding grounds--as well as supporting a larger total population than either could do alone. Kanaha Pond should be located on maps in the statment, and the key relationship between the two ponds could be pointed up.

Construction of the optimum amount of pond edges for shorebird and the creation of nesting islands for the endangered resident bird top the list of planned improvements (p. I-11). Could the discussion of water management to meet these goals be more specific--on the location, construction, and capacity of potential wells and pumps for a dependable water supply? Would the shallow wells of the compatable quaculture operation be available for refuge use?

The Society appreciates the opportunity to express its firm support of the overall proposal.

*Mae E. Mull*  
*Island of Hawaii Representative*

## KAWAINUI COURSE OFFERED

The College of Continuing Education and Community Services (CCECS) will be offering a course this summer entitled "The Natural and Cultural History of Kawainui Marsh." The course will be coordinated by Dr. Robert Shallenberger, who has put together a group of speakers with extensive background and experience in the marsh. Topics for evening presentations and discussion sessions will include (1) geological origins, (2) hydrology, (3) micro-organisms, (4) flora, (5) aquatic fauna (stream, marsh, and estuary), (6) bird life, (7) historic human use, (8) current conservation issues and public involvement, and (9) planning for the future. A major objective will be to interrelate all these topics to provide the interested layman with an understanding of marsh ecosystems in general and Kawainui Marsh in particular. It will also be possible to cover the story of human involvement in this wetland from historic times to the present.

Emphasis will be placed on class involvement in directing the course of discussion. As currently planned, there will be five evening sessions tentatively scheduled for Thursday nights between July 13 and August 10. The course will wind up with field trips into the marsh on the weekend of August 12-13, so that participants can immerse themselves (both literally and figuratively) in the "marsh experience." The evening meetings will be held on the windward side, site to be determined. There will be a small fee for participation. If you are interested, watch for the tabloid in the Sunday paper on July 2 with all the details, or call Dr. Shallenberger (ph. 261-3741) for additional information.

## SUMMER CLASSES AT WAIKIKI AQUARIUM

Week-long summer classes will be given on a variety of subjects several times during the summer. The subjects include: "Marine animals of Hawaii"; "Seashore life for children"; "Marine aquarium set-up and care"; "Underwater photography (beginning)"; and "Marine life mini-expeditions."

Many of the classes are given several times; cost is between \$25 and \$35, and \$200 for the "mini-expeditions". For more details, contact the Waikiki Aquarium, 2777 Kalakaua Ave, Honolulu 96815 or telephone 923-9741.



MARCH BOARD MEETING MINUTES,  
March 6, 1978

At the February meeting, the Board had approved an extensive revision of *Hawaii's Birds*, the printing and color separations to be done in Taiwan. Some members were still uneasy about loss of our copyright as a result of the foreign printing. Rob Shallenberger handed out a sheet listing all the possible alternatives, including estimated costs, and the pros and cons of each alternative. The general feeling was that the basic choice was between a reprint with minor corrections at *Star-Bulletin* and a major revision with separations and printing in Taiwan. After lengthy discussion the Board reversed its February decision, and, with one dissenting vote, agreed to the minor revision by *Star-Bulletin*. It was unanimously decided to remove a bibliographic ambiguity by listing Rob Shallenberger as Editor of the revised edition.

Bob Pyle read a letter from Paul Howard, officially accepting our chapter request. The location and program of a special charter presentation meeting was discussed; possible dates are late April or early May. A letter will be sent to NAS members who are not presently members of HAS.

The need for greater consideration of conservation issues was noted by several board members. At times such as this, when lack of manpower is limiting our coverage of conservation problems, it is necessary for each board member to act individually on issues of particular interest. Rick Coleman noted that there are nine resolutions on the floor of the Legislature this session which affect endangered species. The need for a national liaison was reiterated.

Bob Pyle noted the need for a publications chairman. George Campbell volunteered but recognized the need to spread the work around. Rob suggested contacting Harry Whitten. Sheila Conant volunteered to look over our material at Bishop Museum.

Sheila Conant reported on the Rose Schuster Taylor Scholarship. Flyers have been distributed around the University of Hawaii campus, and notices have been placed in the newspaper. The Science Fair will be held the first week in April; Linda Ogata will be judging for the HAS awards. The National Wildlife Week poster has been completed and will be distributed. The text has been sent to the printers, and Rob also announced that a packet discussing four endangered waterbirds has been put together.

APRIL BOARD MEETING MINUTES

April 10, 1978

A number of Board members were out of town or sick, so there was no quorum.

The Scholarship Committee reported that only one application was received for this year's Rose Schuster Taylor Scholarship. It would be wise to get the notices out early. Grant policy has been settled; guidelines were typed up and distributed to board members. At least one grant application has already been received.

Linda Ogata reported the results of the Science Fair. Trophies were presented in both the Junior and Senior divisions. Linda mentioned the importance of presenting the awards in person and keeping in touch with the winners.

We still need (1) Conservation Chairman, (2) Liaison with NAS, (3) help with the Publicity Chairman (Harry Whitten will work with the Honolulu *Star-Bulletin*, but we need somebody else as well.).

- J. F. Walters

DONAGHHO VISITS PANAMA

Walter Donaghho, longtime resident and active field birder in Hawaii, joined a 5-day trip last January into the back wilderness of Panama. The trip was sponsored by Panama Audubon Society and is described in detail in the March 1978 issue of that Society's journal, *The Toucan*. When last heard from several months ago, Walter was on a leisurely trip through Central America, headed for Argentina.

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journal of the Hawaii Audubon Society."

HAWAII AUDUBON SCHEDULE OF EVENTS

June ~~12~~<sup>12</sup> Board meeting at the home  
of John Ford, 744-B Ekela Ave. (737-8440).  
Ekela, on the Honolulu side, can be  
reached from Winam Ave., off Kapahulu.  
Meeting is at 7:00; all members welcome.

June 11. Field trip to Ulupau Head,  
Kaneohe Marine Station and its booby colony.  
This trip will also feature nesting water-  
birds at the ponds on the base. Meet at the  
Hawaii State Library on Punchbowl St. at 7  
a.m., or at 7:30 at the Aikahi Park Shopping  
Center parking lot near the Kaneohe Bay Dr.  
entrance. Leader; Omer Bussen 262-5506.

June 1~~2~~<sup>19</sup> Membership Meeting, fea-  
turing "The Birds of Paradise and Use of  
their Plumage," by Mr. William Haney, a  
graduate student in Anthropology at Colum-  
bia University. Mr. Haney will present  
an interesting slide show concerning his  
researches in the central highlands of  
New Guinea.

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