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OBJECTIVES OF THE NENE STUDY

William H. Elder

Recent issues of the ELEPAIO have carried succinct summaries of the history of the Nene by Margaret Titcomb, the rearing project at Pohakuloa by J. R. Woodworth and the discovery of a wild flock near the Saddle Road by Dave Woodside. These certainly have done much to generate fresh interest in this, the largest of Hawaii's native land birds, and to provide new hope that the species may not be doomed to extinction in our lifetime.

Six years ago only 13 Nene remained in all the captive flocks in the world -- most of these in the flock of Herbert C. Shipman; today there are nearly 75. If this encouraging progress continues we may soon reach the point where it will be possible and wise management practice to liberate some of the birds to augment the flock remaining in the wild or perhaps restock some area now devoid of wild birds.

Success of such a practice hinges upon a better understanding of the causes of the decline of the Nene and knowledge by which the current mortality factors can be reduced. For any species to survive, the rate of production must equal the rate of losses, or natality must equal mortality. If the balance is tipped ever so slightly so that mortality exceeds, a species declines. This is what has happened to the Nene.

The objectives of the present Nene study are as follows:

1) To reexamine the historical evidence concerning the Nene in a search for clues helpful in interpreting the significance of changes in land-use patterns that may have altered the life equation of the species. If Henshaw was entirely correct when he wrote in 1902 that "the greater number, probably all, leave the upper grounds beginning early in the fall, and resort to lower altitudes, from about 1200 feet downwards" for the breeding season, then we should know if they still do so. If the expension of cane fields nearly up to the fern forest has forced the Nene to remain above this belt for the nesting season it is possible that the birds' fertility has been affected.

2) To discover what changes have taken place in the former breeding areas not taken over by agriculture. Are they still suitable, or have invading exotic plants so changed the habitat that Nene no longer will come there? Such an area was recently visited with Mr. William Meinecke in Kau. Where he found young Nene in open country at the turn of the century there is now little but brushland grown up to Lantana, Christmas berry and Apple of Sodom.

3) To discern, if possible, the seasonal food limitations of the summer ranges -- 5000 to 7500 feet -- during the breeding season and ensuing winter period. If birds are now forced to stay higher than formerly are they subject to impoverished diets or are there plenty of foods for them to shift to after the end of the berry season?

4) To learn the significance of standing water for Nene. This species, sometimes called "lava goose", certainly frequents dry habitats by choice through much of the year. Is open water, even in small pools, essential for the breeding season? Some species of geese in captivity lay only sterile eggs when no pool is available in which they can mate.

5) To appraise the role of predators as a limiting factor upon the Nene. When pueo and io were once abundant, so were Nene; so the native Hawaiian predators - the owl and the hawk - cannot be implicated in any way in the decline of the goose. One even wonders if the introduced predators of such long standing as the rats and pigs could have been of great importance. But the spread of the mongoose is more closely timed with the period of rapid Nene decline. And feral cats and dogs surely increased with the rise in human populations. Perhaps no one of these alone can ever be said to be the limiting factor, but all may have contributed. An opportunity to make observations of even a few nests in the wild might prove of great value in shedding some light on this complex question.

6) The last objective of this current Nene study is to learn some of the details of their behavior for comparison with detailed studies that have been made of the pairing, nesting, incubating, and brooding activities of the Canada goose -- most likely the nearest of kin to Nene. This may shed new light on the origin of the island species, so long isolated from its mainland progenitors. We may also learn whether hand-reared birds should be liberated in pairs or as families when the time comes to release captive-reared stock in the wild.

While it is my responsibility and privilege to coordinate this study this year we must remember that scientists come and go but species should go on. And if the Nene is to live on we must all make an effort to channel all information so that it can be intergrated and put to use. Scraps of evidence from Hawaiian history, old photographs, shipping records, hunting journals, may come to the attention of any one interested but be known to no one else! And the first-hand accounts from those whose memories reach back into the 19th century are of extreme value. Any recent sighting may lead to the discovery of a nest in the wild. Only with this kind of island-wide cooperation can I, or any who follow, hope to answer the many questions which involve the survival of Hawaii's finest bird, the Nene.

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PAUL H. BALDWIN

A more recent participant in the parade of Hawaiian Ornithologists is Paul Baldwin. He was born some forty years ago in California where he lived most of his early life. Shortly after graduating from the University of California in 1937, he arrived in Honolulu to study at the local University. Both the summer of 1938 and that of 1939 he lived at the Volcano on Hawaii Island and worked in the national park there. He spent much of his time investigating the native birds and their environment. After a short stay at Harvard University arrangements were completed so that he could return to Hawaii National Park and devote full time to the study of birds.

From 1940 to 1946 he was in residence in the Kilauea-Mauna Loa section of the park. Trips were made to other areas of the Big Island and even to other islands but for the most part his work was confined to Kilauea and the immediately adjacent sections of the island. In spite of added duties and curtailed activities during the war years various records were compiled and some research was accomplished though on a small scale.

In 1946 Mr. Baldwin together with his family, whom he acquired in the Islands, went to Berkeley where he again entered the University of California to work toward a higher degree. In connection with the degree it was felt that an uninterrupted year of field work in the same area would be beneficial. September of 1948 found him once more on

Hawaii Island preparing for an intensive year of work observing birds and collecting data on Hawaiian Honeycreepers. This year's field study together with the years of graduate instruction culminated in the publication of the paper entitled "Annual Cycle, Environment and Evolution in Hawaiian Honeycreepers (Aves Drepaniidae)" University of California Publications in Zoology (Vol. 52, No. 4, pp. 285-398, plates 8-11, 12 figures) 1953.

Mr. Baldwin is now an Associate Professor of Zoology at Colorado A. and M. College where a good part of his time is spent teaching Ornithology. Recently he investigated the red poll populations on the northern plains of Alaska. At present Mr. Baldwin is spending full time studying the woodpecker - spruce beetle - spruce tree relationships in the Rocky Mountain area under a National Science Foundation Grant.

Sarah C. Baldwin
Fort Collins, Colorado
November 1st, 1956.

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FOGDRIP ON LANAI WATERSHED

By George C. Munro

When Dr. William Hillebrand in the early 1870s brought half a dozen plants of the Norfolk Island pine tree (Araucaria) to Hawaii he could not foresee the part that one of these trees would play in the transition of Lanai's watershed cover from native vegetation to a predominence of foreign trees.

Two of these trees were taken to Lanai and planted by Mr. Frederick H. Hayselden by the Hayselden ranch house at Koele, 1746 feet elevation. One of these was there when I was given the management of the Lanai ranch by the Lanai Ranch Company Limited in April 1911. I estimated its height at that time to be about 75 feet, though it might have been higher. I was told a few years ago that it was then by surveyor's measurement 134½ feet high. Some of the branches of this tree extended over part of the roof of the Koele kitchen. A light wind carrying fog through its topmost branches deposited moisture which collected and fell on the iron roof with quite a tapping sound unlike ordinary rain drops. They seemed heavier, wider apart and more regular.

The Island of Maui, with an elevation of 5788 feet, lies east of Lanai, and drains much of the water from the trade wind before it reaches Lanai, consequently Lanai's east side lower elevation, unlike that of other islands, is dry, and the annual rainfall at its highest point is not more than 40 inches while that of the highest point of Maui is over 300 inches. However, the Lanai mountain is frequently covered with fog, and I noted in the dry season that where there were no trees along the trail the ground would be quite dry but under every tree the ground was damp and hog wallows under them contained water. On one occasion I saw water running down a hardpacked trail from fogdrip off a half dead low tree.

I reasoned that if the Koele tree top at 1746 feet elevation entrapped water from fog the same species from 2000 to 3370 feet would catch more seeing that the low trees there caught quite a lot. But would this tree grow in the soft wet soil of the mountain and take sufficient hold with its roots on the hard substrata of the exposed ridges to hold up its great height. Experiment only would show this. So to try this out we got a few plants from the Board of Agriculture and Forestry, and to avoid too much disturbance of their roots by inexperienced planters they were planted without removing the cans that held them. Two old men who could be spared from heavier ranch work, Nailima,a Hawaiian,and Pedro,a Mexican,planted them in 1919 along the trails on each side of the Kaiholena Valley. I watched their growth and though some of them remained stunted, being probably rootbound in the cans, others grew up through the staghorn fern, brush and tree branches into fine healthy trees. The planting was continued off and on till 1923.

We improved our methods as we gained experience. The trees were kept in one gallon can till about three feet high. Then they were packed on muleback along narrow forest

trails, 12 trees to a mule in large pineapple bran sacks with several slits cut down the middle of one side to allow the tops of the trees to be passed out through. The load was well drawn up on the pack saddle so that the trees stood up perpendicularly. The trees were, therefore, not injured in passing along the narrow forest trails.

The cans were carefully removed without distrubing the roots and the trees planted in small holes just large enough to take them. There was no clearing of vegetation round the roots of the plants. The trees grew well and there was apparently no root-binding. The only care given was later for the forest ranger to see that the top shoot was not injured by other trees or plants. As much time would elapse before there would be returns for this and there was no certainty of returns at all this work was done at the least expense.

Messrs. H. A. and F. F. Baldwin, who bought the property in 1917, followed the policy of the Lanai Company in developing the 140 square mile island as a cattle ranch. The herd was increasing and much water would be needed for them. So during this time I also made a very exhaustive search of all the mountain valleys to find where any source of water could be developed. There was little success with this.

The Baldwin brothers sold the property to the Hawaiian Pineapple Company at the end of 1922, and for the next few years tree planting was concentrated on experimental wind-breaks on the wind-exposed plowable lands. Then both Mr. John L. Whitmore and Mr. James D. Dole realizing the importance of the forest to the Hawaiian Pineapple Company allowed me a liberal annual appropriation for forest improvement to cover a nursery and the extra expense of packing the trees out into the forest. From 1927 to 1932 many thousands of trees were planted in and around the forest and among these were about 2000 Norfolk Island pines in the wet forest where the interception of fogdrip was likely to be of value to the recharge of ground water. These trees and those planted in the 1920s now tower above the other forest trees and the Hawaiian Pineapple Company, due, I believe, to faith in their value for intercepting fogdrip stimulated by their Conservationist, the late Mr. Victor W. Thalman, and realizing the potential value of further planting, is making a very thorough investigation of the amount of water these trees intercept from fog in contrast to what is measured of rainfall.

Results so far are encouraging but it will take some time to come to conclusions. For myself I have not the least doubt but that the Hawaiian Pineapple Company will plant the whole mountaintop with tall trees and thus continue the changing of the forest started by the Lanai Company in 1912 when in accordance with their purchase agreement drawn up by Mr. Walter M. Giffard, Agent for W. A. Irwin with John D. McCrassn & Associates, I started the belt of trees back of Lanai City.

Though results of scientific experiments in transpiration from trees in other countries showed that fogdrip probably could not be counted on as a source of water supply or recharge of ground water I feel sure that does not apply to the fogdrip from the trees on Lanai mountain. The tree at Koele catching water and the evidence furnished by eight years of study of the forest assured a certainty of the trees catching a great deal of water. I had no way of measuring this or the amount of water the trees threw off in transpiration, but I believed and do so still that there would be a decided balance that would add to the ground water.

I had the advantage of the forest trails connecting the different parts of the ranch so that I could study the forest on my regular inspection rounds. Also of a free hand in my management for the Baldwin brothers from 1917 to 1922 and from the Hawaiian Pineapple Company from 1926 to 1932 in tree planting. To show that I had faith in this project as early as 1922 I quote from the Hawaiian Forester and Agriculturist of February of that year an article by me entitled "Forest Covers", page 16 paragraph 3, "This tree precipitates moisture when surrounding trees condense none to speak of." Again in the Forester and Agriculturist of July-September 1929 Mr. Charles Judd kindly published another of my articles captioned "Norfolk Island Pines for the Wet Forests"

page 126 paragraph 2, "Some of these trees are now from eight to eleven feet high and will soon be doing good service by interrupting moisture." Paragraph 3: "In the Lanai forest this tree is only planted where fogdrip is desirable ... But trees intercept a great deal so fogdrip is very important to the island and as possibly it is also on leeward mountains of other islands of the group."

In the 1920s there was concern about deterioration in the native forests on some of these islands apart from the depredations of animals and this was attributed to various causes. The real reason probably was that this vegetation had run its course on these lands and a change was necessary. On revisiting Molokai after 36 years absence I found a very large area of forest entirely changed without being affected to any extent by foreign animals. This was the case with Lanai. All native trees were small and are apparently smaller in succeeding generations. There is evidence that at one time they were much larger. I once saw on the side of a remote valley a very old prostrate tree trunk that was very much larger than any on Lanai at the time, and in 1911 a whole gulchside was littered with the trunks of ohia trees that had died and fallen.

This emphasizes the advisability of setting apart areas to be preserved in their natural state as "living museums" on the plan of the "Nature Conservancy". These can be localities of little use for man's living utilizations such as the area between the gulches of Pelekuna and Wailau on Molokai. Sowing seeds of foreign plants over such areas even by airplane as has been practiced to some extent over Hawaiian forests should be prohibited and all foreign animals destroyed if possible. Surveys of the prevailing species should be taken periodically to record the changes.

This is where the kula (open country) part of the Hawaiian dryland living museum at Na Laau Hawaii on the west slope of Diamond Head will be an interesting study as the rotation of plants on this class of land is much faster than in the wet forests or even in the dryland forests.

Thirty four years of experience in the grazing line on the Hawaiian kula, making botanical collections of its plants and trying to save some of the rare species has given me a unique experience being added to at present at Na Laau Hawaii. Much more will be learned from this project as time goes on. It is a long range one just as the planting for fogdrip was on Lanai.

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EDITOR'S NOTE: Recently a seven-mile road along the high ridge of Lanai has been named Munro Trail in honor of Mr. Munro and the great work which he did during the development of Lanai from a barren waste into productive plantations. Rustic signs bearing the name have been erected at each end of the road, which is fittingly lined with Norfolk Island pines, most of which were planted by Mr. Munro.

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FIELD NOTES:

Field Trip, October 28, 1956

About October 11, Joe King reported seeing an Osprey and a probable Bristle Thighed Curlew at some ponds in the Navy firing range near Ewa.

Written permission was obtained to visit the ponds on October 28. Therefore, it was in a hopeful frame of mind that five of us started out on that date to see what we could discover.

We arrived at 8:40 A.M. and were able to see during the morning the following count:

Coot	3	Golden Plover	25	Brazilian Cardinal	3
Gallinule	1	Greater Yellow Legs	1	Kentucky Cardinal	11
Night Heron	2	Pintail Duck	1	Barred Dove	16
Stilt	14	Tattler	9	Chinese Dove	12
		Turnstone	16	Linnet	1
				Mynah	1
				English Sparrow	20

We also saw something of very great interest. A large bird was seen across the pond and its size and habits identified it as a goose. The only identifying mark seen was a large pink bill. This tentatively identifies it as a white-fronted goose. We feel that this is an exciting find and hope to go back in the near future to make positive identification.

On the way home a stop was made at West Loch where we observed the following:

Coot	3	Shovelers	24	Tattler	1
Stilt	100+	Pintail	10	Turnstone	1

Those present considered this a very interesting and successful day.

Charles Hanson

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Field Trip to Kealia, November 11, 1956

The prospect of rain on Poamoho changed the plans for the November 11 field trip. Instead, the twelve Auduboners chose a drier trail in the game bird territory, with a faint hope of seeing chukars and pheasants. We knew we were taking a calculated risk, for high noon is not the time for game birds, nor is a windy day a good day for birding, nor is a trail where both hikers and hunters have already passed by.

But it was a good day to be alive - a good day for wide horizons and high places - a good day to meet the challenge of a steep trail at the start. It was a lesson in how birds adapt to environment when wind and men sweep by, even as we ourselves were adapting to environment in seeking a somewhat drier trail than the one we originally planned to take.

We saw three distinct types of territory, with three distinct types of birds - around the parking areas the birds common to the island lowlands - the mynahs, the rice-birds, the cardinals; farther up the trail, where springs provided water for undergrowth and forest cover, were leiothrix and white-eye territories; and the uplands with their open areas with plenty of berries and grasses and deep cover of ferns and lantana were ideal game bird territory. That we saw few game birds there was to be expected, rather than bewailed. It was, as we have said, a good day to be alive, a better day to stay alive..... we took a lesson from the birds - we, too, sought cover under the sighing silk oaks, ate our lunches and took a siesta in the shade, and hoped they were doing likewise.

Lucille MacClellan

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Field Trip, November 25, 1956

With an air of expectancy, 23 people were on hand for the start of our field trip on Sunday, November 25. We had announced at our meeting the previous Monday that we would go to a new birding area near Ewa Beach. These ponds are under Navy jurisdiction and are located on the Puuloa rifle range.

On the way we stopped at the West Loch of Pearl Harbor and saw the following birds:

Coot	5	Shoveller Ducks	27
Black-necked stilt	150+	Pintail	3

We then drove on to our destination arriving there about 10:15. On the road as we drove in the gate, we spotted approximately 25 Brazilian Cardinals in an area about 10 feet square. As we got out to get a better look, we saw other birds in the field beside the road. Soon the cry went up, "Skylarks". And sure enough we saw and heard (how lovely the song) 4 before we moved on.

As we drove closer to the pond area, we were watching intently because of previous reports of strange and new species seen in the area recently. We left our cars and walked into the area and we didn't have long to wait. Someone spoke up, "I see a goose". And everyone in the party got a look at the bird. Al Stoops crept up closer to get some movies of it and succeeded in getting some footage as it flew a few yards further out into the pond. As it flew we saw a mark of positive identification - Orange feet! What could it be? Nothing else but a rare (for Hawaii) white-fronted goose.

Other birds seen in the area were these:

Coot	12	Golden Plover	25	Tattler	7
Greater Yellow Legs	1 (uncommon)	Pintail Duck	33	Ruddy Turnstone	4

Each one present enjoyed his lunch before it was time to leave for home. The general opinion was that this had been a truly profitable day.

Charles Hanson

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Review by Austin L. Rand of American Bird Songs. Vol. 1, second issue, 33 1/3 r.p.m. Recorded by P.P. Kellogg and A.A. Allen. Cornell University Records, Ithica, New York. $7.75
Reprinted from Chicago Natural History Bulletin, Vol. 27, No. 7, 1956

This is a revised and re-edited long-playing edition of the earlier volume 1 and contains most of the species heard in the volume 1 ... album ...

The continuity remains loosely ecological: birds of the north woods, of northern and southern gardens and shade trees, of fields and prairies,and American game-birds, with about 60 voices featured and 28 background voices.

One of the innovations in this recording is to have a bird start singing before it is announced. This I found a bit disconcerting at first, not realizing that the preceding bird had ceased to sing and was not trying to imitate something else. But I soon found myself waiting for the next song so I could identify the new song before it was announced ...

Basically, this is a series of songs with the identifications, "This is the song of ..." I wonder if it isn't time to use widely some other such varied approaches as have been started by J.H. Fassett, for one. Breaking a song down, for instance, building it up again, modifying speed, pitch, and volume, and then comparing this song with the songs of other birds, near relatives and distant ones. Or recording the vocabulary of a single species, from the nestling peep to the varied repertory of the adults in courtship, fighting and fleeing, alone and in company.

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Miss Amy Greenwell has written Mr. Munro from Kona about an unusual bird which she saw in the wet forest, at about 3000' elevation, in August. She writes that the bird, of which she had a glimpse, was ..."about the size of a mynah, but a bit plumper, slate gray with a rust colored head and neck. I have never seen one before or since. (It) sat there about ten feet from our jeep as we drove by -- quite tame and rather curious". Any suggestions from our readers as to what the bird might be? Could it be the palila? (Ed)

Mr. Thomas M. Blackman, who has recently moved to Upland, California writes, "I still maintain a keen interest in Hawaiian bird life, and was pleased to read recently of the success of Mr. George C. Munro's project in replanting parts of Diamond Head with Hawaiian plants, and other conservation work.

"Here at Upland, being in the foothills below Mt. Baldy I not only enjoy purer mountain air but am able to take short walks in the unspoiled country. ... best wishes to all the members."

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JANUARY ACTIVITIES:

FIELD TRIPS: January 13 - To Kahuku, to see what changes have taken place in the shore bird population, since we were last there. Meet at the Punchbowl Street side of the Library of Hawaii at 8:00 a.m.

January 27 - To the Puuloa area, which has been very rewarding, with three rare migrants in as many trips, so we will hope to see something good on this trip also. Meet at the Punchbowl Street side of the Library of Hawaii at 8:00 a.m.

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MEETING: January 21 - At the Aquarium auditorium at 7:30 p.m. Mr. Charles A. McWayne, Sr. will show his slides of Midway bird life and tell us something of his observations on that island.

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THE EXECUTIVE COMMITTEE for 1957 were elected at the December meeting, and a vote of thanks extended to the 1956 Committee who had served us so well. We welcome our new officers, and are sure that with their leadership we shall move into a successful year.

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