'ELEPAIO

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The Hawaiian Honeycreepers Revisited

by Dean Amadon

A decade ago two college students, Tonnie Casey and J.D. Jacobi, sent me a specimen of a puzzling bird they had discovered on Maui. With the help of others, I concluded that it was not some exotic introduction, but indeed a new genus and species. They described it as *Melamprosops phaeosoma,* the Po'ouli or Blackfaced Honeycreeper (Casey and Jacobi 1974). Its somber coloration is somewhat unusual for this family or, as most now call it, subfamily, the Hawaiian Honeycreepers or Drepanidinae; but it is exceeded in that respect by the Black Mamo *(Drepanis funerea),* while the blackish facial markings are reminiscent of those of *Loxops (coccinea) caeruleirostris.*

Bock (1978 and partly summarized in Casey and Jacobi) described and figured the tongue of the new genus and concluded that it "supports strongly the inclusion of *Melamprosops* in the Drepanididae." Later, Dr. Richard Zusi of the Smithsonian wrote me that the interorbital septum agrees with that of the Drepanidinae, as he had described it (Zusi 1978).

On geographic grounds alone one would expect an endemic, nine-primaried songbird from the Hawaiian Islands to be a honeycreeper. There is no good reason to hesitate to place *Melamprosops* in the Drepanidinae following *Loxops.* Nonetheless, Pratt (1979) put it in "incertae sedis", a paleontological term now in vogue for forms of uncertain position, and this was followed by Berger (1981) in the revised edition of his HAWAIIAN BIRDLIFE. The latest edition of the CHECKLIST OF NORTH AMERICAN BIRDS of the American Ornithologists' Union (1983) does little better, placing *Melamprosops* at the end of the Drepanidinae with a statement that its relationships are uncertain.

This is not the only instance in recent years in which the genera of the Hawaiian honeycreepers have been bandied about in rather cavalier fashion; not that I would for a moment maintain that my own earlier revision (Amadon 1950) is incapable of improvement. Thus Greenway (1968), when listing the family for PETERS CHECKLIST, made a number of generic changes that were never, to my knowledge, explained. Dr. Pratt, followed as noted for the most part by Berger and the AOU CHECKLIST, put in place a number of changes. Some seem rather extreme, as in placing the tiny 'Anianiau *(parva)* and the much larger, huge-billed Kauai 'Akialoa *(procerus)* in the same genus. Pratt would also again segregate the finch-like honeycreepers in a third main sub-group, using names that were supplied back in the heyday of the genus splitting period. Here again, he was followed by the AOU CHECKLIST, which, moreover, placed the least specialized of these "finches", the Ou, *Psittirostra psittacea* between two species with very similar beaks, the Laysan Finch *(cantans)* and the Palila *(bailleui).* But, if one compares *Psittirostra psittacea* with the Akiapola'au *(Hemignathus munroi-wilsoni),* the futility of separating these two similar, yellow-headed species at anything above the generic level seems apparent. They show how the transition from a thin decurved bill to a finch-like bill (or vice versa) could have occurred (Amadon 1947, 1950).

When it was thought that the ancestor of the Hawaiian honeycreepers was a nectar-feeding bird, probably from tropical America, it was easy to hypothesize an ancestor for the two tribes; both of which contain specialized nectar-feeding species with similar tubular tongues. There is considerable evidence from a variety of sources that the Drepanidinae are most closely related to the Cardueline finches, the group containing the goldfinches and house finches (Zusi 1978). Carduelines are in general thick-billed seed-eaters. Some of them, however, such as the Pine Siskin *(Carduelis pinus)* are relatively thin-billed; and some of them take nectar, at least occasionally. I have myself observed an American Goldfinch *(C. tristis)* feeding from the large blossoms of a *Bombax* tree.

Short and Horne (1978), impressed by the number of species of African weaverfinches (Ploceinae) that more or less frequently eat nectar, have suggested that the habit of manipulating seeds in the beak may preadapt a species or group for nectar feeding. They wrote: "Weavers generally are held to be seed-eaters that feed on insects to some extent. Most insectivorous birds subject their prey to relatively little manipulation once it has been caught. We submit that the seed-eating habit, because it requires the manipulation of seeds by the tongue and bill of the bird, actually favors diverse feeding adaptations in seed-eaters and their derivatives. Thus in a sense seed-eating 'preadapts' birds to a variety of feeding habits, including nectar-feeding. For example the Hawaiian honeycreepers and Australasian nectar-feeding parrots seem to have evolved from seed-eating ancestors. Hence it is not surprising to find weavers feeding on nectar."

The same deductions would apply to the Cardueline finches. In any group, once nectar-feeding has become important, modifications of the tongue may be expected to follow. This has occurred in the parrots mentioned by Short and Horne; they are for that reason known as the "brush-tongued" lories. Among the recent Hawaiian honeycreepers, the genus *Ciridops* may have been as close as any to the ancestral stock. Unfortunately it became extinct before anything was known of its habitat beyond a rumor that it fed on fruit. The bill of *Ciridops* was somewhat finch-like; in fact Judge Dole, the describer, placed it in the stem genus of finches, *Fringilla* (Amadon 1944), yet its tongue was fully tubular (Bock 1972).

As to the age of the Hawaiian honeycreepers, Sibley and Ahlquist (1982) suggest that their divergence from the Carduelinae occurred about 15 to 20 million years ago. This is based on the time

scale implicit in their analysis of DNA hybridization. It is now known that as the Pacific plate slowly passed over the Hawaiian "hot spot" one volcanic island after another was thrust up. Hawaii is now the center of activity while those in the Leeward Islands—Midway, Laysan and others—have almost eroded back into the sea. The total elapsed time was vast; thus Berger (1981:1) cites evidence that Midway was "at least partially truncated by wave action prior to the Miocene", or more than 20,000,000 years ago. The Emperor Seamounts stretching off to the northwards, though now submerged, were once islands and may have played an even earlier role in the evolution of Hawaiian birds and other groups.

Before leaving the question of the origin of the Hawaiian honeycreepers, one may call attention to the great emphasis many now place upon the supposed evolutionary importance of rapid and novel transformations in small, peripheral and often insular populations. Such terms as "founder effect" and "punctuated equilibria" come to mind. I think the importance of this phenomenon is greatly overplayed—most evolutionary products of small islands have great difficulty in becoming established on continents and major adaptive breakthroughs can and do occur in widespread continental species and groups. Nonetheless, by accepting the popular concept, one might turn the prevailing scenario for the evolution of the Drepanidinae on its head. The group may have evolved from some thin-billed ancestor, probably from tropical America, and have acquired the cardueline characters during its rapid adaptive radiation in the islands. A finch-billed offshoot might then have "escaped" to the mainland—whether Asia or North America—and given rise to today's Cardueline finches. The Carduelines, as Dr. L.L. Short has pointed out to me, are a comparatively small and compact group that may have had a rather recent, primarily boreal radiation.

Quite the most exciting recent event in Hawaiian ornithology has been the discovery by Dr. Storrs Olson and his associates (Olson and James 1982a, 1982b) of the fossil and subfossil remains of numerous as yet undescribed species and genera. These finds include no fewer than 15 honeycreepers as well as representatives of such groups as owls, geese, and ibises. Olson and James attribute most of this extinction to the impact of the Hawaiians, who cleared large tracts in the lowlands for agriculture and for raising swine. Equally or more important was the coterie of animals they brought to the Hawaiian Islands with them—swine, dogs, poultry and, perhaps inadvertently, the Polynesian rat. In my review of the honeycreepers, I grossly underestimated the effect that Hawaiians had on the avifauna, in part misled by the fact that the species they used in their feather robes, the 'I'iwi, 'Apapane, Hawaii Mamo and 'O'o, were still numerous at the time the first Europeans and Americans reached the islands.

Further studies of the interrelationships of the Drepanidinae will perforce be curtailed until this fossil material has been thoroughly studied and described. As an example of the surprises to be expected, the Laysan Finch *(Psittirostra cantans)* was, at the time of its discovery, confined to that remote atoll, with a closely allied subspecies or species on tiny Nihoa Island. Now fossils of both have been found on the main islands, along with skulls of a third species. Incidentally, Olson and James place all the Hawaiian finches in the genus *Psittirostra* and use subgenera for the principal variants.

Now that a close link with the Cardueline finches seems beyond dispute, some recent authors, including Olson and James, have begun to refer to the members of the subfamily Drepanidinae as the "Hawaiian Finches", rather than as "Hawaiian Honeycreepers." But if the vernacular English names for families were changed every time opinion shifts as to their ancestry, chaos would result. Nor is there any reason why a group has to be named after its ancestors; mankind is the first example that comes to mind! The Drepanidinae are epitomized by the brilliant nectar-sipping creatures from whose plumes the Hawaiians fashioned their feathered raiment—honeycreepers let them remain!

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CONSERVATION NEWS

BIG ISLAND GEOTHERMAL

(Editors' note: In October, 1985, the Board of Land and Natural Resources approved a land exchange between the Campbell Estate and the State of Hawaii. The exchange involves two huge tracts of land in the Puna District of the Big Island: the Campbell Estate would give the state 25,500 acres known as Kahauale'a, which broadly borders Hawaii Volcanoes National Park (HVNP), in exchange for 27,600 acres of State-owned land adjacent to Kahauale'a. The exchange is now subject to legislative review. Geothermal development had been planned for Kahauale'a and is now being considered for the former State lands. The land board also recommended cancelling the 16,800 acre Wao Kele o Puna Natural Area Reserve on the former State land; as a substitute, a new natural area reserve of 16,300 acres would be established on Kahauale'a. The State and the National Park Service are also discussing the acquisition by the Service of the 5,650 acre "tract 22," a portion of Kahauale'a bordering the HVNP. The Campbell Estate has already filed a Conservation District Use Permit Application (CDUA) to initiate Geothermal exploration and development on the former State lands. At the same time the Estate is requesting reclassification of its newly acquired lands from the P (protected) subzone of the Conservation District to the L (limited) subzone, an action which would permit harvesting of forestry products. At the January 13 public hearing on the CDUA, the Hawaii Audubon Society was represented by board member Mae Mull. Her testimony is given below.)

Statement for the public hearing on the Conservation District Use Application (CDUA) filed by the Estate of James Campbell for exploration and development of geothermal energy in the Kilauea Middle East Rift Zone (MER), Puna District, Hawaii and on the proposal for redesignation of the protective subzone -- Held by the Board of Land and Natural Resources on January 13, 1986 in Hilo, Hawaii.

The Hawaii Audubon Society supports carefully planned, small-scale, incremental geothermal energy exploration that is distinctly separate from subsequent development phases at low elevations along the Kilauea East Rift Zone, on cleared lands that no longer house native plants and animals -- to help meet the energy needs of the Big Island.

The CDUA filed by Campbell Estate does not meet any of these criteria. The lands on which this major industrial development for 100 MWe is proposed are still the exceptionally rich habitats of the Wao Kele O Puna Natural Area Reserve. Just because they have been designated a geothermal resource subzone, their extraordinary biological quality is not reduced one iota.

The Society requests a contested case hearing on the CDUA for the following reasons:

1) The 100 MWe of geothermal development requested by the Campbell Estate is excessive and is not needed for local use. Hawaiian Electric Light Company in Hilo has forecast a need for an additional 8½ MWe in the fall of 1988 which could be supplied in concert by existing alternate energy producers from biomass (eucalyptus and bagasse), hydroelectric power and wind farms.

2) Campbell Estate's plan to spread out large-scale development along two swaths cut through the full length of the MER subzone will unnecessarily disrupt or destroy habitats of native plants and animals. The natural processes of biological adaptation and speciation, which produced Hawaii's unique flora and fauna, could be critically disordered in those vulnerable ecosystems.

3) The development plan for construction disregards the recommendations of well-informed biologists on sensitive areas that should be avoided becasue of their singular biological values.

4) The exploration phase should be kept entirely separate from the development phase -- as the Board previously decided at Kahauale'a. On this CDUA, only exploration should be granted, on a limited scale and on a small parcel -- in accord with what the Board permitted at Kahauale'a -- eight exploration wells on 800 acres.

5) The forty-four (44) well-defined conditions that were part of the Board's Decision and Order in February 1983, which permitted only exploration at Kahauale'a, should be transferred to the exploration permit in the MER subzone in order to ensure high performance standards by the developer.

As for the redesignation of the Protective subzone, the Society recommends that the proposal be withdrawn. Failing this, the Society requests a contested case hearing on the matter for these reasons:

1) If the Board redesignates to the Limited subzone the State-owned lands that the Campbell Estate is scheduled to receive in the land exchange, then the Natural Area Reserve and Puna Forest Reserve lands will lose their protection status, which now allows only preservation and restoration types of land use.

2) To change the subzone to Limited is virtually to give Campbell Estate free license to log and chip more high quality 'ohi'a rain forest, since "growing and harvesting of forest products" is a permitted use in the Limited subzone.

3) It would be unconscionable to switch the land use zoning so that these remnant native forests, unlike any others outside of Puna, could be destroyed now, when their importance for evolutionary research studies is recognized.

4) It would appear improper to change the land use designation before the land exchange is accomplished, since the value of forest lands where logging is a permitted use would be greater than the value of forest lands where logging is not a permitted use. The values of the lands to be exchanged have been set and agreed upon by the State and Campbell Estate and the next step is up to the Legislature, so it would be inappropriate to alter the land values now.

5) It appears that the proper procedures in providing for public review of this proposal have not been followed. Although the published legal notice briefly lists the redesignation proposal, no documentation of any kind on it has been available for public review in the Hilo office of the Department of Land and Natural Resources. The public remains in the dark as to who applied for the redesignation, when, and the reasons for doing so.

The Hawaii Audubon Society appreciates your consideration of the issues raised here. Thank you very much for the opportunity to present this statement.

Mae E. Mull

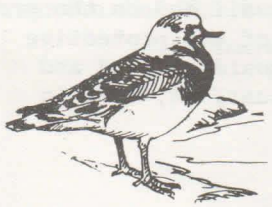
(Editors' note: The Hawaii Audubon Society, a staunch supporter of environmentally sound and judicious development of alternate energy resources, will continue to work together with the Puna Geothermal Committee and others toward that end. For the near future this will mean participation in contested case hearings and possible litigation.

WAIKOLOA ANCHIALINE PONDS DESTROYED

A successful appeal to the 9th Circuit Court of Appeals in San Francisco failed to preserve more than a few of the unique anchialine (brackish water) ponds at Waikoloa on the Big Island, where a $360 million resort is under construction. After Honolulu Federal Judge H. Fong's refusal to grant a Temporary Restraining Order (TRO) on 23 December that would have halted action by the developer C. Hemmeter to fill 70% of the ponds, an appeal was filed in San Francisco on 26 December. The following day, 27 December, Judge C. Wiggins of the 9th Circuit Court granted a TRO. Unfortunately bulldozers had been poised at the site awaiting Fong's decision and on 26 and 27 December, while the appeal was being prepared and heard in San Francisco, the majority of the ponds were filled, irreparably destroying habitat for over 60 species of plants and animals found in these anchialine pond communities. Several of these species are exceeding rare and found only in this ecosystem. Thus, by the time news of the TRO reached the construction site, it was too late to save ponds other than those few already protected by the terms of a permit issued by the Corps of Engineers. Unfortunately those ponds still remaining were not among the largest and most diverse, and probably do not include all of the species characteristic of this unique, brackish water ecosystem. It remains to be seen whether artificial ponds or the remaining ponds will ever contain the full species complement of this unique community. Studies by the University's Zoology Department, to which Hemmeter provided a substantial grant for studies of the remaining ponds, will eventually reveal the fate of any artificial or natural ponds. Funds have also been provided by the developer to protect the remaining ponds, which are spread over about 12 to 13 acres.

All things considered, it is most unfortunate that the developer took action to fill the ponds without waiting for the results of the appeal.

Sheila Conant



(Editors' note: The following items were excerpted from a conservation report submitted by Wayne C. Gagné to the Sierra Club.)

PALILA CASE TO GO TO TRIAL

Federal Judge Samuel King denied a Motion for Summary Judgement late last year for immediate removal of alien Mouflon sheep from the Critical Habitat of the endangered Palila on Mauna Kea. Most specialist witnesses who provided testimony in the case insisted that the only biological solution to critical habitat destruction by the Mouflon was to have them removed by court order. The notable exception, Dr. Steven Mountainspring of the U. S. Fish and Wildlife Service's Mauna Loa Field Station, argued for an "holistic" hunting management approach whereby Mauna Kea would be fenced into sectors at public expense with the sheep then rotated between sectors at intervals supposedly sufficient to allow "recovery" of the native flora. Whatever Judge King's reasons for motion denial, this means at least another half year of habitat destruction before potential victory after the case goes to trial. It also means greatly added cost to our court battle with the State Department of Land and Natural Resources, so your donation to the Sierra Club Legal Defense Fund, which is defending the Palila, is needed now more than ever.

BIOPOWER BANKRUPT, BUT NEW CHIPPER MOVES IN

The bankruptcy court finally closed Biopower's chipping operation at Puna on the Big Island. The company is still in court trying to claim insurance on a fire that destroyed some of their equipment when they initially started chipping native rain forest. Whether they will ever resume remains moot. A newly arrived Alaskan chipping outfit named Hawaiian Forest Byproducts has been contracted by Amfac to supply biomass for power generation. It remains to be seen whether they will, or can, confine their operations to exotic timber plantations, primarily of eucalyptus, to sustain an economically viable operation.

H-3, THE BALL REALLY BOUNCING LOCALLY

Congressional action, if any, on exempting the H-3 freeway from federal laws is not expected for a couple more months. Meanwhile, the city administration is once again helping to bring pressure on the State administration to realistically consider alternatives to freeway construction. The Reagan administration maintains that the federal money slated for H-3 construction can't be used for mass transit, but the city administration disagrees. Faced with a September 1986 deadline for possible transfer of H-3 federal funds, including upgrading existing windward corridors now under study, or otherwise, the decision essentially rests in the hands of one person, Governor Aryoshi. Will he concede that H-3 is inappropriate for solving windward commuter needs, or will he continue to hope that congress can eventually be convinced to bypass federal laws preventing its construction as it is presently conceived? Hawaii Audubon Society and other environmental groups have helped prepare a detailed brochure outlining the many detrimental environmental, social and economic drawbacks of this billion dollar, 10.7 mile highway.

Wayne C. Gagné

8 JANUARY 1986 FIELD TRIP

During a recent sunset, several members of the Hawaii Audubon Society gathered on the beach at Ala Moana Park and prepared to get their feet wet. As the light on the horizon dissolved and stars appeared overhead, Arnold Suzimoto pointed to the patches of reef jutting out of the water off shore. "With the low tide tonight," he explained, "there will be about six inches of water over the reef in most areas --excellent conditions to see lots of concentrated activity." Arnold, an Ichthyologist at B. P. Bishop Museum, is an avid student of life on the reef.

Arnold's enthusiasm for his field became clear as we walked toward our starting point on the inshore reef. He aimed his flashlight into the water and called our attention to a couple of blue-green shrimp. Arnold caught one and deposited it in his floating display case, a yellow dish pail. He then went on to name and briefly characterize its habits, allowing everyone ample opportunity to observe the shrimp at close range before placing it back in the water where, by now, several of its cousins had appeared, their eyes reflecting back at us.

For the next two hours we sloshed over a skeleton of dead coral that teemed with life. Few of the countless animals observed seemed to regard us with alarm. The night-hunting squirrel fish darted but refused to abandon his territory. Others, like the pale and venomous rock fish refused to move at all; after much prodding, he conceded a perfunctory flash of warning color. The liveliest performance of the evening came from a small octopus who clung to our fingers and slithered up the sides of our pail, splendidly changing hues during numerous escape attempts. We handled sea cucumbers that leaked water from one end (nobody was quite sure which) and some marvelous little blobs called sea hares. These didn't look a bit like rabbits and responded to the surprise of human touch by flooding the behandler with warm jets of bright purple goo. "You've got to try this," urged our guide, **"it's water soluble!"** Every nook and cave was somebody's home. A loose rock overturned revealed entire colonies, while the sound of scuttling crabs mingled with the trickle of tide waters channelling through the reef.

By the time we turned to go back to shore the sky was full of stars. The lights of the city glimmered against the calm water. Then one of those lights seemed to come closer. It turned out to be an old Hawaiian man with a lantern and spear going night-fishing. We had begun to see the intricate pattern of decay and regeneration that is life in the ocean in which man plays an important part.

Douglas Paisley

O'AHU "BIG DAY"

On 27 October 1986, while most tuned their radios for updates concerning hurricane Nele, and others watched their favorite football game, four intrepid souls were trying to see as many species of birds in one day as they could. The observers were Andy Engilis, Audrey Newman, Bob Pitman, and Larry Spear.

In birders' lingo this is called a Big Day. To most others it is called CRAZY. As in most "contests" there are rules, and this holds true for Big Days. For example, we had to remain together and travel in the same car all day, and everyone had to see each species counted.

Big Days by nature are very tiring, so by mid-afternoon, despite numerous ice cream stops, fatigue set in, and even a not-so-exciting glimpse of a pheasant peering through the vegetation at us was overwhelming. The resultant simultaneous scream of "Ring-necked Pheasant!" from all was enough to frighten the poor bird back to China!

We started counting at 6:30 am in Makiki and ended our day at Waipio Peninsula at 8:30 pm. Before the day was over we had logged over 130 miles, braving high winds and surf, hot sun, tasteless jokes, and many other hardships, just to get that "one more" species. It was easy at first, as each species was new, but by late afternoon things became more difficult, resulting in Japanese White-eyes looking more and more "albatrossish" as time passed.

I have participated on other Big Days on the mainland and, yes, it is not uncommon to see some 200 species in some areas. But no team worked harder or with such dedication and obsession as we did in counting 59 species. Trying hard for that 60th, we spent two hours at Waipio looking for Pueo, only to find 7 Barn Owls (which we had seen earlier) and 2 amorous cane toads. Nevertheless we established a new state record (the old Big Day stood at 53).

Dowitcher, Kawainui Marsh, O'ahu.

Photo by Greg Vaughn

We could not have been as successful without the aid of Bob's ship binoculars. At 25 x 150 power and weighing 40 lbs, they allowed us to identify seabirds observed from Sand Island, Laie, and Kahuku Points. Of course, binoculars of such size need a formidable tripod, so we used Audrey's car (a critical 5th member). With them we were able to spot Newell's, Sooty, and Wedge-tailed Shearwaters, Mottled Petrels, and Pomarine Jaegers, and many others. The number of seabirds was staggering. We speculated that hurricane Nele forced them closer to shore than normal. Indeed some were so close that we could identify them with standard binoculars!

We would like to share with you our Hawaii Big Day. Weather was overcast with some rain, winds 15-30 mph. Species List: Mottled Petrel, Wedge-tailed Shearwater, Sooty Shearwater, Newell's Shearwater, Masked Booby, Brown Booby, Red-footed Booby, Great Frigatebird, Cattle Egret, Black-crowned Night-Heron, White-faced Ibis, Fulvous Whistling-Duck, Canada Goose, Green-winged Teal, Mallard, Hawaiian Duck, Northern Pintail, Northern Shoveler, Ring-necked Duck, Greater Scaup, Ring-necked Pheasant, Hawaiian Gallinule, Hawaiian Coot, Black-bellied Plover, Lesser Golden-Plover, Hawaiian Stilt, Wandering Tattler, Ruddy Turnstone, Sanderling, Least Sandpiper, Pectoral Sandpiper, Sharp-tailed Sandpiper, Dunlin, Short-billed Dowitcher, Long-billed Dowitcher, Pomarine Jaeger, Black Noddy, White Tern, Rock Dove, Spotted Dove, Zebra Dove, Common Barn-Owl, Eurasian Skylark, Red-vented Bulbul, Red-whiskered Bulbul, White-rumped Shama, Northern Mockingbird, Common Myna, Japanese White-eye, Northern Cardinal, Red-crested Cardinal, House Finch, Yellow-fronted Canary, House Sparrow, Common Waxbill, Red Avadavat, Nutmeg Mannikin, Chestnut Mannikin, Java Sparrow.

Andrew Engilis

FEBRUARY FIELD TRIPS

On Sunday, February 9, Bruce and Robin Eilerts will lead a waterbird field trip to the north coast of O'ahu. This should be a great trip, as Bruce and Robin lead us from Ka'ena Point to the James P. Campbell National Wildlife Refuge, Ki'i Unit. Their goal is to find Laysan Albatross, which have been wintering along the north coast, and to find wintering waterfowl. This will be an all day trip so bring your lunch, binoculars, spotting scope (if you have one), and plenty of sun screen. Meet Bruce and Robin at the Main State Library on Punchbowl Street at 7:30am. Be prepared to car pool. For information call Bruce or Robin at 941-5974.

The following Sunday, 16 February, Carl McIntosh will lead a "Beginning Birdwatching" trip. Carl has specially designed this trip for the beginner, and will concentrate on some of O'ahu's more common birds, teaching field identification. The trip will start out as a hike up Kuliouou Valley and end at Paiko Lagoon. This trip will offer those who attended January's workshop the opportunity to practice, though you are welcome even if you did not attend. Bring some water and insect repellant for the hike. The trip should finish by midday. Meet Carl at the Main State Library on Punchbowl at 7:00am. For information call Carl at 262-4333.

DECEMBER PROGRAM: NEW GUINEA WILDLIFE

Thane Pratt introduced December's program, a slide presentation and commentary by Andrew Engilis on "The Wildlife of New Guinea." A zoologist in the Vertebrate Zoology Section of the B. P. Bishop Museum, Andy has made several trips to New Guinea, participating in the Museum's 20-year-old program of research on the parasites of New Guinea's mammals and birds. He has also been conducting his own research on bird foraging ecology; he recently spent nine months in Papua New Guinea, a 320-square-mile island just north of Australia.

Andy's study area was located on the slopes of Mt. Missim, a mountain near the major town of Wau. Transportation into and out of the area is by Twin Otter planes. The Wau Ecology Institute, formerly a B. P. Bishop Museum field station, is a center for biological research in New Guinea. The region is a tropical rain forest with a pleasant climate.

The presentation began with interior and exterior shots of the construction of a camp (not to be confused with the Port Moresby Hilton). The local people, properly known as "Nationals," helped with all phases of construction, as well as the gathering of specimens and cooking (not of the specimens). Many speak English and are knowledgeable and sophisticated workers.

Ficus (fig) trees abound in the area and are an important base for many birds and insects. Willie Wagtail, a common bird, finds its food mainly on the ground, stirring up insects by vigorously wagging its tail as it walks. Andy's beautiful slides showed a wide variety of birds, including a nectar-eating lory (there are many species and sizes), the small Azure Kingfisher, and the spectacular Bird of Paradise (there are more than 40 species).

Birds of Paradise, widespread from sea level to timberline, are noted for their remarkable mating displays. These are often performed at a "lek," a special communal display area located either on the forest floor or on a particular tree limb. After mating, the female builds the nest, lays eggs, and assumes the tasks of providing for and protecting the chicks.

Trees in the rain forest are well over 100 feet tall, and different levels within the canopy provide habitats for different species of birds, insects, and mammals. Frequent rains and cloudiness make bird observations difficult, so observers must learn to identify bird calls and songs.

Excellent slides were shown of the Spotted Catbird (in the Bowerbird family), which feeds on fruits and insects; the Rainbow Lory, found in small flocks from sea level to 1600 m; the nocturnal, Shovel-billed Kingfisher, endemic to New Guinea; and a wide variety of doves, some as large as a turkey. The MacGregor's Bowerbird builds a large, complex bower in which he performs his courtship dance whenever a female approaches. After mating, the female departs to lay eggs and tend chicks, while the male continues to court other females.

As the presentation continued, slides were shown of New Guinea's two principal kinds of bats: those that echolocate and those with well-developed vision; the two main species of spiny anteater; the walking-stick insect with knife-like spikes on its rear legs to stab unwary predators; insect-eating tree-creepers (New Guinea's equivalent of woodpeckers); three species of Mouse-Warblers; and many species of Owlet-nightjars endemic to Australia and New Guinea. The Brush Turkey, not a true turkey, buries its eggs in a ground nest of leaves and twigs; heat from this decomposing mulch incubates the eggs. The Vulture Parrot has a naked head, much like a vulture; this is a sanitary adaptation protecting the bird from its own messy feeding habits. Vulturine parrots eat mangoes and other soft fruit.

It is unfortunate that native slash-and-burn agriculture consists of a cycle of clearing the forest, raising crops until depleting the soil, and then moving on to clear another area. This procedure can be devastating to the life of the forest.

A question and answer period concluded this fascinating, colorful view of the wildlife of New Guinea. Our thanks to Andrew Engilis for his enlightening presentation.

Betty Johnson

FEBRUARY PROGRAM

This month we're going to try something new! The Hawaii Audubon Society has many talented and energetic birding and natural history enthusiasts. Consequently we'd like to hold an "open house" for members to share their best slides of Hawaiian and Pacific Island birds, invertebrates, plants, beaches, etc. DON'T BE BASHFUL! We know many of you have wonderful slides and we hope you will share them with the rest of us. Just for fun we've decided to make the event into an informal photo contest reminiscent of those we used to co-sponsor with the Conservation Council for Hawaii. If there is enough interest, perhaps we'll revive the idea of an annual photo contest sponsored by several groups.

The format will be this. We encourage photography buffs to bring about 10 of your best slides of Pacific Island wildlife and scenery. During the slide show we'll ask each of you to comment briefly on your slides. Winners will be chosen by popular vote on slides in the following categories: birds, animals other than birds, plants, habitats, conservation and humor. At the end of the show we will take votes and announce the winners. Who knows, they may even get a prize! Rumor has it that scouts seeking new photos for the upcoming new edition of Hawaii's Birds will be in the audience.

Those who are bringing slides should get there before 7:15 so we can set up prior to the meeting. The meeting will be at 7:30pm at the McCully-Moiliili Library on TUESDAY, 18 February.

HAWAII ENVIRONMENTAL LAW WORKSHOP

The Hawaii Chapter of The Wildlife Society is sponsoring a workshop on wildlife and enviromental laws and their specific application to Hawaii. This two-day workshop will cover all aspects of Federal and State laws that affect the use and management of wildlife and other natural resources in Hawaii. A number of specialists and prominent experts in the various fields to be covered will be presenting the material. Among the participants are Michael J. Bean of the Environmental Defense Fund in Washington, D. C., Professor David Callies of the Richardson School of Law at the University of Hawaii, Letitia Uyehara of the State of Hawaii OEQC, Michael Sherwood of the Sierra Club Legal Defense Fund, Kenneth R. Kupchak, and Craig S. Harrison. Representatives of the State Department of Planning and Economic Development, U.S. Army Corps of Engineers, and the State Attorney General's Office have also been invited to participate.

Hawaii Audubon Society is supporting the workshop by underwriting the travel expenses of Mr. Sherwood.

The Wildlife Society is a professional, non-profit organization dedicated to the wise management and conservation of the world's wildlife resources. Among the Society's objectives is a commitment to maintain the highest standards in the wildlife profession, including continuing education. Thus our Chapter is happy to provide this opportunity for quality education and training. Presentation of the material will be oriented towards the professional resource manager, but will be relevant and of interest to land managers, conservationists, research biologists, agency administrators, legal professionals, and others.

The workshop is scheduled for Monday and Tuesday, May 12-13, 1986 at the Hale Koa Hotel in Waikiki. Registration fees vary and are discounted if the application is received before April 10. Persons interested in attending should write to: Hawaii Chapter of the Wildlife Society, 407 Iliaina St., Kailua, HI 96734. Please register early, only a limited number of places are available.

SOCIETY AWARDS GRANT

The Hawaii Audubon Society has awarded a grant to Marjorie Ziegler, a senior in Geography at the University of Hawaii. As part of her honors program, Marjorie proposed to study the natural and cultural history of Kanepu'u, a fascinating dryland forest area on Lana'i. The grant will cover travel expenses for Marjorie and Dr. Steven Montgomery, who will help her with plant identification. We wish Marjorie the best of luck in her endeavors.

HAS NATURAL HISTORY SCHOLARSHIP AND GRANTS

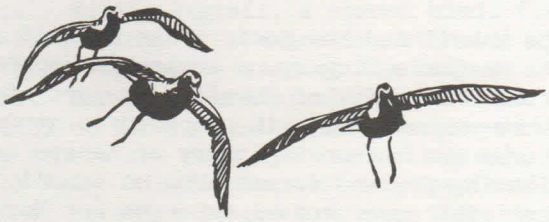
The HAS Scholarship and Grants Committee is accepting applications for the 1986-87 HAS Tuition Scholarship and for HAS grants. The $1,000 Tuition Scholarship is provided to lend financial assistance to outstanding undergraduates majoring in natural science, especially those interested in Hawaiian natural history. The application deadline for the 1986-87 school year is May 1.

In addition to the scholarship, grants are awarded to aid in research projects on Hawaiian or Pacific Natural History. Grants are aimed at small-scale projects or projects that receive funding from sources other than the Society, and generally do not exceed $500. The deadline for grants to be awarded in summer/fall 1986 is April 1.

For information and application forms, write or call John Engbring, Scholarship and Grants Committee, P.O. Box 4443, Honolulu, HI 96813: phone (business) 546-7530.

VOLUNTEER FOR BIRD SURVEY!

U. S. Fish and Wildlife Service Biologist Marie Ecton is organizing a breeding biology survey of forest birds at Hanawi, Maui. The observers will go into the field one week of each month from January to May. The study will focus on endangered species. Volunteer must have previous Hawaii birding experience and require little training for the Maui species. Fish and Wildlife Service will pay for interisland travel and a camping per diem. The field conditions will be rigorous. Anyone interested should call Marie (on Maui) at 878-6733.



GOURMET ICE CREAM!

Will be available at next month's paste-up of the 'Elepaio. Come to Thane Pratt's house at 954 Spencer St. in Makiki on Saturday, 22 February at 1:00pm. Anyone interested in helping with typing, proof reading, or paste-up is welcome. Call me at 524-8464 for more information. Thanks to Rob Fleischer, David McCauley, and Bob Pyle for helping with this month's paste-up.

LEARN BIRDS ON YOUR HOME COMPUTER

A computer software program designed to help people identify birds is now available. Using full color graphics and interactive techniques, this program teaches bird identification by flashing silhouettes on the screen of a microcomputer. The various parts of a bird's body useful in identification are also portrayed and described. The program deals with 21 orders of birds found in North America. Representatives of most of these orders occur in Hawaii.

The program, entitled "Birds of North America, Volume 1, Field Identification," is programmed for the IBM PC and compatible microcomputers and is priced at around $40. It is available from Massachusetts Audubon Society Gift Shop in Lincoln, MA. Further information may be obtained from Boston Electronic Systems Training Inc., 24 Crescent St., #408, Waltham, MA 02154, (617) 893-4400.

NEW EDITION OF HAWAII'S BIRDS DUE

The Publications Committee is beginning to plan for the next edition of *Hawaii's Birds*. In addition to being on the lookout for photos of birds, the committee will be taking a close look at the text for needed revisions and corrections. If you have noticed errors in the current edition, or are aware of anything that needs updating please contact members of the Publications Committee listed at the back of this issue.

EDITORIAL POLICY

Notice to contributors: The *'Elepaio* invites authors to submit scientific articles on natural history of Hawaii and the Pacific. Scientific articles are subject to peer review. The *'Elepaio* also serves as a newsletters to inform members of conservation issues, society events, and other subjects of interest to members. Contributors should be aware that all articles, trip reports, notices, etc. MUST be submitted typewritten and double-spaced. These may be sent to the Managing Editor at 954 Spencer St, Honolulu, HI 96822. Articles not subject to review MUST be received by the 15th of each month to be considered for publication in the next month's issue.

BACK ISSUES OF 'ELEPAIO

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

Vol. 41, No. 1(July 1980) to present:

50¢ per issue, $5.00 per volume

Vol. 1 through 40(1939 to 1979):

$1.00 per issue, $10.00 per volume
(5 or more volumes: $8.00 per volume)

Vol. 1 through 43(complete set: 1939 to June '83)

$350.00 for the complete set

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PUBLICATIONS OF THE SOCIETY

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

FIELD CHECKLIST OF BIRDS OF HAWAII by R. L. Pyle (1976). A pocket-size field card listing 125 species found in Hawaii with space for notes of field trips.
(Postpaid).....$ .25
(ten or more, 10¢ per copy)

GUIDE TO HAWAIIAN BIRDING by members of the Society and edited by C. J. Ralph (1977). Where to go and some idea of what you are likely to see. For the islands of Kauai, Oahu, Lanai, Molokai, Maui and Hawaii
(Postpaid).....$1.50

CHECKLIST OF THE BIRDS OF HAWAII by R. L. Pyle (1983). An authoritative compilation of all species naturally occurring in Hawaii as well as those introduced by man which are currently established as viable populations. Gives each species' status.
(Postpaid).....$2.00

CALENDAR OF EVENTS

Feb. 9 (Sun.) Field trip to north shore, meet at 7:30am, Punchbowl St. side of Library. Call B. or R. Eilerts 941-5974.

Feb. 10 (Mon.) Board meeting at Bishop Museum at 7:00pm SHARP. Call Allen Allison 848-4145-w.

Feb. 16 (Sun.) Field trip in Honolulu, meet at 7:00am, Punchbowl St. side of Library. Call C. McIntosh 262-4333.

Feb. 18 (TUESDAY) General Meeting at McCully-Moiliili Library at 7:30pm. NOTE DIFFERENT MEETING DAY!

TABLE OF CONTENTS

Vol. 46, No. 8, February, 1986

The Hawaiian Honeycreepers Revisited
Dean Amadon.....83
No Na Leo 'Ole (Conservation News).....85
January 1986 Field Trip
Douglas Paisley.....87
O'ahu "Big Day"
Andrew Engilis.....88
December 1985 Program: New Guinea Wildlife
Betty Johnson.....89

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