



## Nukupu'u in the Twentieth Century: Endangered Species or Phantom Presence?

Thane K. Pratt<sup>1</sup>  
and  
Robert L. Pyle<sup>2</sup>

In May 1899, while on a bird collecting trip to Makaweli, Kaua'i, George C. Munro shot the last two Nukupu'u specimens (*Hemignathus lucidus*) ever taken. Without realizing it, he closed an era of discovery that brought this remarkable Hawaiian honeycreeper to the attention of science. Virtually all we know of the hook-billed Nukupu'u is based on about 90 specimens and the firsthand observations of naturalists Wilson (Wilson and Evans 1890-1899), Palmer (Rothschild 1893-1900), Perkins (1903), and Munro (1960). Their accounts depict a bird that closely resembled the 'Akiapola'au (*Hemignathus munroi*) and shared that species' warbled house-finch-like song, energetic bark-excavating behavior, insectivorous diet, and sociality involving solitary pairs. The nineteenth-century naturalists found the Nukupu'u on Kaua'i, O'ahu, and Maui and the 'Akiapola'au only on the island of Hawai'i.

The next six decades passed without major field studies in Nukupu'u habitat. Then, in 1960, Richardson and Bowles (1964) had a fleeting glimpse of two Nukupu'u in the Alaka'i Swamp on Kaua'i, and in 1967 Banko (1968) reported seeing three of the birds in upper Kipahulu Valley on Maui. (Unfortunately, the O'ahu population never reappeared.) These discoveries heralded a slow and sporadic stream of sightings up to the present. Nevertheless, the Nukupu'u remains elusive, and because the birds cannot be reliably found and studied, no special attempt has been made to save this endangered species from extinction.

We began our study as a fact-finding exercise while preparing the Birds of North America account for the Nukupu'u.

The goal was to review all Nukupu'u reports of the past 100 years and learn what information they contained. However, two disturbing questions soon arose: How far did the Nukupu'u survive into the 20th century, and is it alive today? Our paper summarizes the reports to date and assesses the status of this "missing" species.

### METHODS

We reviewed all reports of Nukupu'u detections from the twentieth century in the SIGHTINGS database maintained at Bernice P. Bishop Museum of Honolulu (BPBM). We also searched and crosschecked two other sources: Banko (1984), which contained only observations already in SIGHTINGS, and the Hawai'i Heritage Data Base maintained by The Nature Conservancy of Hawai'i, which yielded two additional reports. None of the reports in SIGHTINGS or elsewhere contained any mention of a specimen collected, photograph, voice recording, or banding data, except as noted below. From these sources we gathered a body of reports of Nukupu'u sightings from 1960 to 1996 (Appendix 1).

We examined all observational data in these reports for information useful for confirming detections. In addition to descriptive notes of morphology and field marks, we extracted descriptions of songs, any references to characteristic foraging behavior such as tapping or drilling, or any mention of nesting events or association with calling juveniles. We analyzed descriptions to identify the birds to species and to suggest a probable age or sex. To evaluate the degree of certainty for each detection, we considered the observer's confidence in his or her identification, and noted the duration of the sighting and whether the same individual bird was seen more than once by multiple observers. Additionally, we classified the

experience of observers on the island in question as (1) a first time visit <8 days, (2) a repeat visit of <8 days, or (3) any visit of >8 days. We also recorded date and location to characterize temporal and geographic patterns of detections. We did not include 8 reports for which the observer was uncertain of the bird's identity.

### RESULTS

We tallied the remaining 47 reports (Table 1). All of the detections were visual observations; no bird was identified by song. Two photos were taken of putative Kaua'i Nukupu'u. One taken at the Kalalau Lookout in 1981 by E. Beauchesne (photo at BPBM) was clearly a misidentified 'Akeke'e (*Loxops caeruleirostris*), judging by its grayish conical bill and forked tail. The other, taken by John Sincok, was never archived and has subsequently been lost. The only voice recording (a Maui Nukupu'u call) was taken by R. Fleischer and has also been misplaced. All observations were of birds not previously seen by others, except in two possible cases. These were (1) three sightings of Maui Nukupu'u by W. Banko in August 1967 followed in September by G. Morrison's report (Banko 1968) and (2) three reports of single male Maui Nukupu'u in Hanawi Natural Area Reserve on October 1994, September 1995, and March 1996 in approximately the same location (Reynolds and Snetsinger, in press).

Birds observed were generally in view for a few seconds to 30 minutes, with 13 of 20 (65%) birds being seen well for <1 minute. No social behavior, breeding behavior, or evidence of breeding was documented, although two observations were of an adult male Kaua'i Nukupu'u with either a female or juvenile, and another bird on Maui was described as a lone juvenile based on its dull plumage

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and yellow coloration at the corner of the gape. Only one bird was noted singing "a short, sweet trill" (King 1961). Foraging birds searched for insects on branches and tree trunks in 7 reports for Kaua'i and none for Maui Nukupu'u. However, the characteristic drilling and tapping were noted only in the following four reports. Donaghho (1965) saw a bird "creeping all over the limbs of an olapa (Cheirodendron) tree, now and then pausing to hack at the stump of a limb." Three birds seen by other observers were noted to be chiseling, and one of them was tapping. However, the described plumages of two of the latter birds better match that of Kaua'i 'Amakihi (SIGHTINGS), which also frequently taps at bark. Kaua'i Nukupu'u were reported taking nectar once each at flowers of 'ohi'a-lehua (Metrosideros polymorpha) and a lobelia (Cyanea sp.), whereas Maui Nukupu'u took nectar once each at flowers of 'ohi'a-lehua and pukiawe (Styphelia tameiameia), and a Nukupu'u reported from Hawai'i Island

in 1971 took 'ohi'a-lehua nectar.

Field marks used by observers to identify Nukupu'u included the bill length and shape and the yellow head in males (Table 1). The most common feature used to identify the bird as a Nukupu'u was the long, strongly decurved bill, and sometimes the upper bill was noted to be longer than the lower bill. Observers in 11 reports identified their bird as a male based on a yellow head and breast. In 67% of reports of Kaua'i Nukupu'u, plumage descriptions indicate that the birds may have been misidentified Kaua'i 'Amakihi. The field marks described for these birds included streaking on the head or yellowish green or greenish underparts, characters that better match the latter species. Nevertheless, all of these descriptions also mention a long, decurved bill, and four note a longer upper bill relative to the lower.

For Kaua'i, most reports (79%) were made by observers on trips of 8 days or less to the island where the bird was seen, whereas for Maui, observers on such short trips were a minority (33%).

## DISCUSSION

New information about the Nukupu'u.

Observations over the past 40 years provide disappointingly little information on the vocalizations, behavior, and ecology of the Nukupu'u. The single description of a Nukupu'u song (King 1961), from Kaua'i, is vague and indistinguishable from Kaua'i 'Amakihi song or from the songs of three other Kaua'i honeycreepers. The reported song differs from the Kaua'i Nukupu'u song described by H. Palmer as a "short but rather sweet warble, consisting of some half dozen notes" (Rothschild 1893-1900, page 102). The Maui Nukupu'u had a very similar and equally distinctive song (Perkins 1895).

Social or breeding behavior would be expected if a population existed. However, none were reported by recent observers. Recent observers did describe foraging maneuvers characteristic of Nukupu'u (as related by Perkins 1903) and generally mentioned their bird ex-

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## Hawaii Audubon Society

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exploring branch surfaces. However, only four reports specify drilling, and in two of these the plumage descriptions are a better match for Kaua'i 'Amakihi. Recent observations of nectar-feeding by Nukupu'u are surprising in view of the absence of such behavior from the eyewitness accounts by nineteenth century naturalists. Perkins (1895, 1903) recalled that the Maui Nukupu'u "on rare occasions" took nectar from 'ohi'a-lehua flowers, although he never witnessed this himself. Nectar-feeding at 'ohi'a-lehua flowers by the closely related 'Akiapola'au is very rare, although this species more regularly drinks from sap wells, an activity requiring considerable gymnastics because of the shortened mandible (J. Jeffrey, pers. comm.).

Taken at face value, the distribution of Nukupu'u sightings suggests a widespread recent geographic range for the species in suitable habitat on Kaua'i and Maui. On Kaua'i, birds were reported from the western Koke'e region east to the southern Alaka'i. On Maui, they turned up in Hosmer's Grove and Waikamoi Preserve and from the Hanawi drainage east to Kipahulu Valley. No one saw Nukupu'u on the island of Hawai'i in the late 19th or 20th centuries except for one report in 1971 (van Riper 1982). This lone Big Island report is particularly enigmatic because the only other evidence for the Nukupu'u on that island is a mid-nineteenth century specimen (Olson and James 1994). Even more perplexing, recent DNA testing suggests that this specimen may instead belong to the O'ahu subspecies (R. Fleischer, pers. comm.).

Does the Nukupu'u survive, or is it extinct? Despite recent reports, no individual Nukupu'u has been seen repeatedly let alone studied, unless one includes the Maui sightings at Kipahulu in 1967 and at Hanawi in 1994-1996. Is the Nukupu'u so rare, so silent, and so secretive that it can linger for the past 40 years beyond the reach of steady observation? Is it realistic to suppose that the Nukupu'u could survive until now in such low numbers? The absence of repeated, verified sightings, together with the scarce and inconsistent behavioral data accompanying recent reports, suggest to us that the status of the Nukupu'u should be re-evaluated.

If the Nukupu'u still exists, what might observers expect to find? We propose that

in behavior, distribution, and demography Nukupu'u would resemble relict populations of its closest relatives, the 'Akiapola'au and Maui Parrotbill (*Pseudonestor xanthophrys*; Simon et al. 1997; T. Pratt, pers. obs.). Adult males would predominate, each in his own large territory, where he would be readily and repeatedly located by characteristic song. Territories would be clustered. Another beacon would be the incessant calling of juvenile birds, similar to that of young 'Akiapola'au and parrotbills. Juveniles of these two species persistently give a unique "chew" note while following their parents around for many months (Simon et al. 1997; T. K. Pratt, pers. obs.). We would expect to find Nukupu'u in pairs, often with attendant juveniles, except in collapsed populations of a few aging males who continue singing to attract females. Solitary or paired Nukupu'u would join mixed species foraging flocks, where they could be followed and watched for long periods (10-40 minutes) while they forage on branches for insects. Foraging behaviors would generally include excavating maneuvers (tapping, deep probing, drilling, chiseling, flaking, pulling, etc.). In fact, tapping would also serve as a means of recognizing and locating Nukupu'u, although tapping by Nukupu'u is not as loud as that of 'Akiapola'au (Perkins 1903). Our data show that none of these demographic or behavioral features (apart from two reports of drilling) have been described in the past forty years for Nukupu'u. Observations instead are brief and document behaviors that are either shared with other honeycreeper species or are uncharacteristic of Nukupu'u.

Amateur birders and field biologists alike contributed records to our database. Noteworthy is that numerous surveys by trained participants could not find Nukupu'u on Kaua'i or Maui. On Kaua'i, the only species of native forest bird not collected by Richardson and Bowles (1964) during their landmark bird survey was the Nukupu'u. John Sincovec, a U.S. Fish and Wildlife Service biologist, reported only two Nukupu'u from 1968-1975 during more than 500 days spent searching for and studying native forest birds on Kaua'i (Scott et al. 1986). The Hawai'i Forest Bird Survey of 1981 failed to find Nukupu'u on Kaua'i (Scott et al. 1986). Follow-up surveys on that island in 1985,

1989, and 1994, and the expanded survey of 2000 found no Nukupu'u (excepting one report from the southern Alaka'i, more below; Hawai'i Division of Forestry and Wildlife [DOFAW], unpubl. data; U.S.G.S. Pacific Island Ecosystems Research Center [PIERC], unpubl. data). The Hawai'i Rare Bird Search (HRBS), a 1996 survey launched specially to rediscover critically endangered birds, logged 562 hours searching in likely habitat throughout the Alaka'i and did not yield a single confirmed sighting or auditory detection (Reynolds and Snetsinger, in press). More recently, four years of field work (1995-1999) by wildlife biologists studying and restoring a population of Puaiohi (*Myadestes palmeri*) turned up no Nukupu'u in the western Alaka'i (PIERC, unpubl. data).

On Maui, the Hawai'i Forest Bird Survey of 1980 logged only one Nukupu'u sighting (Scott et al. 1986), and subsequent surveys in 1992 and 1996 reported only one possible detection (in 1996; DOFAW, unpubl. data). Bird surveys in the upper reaches of Kipahulu Valley in 1983-1984 and 1993 missed Nukupu'u (PIERC, unpubl. data). The previously mentioned HRBS accomplished 833 hours searching on Maui in 1994-1995 and reported only the two sightings mentioned earlier (Reynolds and Snetsinger, in press). However, a five-year study of 'Akohekohe (*Palmeria dolei*) and Maui Parrotbill at Frisbee Meadow in the Hanawi Natural Area Reserve (HNAR; 1992-1997) turned up none. Subsequent searches that logged more than 10,800 person hours throughout the upper elevation forests of HNAR and nearby areas (October 1995- June 1999) failed to confirm earlier detections (Baker, in press; Collins et al. 1999). The recent surveys did find the last three Po'ouli (*Melamprosops phaeosoma*), and these were detected repeatedly. Field crews with the Maui Forest Bird Recovery Project working on other aspects of bird recovery spent thousands of additional hours (1995-1999) in portions of the Hanawi Natural Area Reserve and did not incidentally detect Nukupu'u. This research provides strong evidence that Nukupu'u no longer persist on the northeast slope of Haleakala. It should be noted, however, that very little effort has been spent searching forests below 1500

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m, and past surveys may have overlooked birds surviving at middle elevations, particularly in forests containing koa (*Acacia koa*). Nevertheless, hope for an undiscovered population is tempered by the observation that bird densities decline steeply below 1,500 m on east Maui for most honeycreepers (Scott et al. 1986). To the west, at Hosmer's Grove and Waikamoi Preserve, recent sightings by short-term visitors have gone unconfirmed by long-term researchers who conducted field studies of honeycreepers in the same areas from 1992 to 1997 without seeing, hearing, or netting any Nukupu'u (E. VanGelder, H. Baker, and P. Baker, pers. comm.).

These data from organized surveys and long-term field studies point to the extreme rarity of Nukupu'u sightings and put the remaining reports in a new context with respect to the experience of observers. Most Nukupu'u sightings were reported by people on short visits (<1 week) to the island where the bird was seen. Fewer observers with a longer immediate experience with birds on Kaua'i, and more recently on Maui, reported Nukupu'u. If observers are misidentifying other species as Nukupu'u, what are they really seeing?

On Kaua'i, the bird most likely to be confused with a Nukupu'u is the Kaua'i 'Amakihi, a species that spends much time foraging for insects on tree branches. It certainly forages this way more than 'amakihi on other islands (Perkins 1903, Lindsey et al. 1998). The bill of this bird is about 20% longer and more robust than the bills of O'ahu and Hawai'i 'amakihi (*H. flavus* and *H. virens*, Lindsey et al. 1998), which are more familiar to many visiting observers. Nor is the 'amakihi's normal-length mandible a reliable field character, because the proportional length of a honeycreeper's upper and lower bill can be hard to judge at a distance and may appear uneven. Furthermore, the occasional 'amakihi has a bill deformed by avian pox infections; in others, a tongue stuck out beyond the upper bill can create an instant Nukupu'u! Most observers seem unaware of plumage differences between Kaua'i 'Amakihi and Kaua'i Nukupu'u. Kaua'i 'Amakihi in bright lighting can appear yellow and could be confused with male Nukupu'u (cover photo of Lindsey et al. 1998). The majority of detailed reports of Kaua'i Nukupu'u

actually describe field marks that identify the bird as Kaua'i 'Amakihi. For example, the bird mentioned above from the southern Alaka'i was noted as "all soft yellow, underside lighter"... "almost cream yellow," with yellow-gray lores. By comparison, the head and breast of male Kaua'i Nukupu'u are bright orange-yellow, and the lores are black. Females and young Kaua'i Nukupu'u are greenish gray above and whitish below. Thus, "female Kaua'i Nukupu'u" described as greenish yellow below must be Kaua'i 'Amakihi instead.

On Maui, Hawai'i 'Amakihi and Maui Parrotbill are the only somewhat likely sources of confusion. Female and young Maui Nukupu'u are not readily distinguishable by plumage from either species. Therefore their identification depends entirely on the bill being seen well, which, as we have learned from mistakes with Kaua'i 'Amakihi, is not as easy as it may seem. The Maui Parrotbill's beak is surprisingly narrow and hooked and at an angle can appear quite slender as well (cover photo of Simon et al. 1997). The slender appearance is enhanced when the dark ridge of the upper bill is seen in contrast to the pale rest of the bill.

It is not unexpected that observers misidentify other species as Nukupu'u. No modern publication illustrates the plumages of the three island forms of Nukupu'u. Without illustrations, plumage comparisons with 'amakihi and Maui Parrotbills cannot be made with confidence. We commend the training received by participants of bird surveys, particularly when training includes examining museum specimens. This preparation has likely paid off in fewer misidentifications. Appendix 2 describes field marks to guide the identification of these potentially confusing birds.

An important lesson learned is the value of recording in detail the appearance and behavior of rare birds and that observers should document their sightings carefully. These data can be used to judge a bird's identity and, if it is a Nukupu'u, to develop a profile of information. Sightings should be submitted to a database such as SIGHTINGS to become part of the permanent record. Even uncertain sightings can provide a potential lead to an undiscovered population.

## CONCLUSIONS

Based on our analysis of reported sightings of Nukupu'u, we cannot cite

unequivocal evidence that the Kaua'i population survived beyond 1899. For the Maui Nukupu'u, there are only two instances where more than one qualified observer saw what may have been the same bird(s) and submitted detailed field notes (Banko 1968, Reynolds and Snetsinger, in press). Sadly, further extensive searches in the 1990s for Kaua'i or Maui Nukupu'u did not find either bird again. Still, we cannot easily dismiss well-documented reports of Nukupu'u. It is conceivable that the Nukupu'u was alive and seen in the past 40 years, a time of decline and extinction for other species of honeycreepers (Conant et al. 1998, Reynolds and Snetsinger, in press).

This uncertainty prevents us from rejecting all available records and concluding that the Nukupu'u has been dead and gone these hundred years. Nevertheless, we must emphasize that none of the sightings is supported by good behavioral evidence, particularly song. Nor are there reports backed up by specimens, photographs, banding records, or voice recordings. Over the past decade, organized surveys have searched in vain for a population of Nukupu'u to be studied and saved. If the species is not now extinct, it soon will be.

## POST SCRIPT

When this manuscript was first reviewed, one reader warned that the paper would really upset some people, and another remarked that we were trying to make the Nukupu'u into the Loch Ness Monster of the Alaka'i Swamp. Not so. The fate of the bird is unresolved and open to different interpretations. Mainly, we intend this to be a fair and long-overdue review of the Nukupu'u record and a commentary on how to improve the quality of reports. To do that we had to talk about past reports, individually and collectively, and we did this with an understanding of our own fallibility as observers. If there is any embarrassment at all, then a glance at Appendix 1 shows there is plenty of company to share it! Lastly, we may have misrepresented or misinterpreted some reports or missed others altogether. If so, now is a good time to send to SIGHTINGS any corrections or additional information for the reports in Appendix 1 or full information for any reports not listed there (to SIGHTINGS, c/o Bob Pyle, Bishop Museum, 1525 Bernice St, Honolulu, HI 96817, or to [rlpyle@bishopmuseum.org](mailto:rlpyle@bishopmuseum.org)). This would be much appreciated.

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### 1 Thane K. Pratt

U.S.G.S. Pacific Island Ecosystems Research Center

P. O. Box 44

Hawai'i National Park, HI 96718

Phone 967-7396, ext 234; Fax 967-8568

Email: [thane\\_pratt@usgs.gov](mailto:thane_pratt@usgs.gov)

### 2 Robert L. Pyle

1314 Kalakaua Ave., #1010

Honolulu, HI 96826

Phone 983-4646

Email: [HYPERLINKmailto:rlpyle@bishop.bishopmuseum.org](mailto:HYPERLINKmailto:rlpyle@bishop.bishopmuseum.org) or [rlpyle@bishopmuseum.org](mailto:rlpyle@bishopmuseum.org)

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**Table 1. Reports of Nukupu'u by island, 1900-1999, with details of descriptions and immediate experience of the observer on the island where the sighting occurred. There were no reports of Nukupu'u on O'ahu.**

	<u>Kaua'i</u>	<u>Maui</u>	<u>Hawai'i</u>
Number of reports	23	24	1
Appearance described	15	12	1
Bill long and hooked	14	8	1
Upper bill longer than lower	7	5	1
Head yellow	5	6	1
Plumage better fits 'amakihi	10	0	-
Experience on island < 8 days	19	8	-
Experience on island > 8 days	5	14	1

**Appendix 1. Listing of Nukupu'u reports for 1900-1999.**

OBSERVER	DATE	LOCALITY	CITATION
<b>KAUA'I</b>			
Richardson, F., Bowles, J.	1960	Koaie	Richardson and Bowles 1964
King, B.	March, 1961	Koaie?	'Elepaio 22:3
Donaghho, W.	August, 1964	Koaie	'Elepaio 26:29
Ord, M	1965-1966	Koaie	SIGHTINGS
Gauthey, J., et al.	June, 1968	Koaie	'Elepaio 29:20
Sincock, J.	1973-1974	Alaka'i	'Elepaio 37:107
Conant, S.	July, 1975	Alaka'i	Conant et al. 1998
Harper, C.	July, 1979	Koke'e	SIGHTINGS
Beauchesne, E.	March, 1981	Koke'e	SIGHTINGS
Trochet, J.	March, 1985	Koaie	SIGHTINGS
Marsh, T	June, 1985	Koke'e	SIGHTINGS
Ecton, M., Pyle, R.	June, 1985	Southern Alaka'i	SIGHTINGS
Telfer, T.	June, 1985	Southern Alaka'i	SIGHTINGS
Telfer, T., Kepler, C.	June, 1985	Southern Alaka'i	SIGHTINGS
Hamilton, L.	October, 1986	Awa'awapuhi Tr.	SIGHTINGS
Beal, E.	February, 1988	Koke'e	SIGHTINGS
Carpenter, G.	April, 1989	Nu'alolo Tr.	SIGHTINGS
Heatley, T	July, 1989	Kilohana	SIGHTINGS
Modesitt, J.	February, 1991	Alaka'i Swamp Tr.	SIGHTINGS
La Via, V.	February, 1992	Alaka'i Swamp Tr.	SIGHTINGS
Danzenbaker, M.	May, 1992	Pihea Tr.	SIGHTINGS
unk	October, 1992	Kalalau Lookout	SIGHTINGS
Campbell, K.	January, 1995	Pihea Tr.	SIGHTINGS
Casey, T.	May, 1995	Mohihi Tr.	SIGHTINGS
Casey, T.	June, 1995	Mohihi Tr.	SIGHTINGS
Jeffrey, J.	June, 1995	Mohihi Tr.	SIGHTINGS
Rose, J.	January, 1996	Alaka'i Swamp Tr.	SIGHTINGS

continued on page 41



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## MAUI

Banko, W.	August, 1967	Kipahulu	Banko 1968
Morrison, G.	September, 1967	Kipahulu	Banko 1968
Hana RF	1973	E. Maui	'Elepaio 37:107
Stemmerman, L.	June, 1976	Hanawi	'Elepaio 41:59
Conant, S.	August, 1978	Kipahulu	'Elepaio 41:59
Stemmerman, M.	March, 1979	Kipahulu	'Elepaio 41:77
Mountainspring, S.	May, 1981	Hanawi	SIGHTINGS
Newman, A.	1983	Waikamoi	'Elepaio 44:6
Mountainspring, S.	July, 1983	Hanawi	SIGHTINGS
Engilis, A.	November, 1985	Hanawi	'Elepaio 50:68
Ecton, M., Williams, J.	January, 1986	Hanawi	SIGHTINGS
Gagne, B.	March, 1986	Hanawi	'Elepaio 50:68
Engilis, A.	May, 1986	Hanawi	'Elepaio 50:68
Ecton, M., Kjargaard, M.	May, 1986	Hanawi	SIGHTINGS
Martin, D.	1987	Ko'olau Gap	SIGHTINGS
Gon, S.	March, 1988	Hanawi	H. Heritage Data Base
Fleischer, R.	May, 1989	Hanawi	SIGHTINGS
Rydell, R.	May, 1990	Waikamoi	H. Heritage Data Base
Schock, M.	1991	Hosmer Grove	SIGHTINGS
Greaves, E.	March, 1993	Hosmer Grove	SIGHTINGS
Park trail leader	1994	Waikamoi	SIGHTINGS
Tolman, G.	1994	Waikamoi	SIGHTINGS
Johnson, C.	November, 1994	Hosmer Grove	SIGHTINGS
Jeffrey, J.	October, 1994	Hanawi	SIGHTINGS
Master, B.	October, 1994	Waikamoi	SIGHTINGS
Reynolds, M.	September, 1995	Hanawi	SIGHTINGS
Berlin, K.	March, 1996	Hanawi	SIGHTINGS

## HAWAI'I

van Riper, C.	June, 1971	Kohala Mts.	van Riper 1982
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### Appendix 2. Field marks for identifying Nukupu'u.

Kaua'i Nukupu'u: This form is slightly smaller than, but overlapping in size with, the more familiar 'Akiapola'au from the Big Island. Kaua'i Nukupu'u are substantially larger than Kaua'i 'Amakihi, weighing perhaps half again as much. Adult males have a brilliant orange-yellow head and breast and black lores; the mantle, wings, and tail are yellowish green. Females and immature birds are greenish-gray above and whitish below, sometimes with small patches of yellow above the lores and on the chin. Except for the yellow in the face, the two-toned plumage of female and immature Kaua'i Nukupu'u (olive gray above, white below) more closely resembles that of their frequent companions the 'Akikiki (*Oreomystis bairdi*), than of a Kaua'i 'Amakihi! Kaua'i Nukupu'u are not greenish yellow below, as are Kaua'i 'Amakihi.

Maui Nukupu'u: This form is smaller than 'Akiapola'au or Kaua'i Nukupu'u, with little overlap in size; it is identical in size to Maui Parrotbill and much larger than 'amakihi on Maui. Males resemble male Kaua'i Nukupu'u, but the yellow on the head extends only to the back of crown and nape, and the mantle is gray-green rather than yellow-green. Both sexes of Maui Nukupu'u differ from Kaua'i Nukupu'u in that the flanks are obviously darker. Compared with male Maui Parrotbill, male Maui Nukupu'u have yellow on the crown. Females and immature birds are gray-green above and yellowish, yellowish gray, or yellowish green below. A pale yellow superciliary line extends over and behind the eye (lacking in Kaua'i Nukupu'u), bringing Maui Nukupu'u closer in appearance to Maui Parrotbill, to which they are nearly identical in plumage. The upper bill is wire-thin rather than a thicker parrot-like beak.

What about that amazing bill? The Nukupu'u's upper bill is not simply longer than the lower. The difference between the upper and lower bill is greatly exaggerated in length and shape. The upper bill is an unmistakable, thin, wiry hook, and the lower bill is half as long and stouter than the upper.



# Citizen Suit Secures Protection for Imperiled O'ahu Forest Bird

As a result of a lawsuit brought by Earthjustice Legal Defense Fund on behalf of the Conservation Council for Hawai'i (CCH), the critically imperiled O'ahu 'elepaio (a native forest bird) is finally benefiting from protection under the federal Endangered Species Act ("ESA"). On January 3, 2000, CCH filed suit against the Secretary of the Interior and the Director of the United States Fish and Wildlife Service ("Service") to compel the Service to take final action on a proposed rule to add the O'ahu 'elepaio to the endangered species list. Sightings of the O'ahu 'elepaio — once abundant in forested areas throughout O'ahu — have plummeted in recent years, with only an estimated 1,500 birds remaining, and the bird now occupies only about 4 percent of its original, historic range. The bird's dramatic decline prompted the Service to propose the O'ahu 'elepaio for listing as endangered on October 6, 1998, but the Service then failed to comply with the ESA's strict mandate to finalize this proposal within one year. As a result of a settlement reached in February 2000, the Service published a final rule today (04/18/00) listing the O'ahu 'elepaio as an endangered species.

Finalizing the proposed rule was necessary to extend to the O'ahu 'elepaio the full range of legal protection that listing under the ESA confers. Now that it is listed, both federal and state law prohibit harassing, harming or killing the O'ahu 'elepaio, including habitat modification that significantly impairs the bird's normal behavioral patterns such as breeding, feeding or sheltering. Listing will

also require all federal agencies — including the Department of Transportation and the military — to ensure that their actions will not push the O'ahu 'elepaio towards extinction in the wild.

"While we're pleased that the O'ahu 'elepaio is finally protected as an endangered species, we're frustrated that, once again, the Service has flouted its duty also to designate the species' critical habitat," said Earthjustice Legal Defense Fund attorney David Henkin. "It's unfortunate that concerned citizens have to take the Service to court to force it to comply with the law. But critical habitat protection is vital to the O'ahu 'elepaio's recovery, so that's what we'll do."

"Critical habitat" consists of those areas that must be managed to permit an imperiled species to recover to a level where it is safe, for the foreseeable future, from the danger of extinction. Critical habitat designation generally has little impact on private land owners since it is directed solely at actions carried out, funded or approved by federal agencies. Nonetheless, designating critical habitat confers significant benefits on Hawai'i's listed species by protecting them from federal agency actions — such as federal funding of road improvements, federal infrastructure projects, and military training — that can adversely modify or destroy the habitat on which these species depend for their survival and recovery. Also, designating critical habitat performs an important educational role, informing the public as well as state and local governments about areas essential to the conservation of Hawai'i's native species.

Habitat loss and degradation currently pose one of the primary threats to the O'ahu 'elepaio. For example, the H-3 freeway — completed in 1997 — cut through Halawa Valley, home to one of only seven remaining populations of the bird. Suburban and golf course development also displaces habitat the O'ahu 'elepaio needs. Ordinance-induced fires and related military activities at Makua Military Reservation and Schofield Barracks pose significant threats to a large part of the bird's remaining habitat in the eastern Wai'anae Mountains.

Conservation Council for Hawai'i is a non-profit citizens' organization with over 300 members on O'ahu, approximately 550 members elsewhere in Hawai'i, and several hundred members in other parts of the United States. CCH seeks to promote environmental health and education in general, and the conservation and management of Hawai'i's natural resources in particular, including imperiled Hawaiian forest birds like the O'ahu 'elepaio.

Earthjustice Legal Defense Fund (formerly Sierra Club Legal Defense Fund) is a non-profit, public interest, environmental law firm. The Mid-Pacific office, which opened in Honolulu in 1988, has represented dozens of environmental, native Hawaiian, and community organizations in litigation and administrative proceedings.

*source: Earthjustice Legal Defense Fund news release dated 4-18-00.*

*Contact: David Henkin, (808) 599-2436 (Earthjustice)*

## Volunteers Needed for Wetlands Cleanups

Volunteers will be needed this summer to work clearing the bird sanctuary on Enchanted Lake in Kailua (Kiuke'e Place - just off Ke'olu Drive). The Enchanted Lake Bird Sanctuary is one of few wetland habitats available to waterfowl on the island of O'ahu, and one of the most accessible places to see them. It is home to endangered and indigenous birds such as the Hawaiian coot, Hawaiian moorhen, Black-necked Stilt, and Black-crowned Night Heron.

The upper and lower canals are overgrown with California grass and infested

with an alien species, *Salvinia molesta*. Removing the grass and weeds will allow for an increase in water flow, providing additional nesting areas for the birds and flushing the *Salvinia molesta* downstream where the salinity kills this alien weed. It is hard, dirty work. Hardware Hawai'i has donated tools and equipment but if you have machetes, sickles, or a kayak or rowboat, those will also be needed!

Can you help us? If so, please contact us at 261-7721 or e-mail to kahilist@aloha.com We will contact you when we plan our next cleanup. Mahalo!

## National Audubon Society Election

Election of a nominee to the NAS Board of Directors from the Alaska/Hawaii/Guam Region will be held at the regularly scheduled HAS Board meeting on June 12. All interested members are welcome to participate. Amy Skilbred from Juneau, Alaska is running unopposed for re-election to a second three-year term.



# Kailua Ahupua'a: Past, Present, and Future: a Community Symposium to be held June 17, 2000

*Sponsored by Kawai Nui Heritage Foundation and 'Ahahui Malama I ka Lokahi*

This will be an opportunity for the Windward Community to learn about the ahupua'a concept and, in that context, the current status of a number of activities proposed by government and community groups in the Kailua Ahupua'a. The Symposium will be held at Le Jardin Academy, courtesy of the Academy, from 8:30 a.m. - 1:30 p.m. followed by an optional two-hour bus tour of three sites in the Kailua Ahupua'a.

8:30 - 9:00 a.m. Registration & exhibits

9:00 a.m. Oli and introductions

? - noon Ecosystem & Watershed Health, Bruce Wilcox, Ph.D.,

The Ahupua'a: Origins & Values, Stephen Kubota & Lynette Cruz, Ahupua'a Action Alliance

Hawaiian Sites in the Kailua Ahupua'a, Kawao Durante

Direction Plan - Precursor & Pointer, Kawai Nui Heritage Foundation

Waterbird Ponds Restoration, Benton Ching, USA-COE

Kawai Nui Marsh Management Plan, Paul Conry, DLNR Wildlife Biologist

City & County Vision Team Proposals Affecting Kawai Nui & its Watershed, Kailua & Waimanalo Vision Team Members

12 noon - 12:45 p.m. Lunch, exhibits

12:45 p.m. Bellows AFS Restoration - Native Plants & Watershed Protection, Diane Drigot, Ph.D., Environmental Protection Specialist, Marine Corps Base Hawai'i

Wetlands Information Network, Sharon Reilly, Ducks Unlimited

1:45 - 3:45 p.m. Bus tour of three sites in the Kailua Ahupua'a

To reserve your place at the symposium, please mail a check payable to Kawai Nui Heritage Foundation for \$7.00/person for lunch & materials to Kawai Nui Heritage Foundation, P. O. Box 1101, Kailua, Hawai'i 96734 for receipt not later than June 14, 2000. Please include a daytime or evening phone number. Questions? 595-3922

## Field Trips for 2000

All trips with an \* are still in the process of being planned. Details will be provided as the scheduled dates get closer. A donation of \$2.00 per participant on all field trips is appreciated.

**June 17 Pelagic Birding Trip** on a 42-foot sailboat to look for seabirds. All seats taken - Call HAS office to be placed on cancellation list, 528-1432.

**June 23 Rowland's Pond**, an unusual artificial wetland. Located near Barbers Point, the 5-acre pond is now a permanent home for about 100 Hawaiian Stilts, or ae'o. We will be accompanied by a representative of the U.S. Fish and Wildlife Service. Trip limited to 20 people. Call Mary Gaber at 247-0104 for reservations and info.

**July 8 Poamoho Trail** This ridge trail to the Ko'olau summit starting from behind the Dole pineapple stand features many native plants on the upper portions of the trail. It's also possible to see native birds such as the 'amakihi and 'apapane and perhaps land snails at the trail's end but the real payoff is a spectacular view of Kahana valley. The exact length of this hike is somewhat dependent upon weather conditions and whether we have enough 4 x 4 vehicles to get us to the trailhead. The access road is much improved due to recent work by the state. Be prepared for a long day; the round trip could take 5 to 8 hours depending on how far we actually have to hike. Bring lots of water, a lunch and other snacks, rain gear, sun protection and binoculars. Reservations are required. Call Sharon 739-2438 for directions and meeting places. Limited to 10-15 participants.

**July 23 Kamananui (Moanalua) Valley family hike.** We are privileged to have Lorin Gill as our leader on a walk along the Kamananui Valley trail. Lorin's expertise in the geology, history, and botanical features of the Valley will add to our enjoyment and understanding of this historic place. Among other interesting sights, we will see the revered Pohakukaluahine petroglyph rock. Be prepared for sun or maybe rain, wear sturdy walking shoes, wear sunscreen and bring snacks and water. The limit is 20 persons, and to reserve, please call Mary Gaber at 247-0104.

**August 20 Native Forest Bird Captive Propagation Unit at Honolulu Zoo.** See and hear 'amakihi, 'apapane, and 'i'iwi up close, along with an aging but charming Laysan finch. Two trips, 9:30am and 1:30pm, each limited to 10 people. This is a very popular trip, so make your reservations early! Call HAS office to register, 528-1432.

**September 4 Keauhou on the Big Island** - trip to see forest birds

**October 28 James Campbell National Wildlife Refuge**

**November 25th 'Ewa Plains Sinkholes** to look for fossils of extinct Hawaiian birds with Dr. Alan Ziegler.

**December -\*Christmas Bird Count**



# My Paradise Pursuits Experience

*by Statewide Champions of the Hilo Team: Emma Yuen, Miki Yoshioka, and Jessica Hara*

**Emma Yuen says:** I've really enjoyed Paradise Pursuits, not only for the victory, but for all the knowledge I gained as the team captain this year.

Now, when I look around Hawai'i, I really know what is happening, what various plants and animals are, what people are talking about. My parents are incredibly involved in the environment, and they would always talk about different environmental topics and try to teach me about the different topics, flora and fauna. But I would never learn them. Now, it seems, with the pressure of being in a team and the need to absorb the knowledge, after years of my parents trying to teach me information, I finally have learned it.

Likewise, I know some of the issues surrounding Hawai'i's environment, but that is a suggestion I have for the show, that they have us learn more current events about specific environmental issues. I work part time as the website designer for Environment Hawai'i, an environmental newsletter, and every day I sift through pages and pages about different environmental issues. Those issues talk about developments going on, industries that are polluting our environment, the community's response to different environmental issues, etc. Those are very important facets of Hawai'i's natural environment that haven't been discussed in

the two years that I have been in Paradise Pursuits.

Plus, the whole experience was very fun because of my very amiable teammates who never let anything get too serious or formal.

**Miki Yoshioka has this to say:** It all started when Ms. Wong asked us if we wanted to be on TV. Of course I said yes but I really didn't know what I was getting myself into. We studied and drilled each other on all of the books on our bibliography. Although the practices were a lot of work, it was still fun because of the BUZZERS! We got to use the buzzer system when we were quizzing each other. All of the work paid off when we won the statewide title. It was very exciting because for most of us it was our first time and 3 out of 4 of us were freshmen. I learned so much not only about Hawai'i's ecology but also about teamwork. I can't wait to go back next year!

**Jessica Hara's experience:** The Paradise Pursuits statewide competition was one of the greatest academic competitions that I have ever had the privilege to compete in. Not only was the material that we had to study wide ranging, but it was also very informative and interesting.

But enough about the academic aspects of Paradise Pursuit, there is also a great social side to the games as well, or

at least there was in my case. My teammates were Rachel Klein, Emma Yuen and Miki Yoshioka, and I had known them for a while before we all got together to join the Paradise Pursuits team. Because we had all known each other and were all about the same age, we were able to relax in each others' company, joke around, and really get to know one another. I think this gave our team the ability to trust each other when it came to answering questions. We were one of the few teams that talked over almost every question before giving our final answer. Our close camaraderie also enabled us to enjoy our brief trip on O'ahu, eking out every last minute of the day to go shopping, study, sing in the car, or just kick back and talk story with each other. I look back now and wonder how our coach, Mrs. Jeanette Wong, was able to handle the four of us without going crazy!

I think Paradise Pursuits was a great experience for me because I got to meet new people from other schools, learn new things about our state, be on TV, strengthen my friendship with my teammates, and many, many other things that are too numerous to list. Because of this, I would like to send my deepest thanks to the Hawaii Audubon Society and all their sponsors for making Paradise Pursuits possible. Aloha and I'll see you next year!

## *Environment Hawai'i To Celebrate 10 Years of Publication*

*by Pat Tummons*

Environment Hawai'i will celebrate completion of ten years of publication with a dinner July 14, 2000, at the Pagoda Hotel. Following dinner, renowned photographers Susan Middleton and David Liitschwager will present a sneak preview of the portraits of rare Hawaiian species that will be included in their next book.

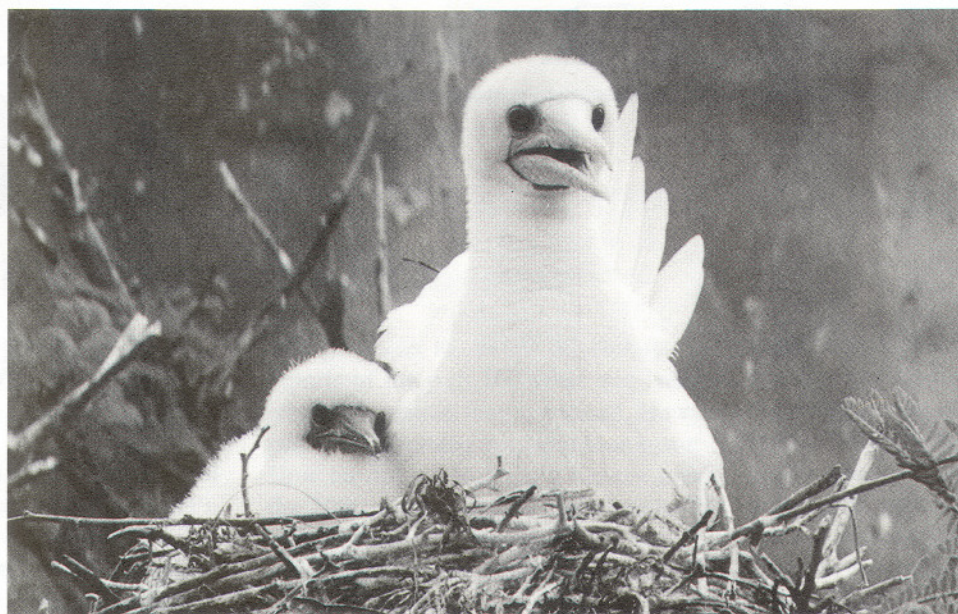
Environment Hawai'i, founded in 1990, is the state's single best source of news on environmental issues. Over the years, it has scooped the dailies with reports on the "spaceport," storage of spent nuclear fuel at Pearl Harbor, the transfer of the Olinda endangered species facility to the Peregrine Fund, plans to pare back the already strapped Natural Reserve System, and dozens of other stories.

The subscriber-supported newsletter is edited by Pat Tummons. Senior staff writer is Kailua High and UH graduate Teresa Dawson. Susie Yong is administrative assistant, and Emma Yuen, a high school sophomore - and on the winning Paradise Pursuits team this year - is webmaster and columnist for the newsletter.

The cost of the July 14 event is \$50, with \$25 deductible as a charitable contribution to the newsletter, which is a tax-exempt 501(c)(3) corporation. To reserve a seat, call the newsletter, toll-free, at 877 934-0130 or email HYPERLINK "mailto:pattum@aloha.net" or pattum@aloha.net



*Mom and baby Red-footed Boobies greeted the 24 participants in the April 20 Field Trip to the Booby Colony at Marine Corps Base Hawai'i. Thanks to the Base for hosting us again!*



## *Fascinating Program Meetings Scheduled for June and August!*

On Monday, June 19, Dr. Michael Hadfield, University of Hawai'i Professor of Zoology and Director of the Kewalo Marine Laboratory will give a talk entitled, "Multiple Approaches to the Conservation of Hawaiian Tree Snails." The Hawaiian tree snail, once so numerous that lei were made of its shells, is on the brink of extinction and has been listed as an endangered species. The Army and the University of Hawai'i have been working closely for the past five years on a joint project at Makua Valley to save one of the largest known families of tree snails. Come learn about the threats to this rare and beautiful creature and about what is being done to encourage its survival.

On Monday, August 21, Beth Flint, a Wildlife Biologist for the U.S. Fish and Wildlife Service will give a presentation entitled, "Conservation and Status of Seabirds in Hawai'i and the Tropical Pacific."

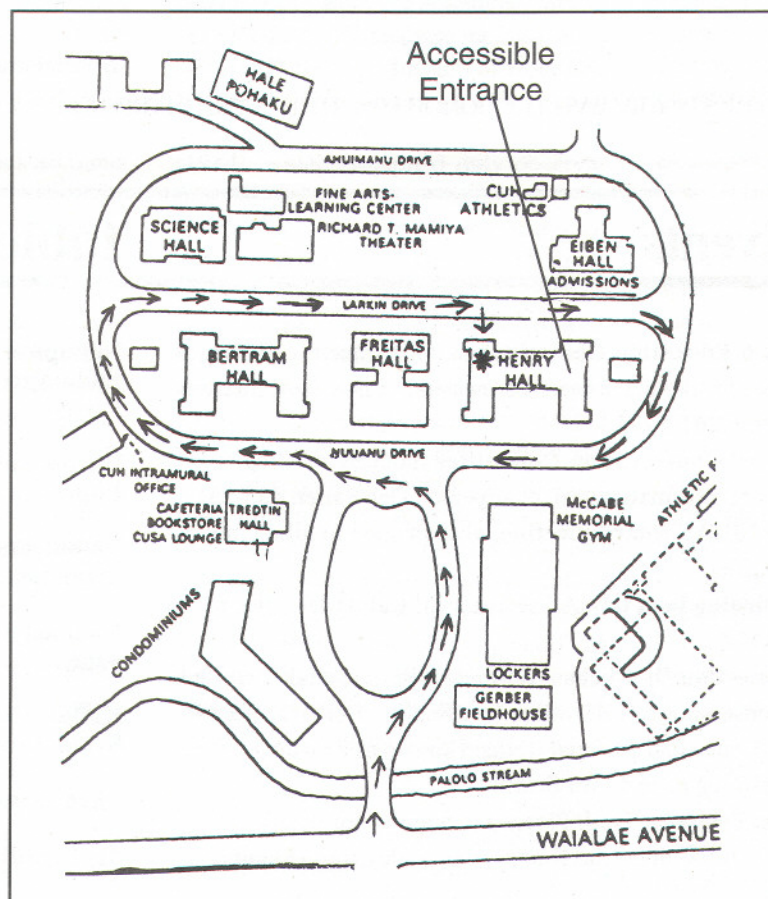
Did you know that some seabirds spend years out at sea before returning to land to find a mate and raise young? Beth Flint has spent most of her career researching

seabird ecology. She earned a Bachelor's degree in Wildlife Biology from the University of Montana and a Doctorate in Biology from UCLA. She recently coordinated the Second International Conference on the Biology and Conservation of Albatrosses and Other Petrels held in Honolulu in May 2000.

Program meetings are now held in Room 109, the Audio-Visual room on the first floor of Henry Hall on the Chaminade University Campus (see map) park in any available spots along the route shown by arrows).

Members were mistakenly directed to Room 106 for the last Program Meeting-our apologies!

It is Room 109! Meetings are from 7:30 to 9:30pm. Refreshments are served, and HAS publications and T-shirts will be available for purchase.







JUNE/JULY 2000

# 'ELEPAIO

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## Calendar of Events

**Thursdays, June 1 and July 6 Education Committee** monthly meeting, 7 p.m. at BaLe Sandwich Shop in Manoa Marketplace (near Safeway). For more information, call chairperson Wendy Johnson, 261-5957.

**Mondays, June 12 and July 10 Conservation Committee** monthly meeting at the HAS office at 5:45 p.m. For more information, call chairperson Dan Sailer, 455-2311.

**Mondays, June 12 and July 10 HAS Board meeting**, always open to all members, 6:30 to 8:30 p.m. at the HAS office.

**Saturday, June 17 Palagic Birding boat trip** All seats taken! Call HAS office to be put on cancellation list, 528-1432.

**Monday, June 19 Program meeting** Dr. Michael Hadfield will give a talk entitled, "Multiple approaches to the Conservation of Hawaiian Tree Snails." Details on page 45.

**Friday, June 23 Field trip** to the unusual artificial wetland known as Rowland's Pond to see Black-necked stilt. Please see page 43 for details.

**Saturday, July 8 Field trip** to Poamoho Trail. Please see page 43 for details.

**Sunday, July 23 Field trip** A walk along the Kamananui Valley trail (Moanalua). Please see page 43 for details.

**Sunday, August 20 Field trip** to Native Forest Bird Propagation Unit at Honolulu Zoo. Please see page 43 for details.

**Monday, August 21 Program Meeting** Beth Flint will give a presentation entitled, "Conservation and Status of Seabirds in Hawai'i and the Tropical Pacific." Details on page 45.

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