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1972 REPORT OF NENE RESTORATION PROGRAM

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Second & Final Installment

Nene in the Wild

Investigations conducted by Elder and Woodside (1958), and Division personnel revealed that nene were most likely to be seen on mountain slopes between 5,000 to 8,000 feet. ...Three areas known to be frequented by nene were selected for release areas and established as sanctuaries through cooperative agreements with the land owners. Although these areas are accessible by jeep roads, because of their private ownership they are relatively free from undue disturbances.

Keauhou Sanctuary: The Keauhou Sanctuary...was established in 1958 through a cooperative agreement with the Bishop Estate--owners of the land, C. Brewer & Company--the Lessors, and the Board of Agriculture and Forestry (presently the Board of Land and Natural Resources). This agreement provided the Division of Fish and Game with access to an area of 8,100 acres to conduct studies, eliminate predators, and post the area against trespass. These measures provided the means for effectively protecting an area that was crucial to the survival of nene.

Kipuka, or vegetated areas surrounded by more recent lava flows, which are found in the Keauhou Sanctuary, provide the nene with essential food and cover habitat. These kipuka vary in size from less than an acre to several thousand acres, with vegetation in various stages of ecological succession. The substrate is composed of aa (rough) and pahoehoe (smooth) lava flows in various stages of decomposition. Most of the sanctuary lies between 6,000 to 7,000 feet in elevation.

Rainfall is one of the most important factors which influences the rate of decomposition of lava and the progression of ecological succession. Table 10 shows rainfall records for Mauna Loa at 6,700' elevation and presents rainfall data from the National Park Station nearest the sanctuary. The average annaul rainfall from 1960 through 1969 was 60.65 inches. Rainfall distribution is favorable to the production of food when the nene are present in the sanctuary.

Primary succession consists of lichens growing on bare lava. Other pioneer species are the'ohelo (Vaccinium spp.), kukae-nene (Coprosma ernodeoides), gosmore (Hypochoeris radicata), pukiawe (Styphelia tameiameiae), and various grasses. This pioneer plant association is common on the Keawewai Lava Flow, particularly the western portion.

Older kipuka are vegetated with 'a'alii (Dodonaea viscosa), mamane (Sophora chrysophylla), 'ohi'a (Metrosideros collina), and koa (Acacia koa) in association with the other shrubs and grasses. These trees, with the exception of 'ohi'a, are only found in kipuka with sufficient soil to support them. The 'ohi'a grows in virtually bare lava flows, as well as in the kipuka.

Portions of the Keauhou Sanctuary are utilized by grazing cattle. Use of this area as pasture is marginal due to lack of forage and few cattle stray into the sanctuary proper. There is some browsing and grazing by feral goats. A certain amount of grazing is desirable, since it helps to keep the vegetation from becoming too dense. Portions of some of the larger kipuka are heavily "furrowed" by feral pigs in their foraging activities.

Keauhou 2 Sanctuary (Hualalai), North Kona: The Keauhou 2 Sanctuary was established in 1961 through a cooperative agreement with the Bishop Estate--owners of the land, W.H. Greenwell, Ltd--the Lessors, and the Board of Agriculture and Conservation. A total of 12,678 acres was designated as a nene sanctuary, providing the Division with access to the area, and permitting the Division to conduct studies, eliminate predators, and post the area against trespass. ...

The sanctuary is located at the base of Hualalai and extends into the saddle region between Mauna Loa and Hualalai. The elevation here is approximately 6,000 feet with an annual rainfall of about 30 inches. Table 11 gives the rainfall readings at this sanctuary. Habitat conditions differ considerably from those of the Keauhou Sanctuary. Most of the area consists of ancient pahoehoe flows with a thin covering of volcanic cinders. Vegetation consists of an association of 'ohelo, pukiawe, 'a'alii, and kukae-nene, with 'ohi'a scattered throughout the area. Sandalwood in the genera Santalum and Exocarpus occurs sparingly in the sanctuary. There are some kipuka with the typical open mamane forest type common to this vegetative zone. Little use is made of this cover type by nene except along the edges of the kipuka where the birds find succulent grasses and forbs resulting from the fog drip from the trees.

The sanctuary is not utilized for livestock grazing except by groups of feral sheep, goats and pigs. These feral animals and feral pigs are occasionally hunted by ranch employees. There are no indications that the presence and activities of these feral game mammals if in low numbers are adversely affecting the nene habitat except as they pose an attraction to feral dogs.

Kahuku Sanctuary: The Kahuku Sanctuary was established in 1967 through a cooperative agreement with the Damon Estate, owners of the land. This agreement permits the Division to gain access to 20,000 acres of nene habitat to conduct studies, eliminate predators, and post the area against trespass.

This sanctuary...lies principally between 6,000 to 7,000 feet on the southeastern slope of Mauna Loa, above the Kau Forest Reserve. Precipitation in the sanctuary is probably less than the readings recorded at the closest rain gauge, Punaluu-Kahawai. This station is at the edge of the forest and gets considerable rainfall, unlike the usual fog drip in the higher sanctuary area. Table 12 is a record of rainfall for Punaluu-Kahawai. The rainfall at the sanctuary probably ranges between 50 to 100 inches annually.

Portions of the sanctuary are covered by a thin mantle of soil which supports scattered 'ohi'a trees with an understory of 'ohelo, pukiawe, kukae-nene and various grasses of which yorkshire fog (Holcus lanatus) is the most common. Gosmore is abundant during the wet months and kuae-nene in fruit can be found practically throughout the year.

There are some recent lava flows which are virtually barren of vegetation which are utilized by nene as escape areas.

Cattle grazing, a former land use, has been discontinued due to the thin soils and lack of water. There is some grazing by feral goats, but their effect on the habitat is negligible. Feral pigs are abundant and signs of their foraging activities are common. They compete with the nene for food only to a limited extent.

Reproduction: The nene in Hawaii begin to breed in the early winter when the day length is decreasing. Breeding stock at Slimbridge, England, and in Connecticut begin to breed in the spring when the day length is increasing. Most geese at Pohakuloa lay their first egg during the first two weeks in November. Nesting in the wild generally parallels the situation at Pohakuloa. At the Keauhou Sanctuary, first nests are commonly discovered in November. Tables 13 through 18 present the data on nests and broods for all three sanctuaries. Only two active nests have been discovered at the Keauhou Sanctuary, one in late January and one in April. No active nests have been found at the Kahuku Sanctuary but broods have been seen there. There is insufficient data at this time to draw meaningful conclusions about the length of the breeding season in the wild.

Breeding and nesting territories are difficult to define clearly. Nest sites are usually found in kipuka, which are islands of older lava flows surrounded by more recent flows. These kipuka support varied plant life suitable for nesting cover. The use of kipuka tends to isolate breeding pairs. The size of these kipuka varies from a few square yards to many acres; thus, it is difficult to determine the area of habitat which is defended as nesting or breeding territory.

Most of the nests have been found under pukiawe bushes where the goose scoops out a shallow depression in the litter and duff. A few nests have been found under scrub 'ohi'a trees. The goose does not cover the eggs when leaving the nest until the last egg is laid and she begins to incubate. When this occurs, the goose thoroughly covers the eggs with down, leaves and twigs before she leaves the nest on foraging trips. This helps moderate temperature changes to the eggs and also helps conceal the nest.

The gander guards the nest site from an elevated rock outcrop, or similar feature, a short distance from the nest. From his station, the gander usually has an unobstructed view of the goose on the nest, as well as a commanding sweep of the surrounding area. When danger approaches he gives a warning, a soft low call note. In the early stages of incubation, the goose will leave the nest and appear a good distance from the nest site. This ruse is very successful in concealing the site of the nest, since one will search the area where he first saw the goose. During later stages of incubation, the goose will remain motionless on the nest. Unless a thorough search is made, one is apt to walk past the nest without discovering it.

One method used to find nests is to go to the gander's station which can be readily identified by the piles of accumulated droppings. Searching from this point, one can usually find the nest. In all nests under observation, the gander has never been seen to participate in incubation.

There is evidence to indicate that mated pairs are prone to return to the same kipuka or general area to nest each year. In some instances the same nest site has been utilized for several years in succession. Most of our observations indicate that pairs remain together until one partner is lost through death. However, there have been instances where a goose had different mates during two breeding seasons. Tables 13 through 18 show that birds which have been released are successfully pairing with wild nene, as well as with other birds reared in captivity.

There is no evidence, at the present time, to indicate that nene renest in the wild if their nest is deserted. Several pairs of banded birds under observation throughout the breeding season failed to renest when their nest was deserted or destroyed by predators. In contrast, nene at Pohakuloa renest readily after the first clutch has been hatched and the young goslings removed.

Distribution and Movement: The only known major seasonal movement of nene involves the shift of a significant portion of the nene population to a large summering ground.... This movement occurs after the breeding season and following a period of about one month during which these birds flock and do considerable wandering. Many of the birds involved in this movement follow a daily pattern in the summer of roosting at night in an area located north of the Saddle road in Puu Oō Ranch. Each morning they fly south to lava flows and kipuka on the slopes of Mauna Loa where they rest and feed during the day. Some of these daily flights are at least 15 miles long.

These flights usually begin in late June and continue through September when the birds begin returning to the nesting areas. The number of birds in this summer flight pattern each year is difficult to determine due to limited personnel and frequent fog and rain which prevail in the area and also by the fact that the birds often fly about at night.

The following data summarize the highest counts of nene observed on the roosting area in Puu Oo Ranch or seen crossing the Saddle Road during each of the last 15 years of summer observations.

Year	Highest Count	Year	Highest Count	Year	Highest Count
1955	24	1961	37	1967	46
1956	28	1962	30	1968	45
1957	22	1963	9	1969	114
1958	3	1964	48	1970	incomplete count
1959	15	1965	76	1971	113
1960	32	1966	42		

As the foregoing figures indicate, there is no consistent pattern of increase. However, it is felt that the 1956, 1961, 1964, 1965 and 1969 counts show a significant increase in the population.

There are many more birds observed on the flyway counts and on the roosting grounds than can be accounted for in the Keauhou Sanctuary during the nesting season. About

90% of the nene on the roosting grounds are unbanded and are presumed to be wild birds. There are several hundred square miles of potential habitat areas of rugged terrain on Mauna Loa, of which only a fraction has been adequately surveyed for nene. Birds may be coming to this summer area from as far away as South Kona. The flight paths, when observed from the observation points on the Saddle Road indicate that these nene spread out over a large area on the slopes of Mauna Loa and utilize lava flows and kipuka there. Many birds spend the day on the 1852 and 1881 lava flows, but efforts to locate other feeding and resting grounds on the slopes of Mauna Loa have been unsuccessful. Locating the other major feeding and resting areas is essential to our ecological study and to the preservation of the nene.

Only a small number of released nene are to be found in the Puu Oo summer roosting area. It is not known where the majority of the surviving released birds spend the summer period. ...

The movements of a gander released at the Kahuku Sanctuary in 1967 give an interesting clue to nene dispersal. This bird mated with an unbanded goose at the Keauhou Sanctuary during the 1967-1968 breeding season and this pair reared a brood of three goslings. The pair and their brood appeared at the summering grounds in August 1969.

...These birds /nene released at the Keauhou 2 Sanctuary/ generally return to the sanctuary during the breeding season, although very few have been observed to nest there. They are not commonly seen in the area during the remainder of the year. Some frequent the ranches to the west and south of the sanctuary. Waterholes in Huehue Ranch are favored feeding and resting grounds throughout the year. Recent reports have been received of nene in pastures of Puu Waawaa Ranch. A few unbanded wild nene are seen in this sanctuary, but very little is known of their movements. They have been seen flying east or northeast towards the slopes of Mauna Loa until they disappear in the distance. This very extensive area has not been adequately surveyed for nene.

There has been a general dispersal of nene from the Kahuku Sanctuary after each release but no regular movement patterns have been detected. The few wild nene found in the sanctuary have had little apparent influence on the movement patterns of nene which were released here. ...The other nene observations have been made in areas to the south of the sanctuary. Nene have also been seen in the Kahuku Ranch pastures, at Kiolokaa, Naalehu, Punaluu, and Pahala.

An interesting question on nene movement is whether the birds fly between islands. The records of the following two birds are the only known records of interisland movements. A goose which was reared at Pohakuloa was sent to Maui for release there at Paliku. This was deemed desirable since this goose twice returned to Pohakuloa after having been released at the Keauhou Sanctuary. With a mate, (a Pohakuloa reared gander which had been released in Haleakala), this goose returned to Pohakuloa from Maui, a distance in excess of 70 air miles. The record established by these particular birds is significant in that it proved the nene will fly between the islands. It leads to speculation that perhaps additional nene may have flown from one island to the other, however, there is insufficient data at the present time to determine whether there is any significant inter-island movement.

Habits: Nene are generally unafraid, curious and particularly bold during the breeding season. At this time a gander may attack an intruder. This boldness is not as pronounced in the wild as it is at Pohakuloa where ganders often inflict minor bruises on our propagation staff. A goose will usually "freeze" on the nest if the eggs are in an advanced stage of incubation. The geese are very protective toward their young. When a pair with young is confronted by a human, one of the adults usually remains between the intruder and the brood. Frequently the adult will exhibit a threat display by spreading its wings, lowering its head and hissing. Unless crowded too closely, the family retreats in an orderly fashion without panic.

Wild nene are generally more wary than those reared in captivity. Observations have been made of nene seeking cover when they hear an airplane flying overhead, or hear and see an approaching vehicle. These observations indicate one of the difficulties of using helicopters to locate nene from the air when conducting nene surveys.

Another trait which the nene exhibits is nervousness. Quite often an investigator may be unaware of the presence of nene until the bird calls. These incidents usually occur when the investigator is remaining quiet. The nene which has successfully evaded detection appears to become nervous with the investigator's inactivity and emits a soft, moaning

call which discloses its presence.

During the moulting period nene usually become very wary and elusive. At this time they generally keep to well vegetated kipuka to evade detection. One may see moulted feathers and hear movement of a nene through the brush, but rarely will he see the bird unless it is forced to the edge of a kipuka.

Nene in the wild do not appear to be attracted to water. They may be seen at waterholes but appear to be concerned only with the succulent green feed that is abundant along the banks. If food is abundant in their normal feeding grounds, they rarely frequent waterholes or cattle water troughs.

Food Habits: Nene are vegetarians. As was reported by Baldwin (1947), nene observed in this study were opportunists in their feeding habits. They consumed a variety of available foods. There was a marked preference for gosmore (Hypochaeris radicata), the leaves, buds, and flowers are consumed. 'Ohelo (Vaccinium spp) and kukaenene (Coprosma ernodioides) are the most important food berries in the nene sanctuaries. These were observed to be eaten in preference to pukiawe (Styphelia tameiameiae). Popolo (Solanum modiflorum) is relatively uncommon in the nene habitats observed during this study. In addition to the food plants listed by Baldwin, nene have been observed to eat the seed heads of mesquite grass or yorkshire fog (holcus lanatus). This is an exotic which is common in the nene sanctuaries and adjacent ranch lands.

The nene feed most heavily during the early morning hours and again in the late afternoon. They are usually observed resting in the shade during the mid-day hours.

Goats and pigs are not serious competitors to the nene. These mammals utilize the same food plants as the nene; however, they are not at present so abundant that they would affect the food supply of the nene. In some instances their feeding activities may be beneficial as the pigs in rooting the ground stimulate gosmore and other succulents. Populations of both species are controlled in the nene sanctuaries by shooting.

At the present time food resources are not considered a limiting factor to nene in the wild.

Predation: Since the inception of a predator control program in the sanctuaries, only two known incidents of predation have been recorded on Hawaii. The partly consumed carcass of a gosling was found in the Keauhou Sanctuary. The predator was believed to be a rat. The other incident was the finding of three adult nene at Mt. Hualalai which had been killed by dogs.

The predator control program involves the use of 1080 poison injected into chunks of meat which are scattered throughout the sanctuaries for the control of feral dogs, feral pigs, mongooses and feral cats. These baits are deposited in crevices in areas frequented by predators. Placement of these baits is done in a manner to prevent their being consumed by the Hawaiian hawks. Each of the sanctuaries is treated with these poisoned baits in September and October before the breeding season. When nests are found, it is a general practice to put out additional baits in the vicinity of the nests to afford them greater protection from predators.

It is believed that this program has been effective in minimizing losses of nests and broods under observation. A dead rat was found near a nest which had been treated with poisoned baits. A feral dog which had attacked the survey crew was found dead after poisoned baits were disseminated in the area. Several other dogs have been eliminated from the sanctuaries by shooting and trapping as well as poison.

The Hawaiian hawk has been observed harassing nene in flight on two occasions. This indicates that hawks may prey on the nene. However, there are no records to show that the hawk is a serious predator to the nene. The Hawaiian hawk is a rare and endangered species and occurs in very small numbers throughout the island of Hawaii.

Release of Pen-reared Nene: Three release sites were selected and established, one in each nene sanctuary.

The release pens enclose typical habitat, providing the Pohakuloa reared birds with a variety of food and cover plants which are common to the areas. When placed in the release pens the birds eat this natural food and the commercial feed is gradually reduced. Water is provided in the pens at all times.

The release pens are about half-an-acre to one acre in size and fenced with one-inch chicken wire. To discourage burrowing predators, the fence wire is buried in an L-shape: one foot deep and one foot turned out parallel to the ground. The top of the pen is open.

A gentle release is used. All of the nene to be released are banded with colored plastic bands. The primaries of one wing, which had been clipped to prevent flying while in the pens at Pohakuloa are plucked. During this artificial flightless period, the nene are placed in the release pen. Constant surveillance is maintained to prevent predation and poisoned baits are also disseminated outside the pen to eliminate terrestrial predators such as mongoose and feral dogs. The nene are usually able to fly out of the pen within six weeks when their primaries have re-grown and hardened.

There have been instances where some nene have developed gaps in their primaries. This was caused by damage to the feather follicles after the feathers were plucked and the new feathers were growing. Very few of the birds sustained damage to the extent that they were unable to fly, although this ability was impaired in some birds. In an effort to prevent such damage, an experiment was conducted whereby some nene were not wing-clipped as they matured and were brailed when placed in the release pen. It was felt that this technique would have two benefits: (1) Damage to the feather follicles would be eliminated. (2) The nene could be kept in the release pen for a shorter period of time than the six weeks required when the feathers are plucked, thus reducing their vulnerability to predators.

Unfortunately, our expectations were not realized. In one release when the birds were brailed for only eight days, the brailing had caused some of the bird's wing tips to become twisted which impaired their flying ability. These nene recovered, but this experience indicated that the plucking of primaries was a better technique than using brails on still growing birds.

Most of the nene released were between two to four months old; however, a few releases contained birds over a year old. The older birds appear to leave the flocks of younger birds and range over a wider area. There is insufficient data to determine if age at the time of release has an effect on adaptability or survival.

Tables 19 thorugh 22 summarize observations of nene after release. It is evident from the data that some birds inhabit areas which are not currently known. This is the only conclusion one can reach when individual nene are not seen for three, four or five years, then are again observed in the wild. The vast areas on Hawaii with suitable nene habitat must be further explored in an effort to locate these birds.

Release of Nene on the Island of Maui

Early reports indicate that the former range of the nene included the Island of Maui, especially on Haleakala. This bird has not been reported on Maui since the early 1900's. A survey of the existing habitat on Maui was made in June of 1960. It was determined that there were some 9,000 acres of excellent nene habitat and 30,000 acres of moderate to good, mostly seasonal, habitat available.

When a proposal was made to send nene reared at the Wildfowl Trust in England to Hawaii for release into the wild, it was decided that these birds could best be used to attempt the re-establishment of the species on Maui. Because the birds raised in England were from the original Shipman strain, it was deemed wise to supplement the release of these birds with a number of birds reared at Pohakuloa from wild strain stock.

The Release Site: After considerable survey of the available habitats and suitable release locations, it was decided to locate the release pen near the Paliku ranger cabin within Haleakala National Park. The reasons for this choice are as follows: (1) This area, which lies at the upper end of the Kaupo Gap is excellent nene habitat and contains year-round feed. (2) The remoteness of the area will insure a minimum of disturbance to the birds and pen. (3) The excellent accommodations available at the Paliku ranger cabin for personnel caring for the birds. The cabin was made available to project personnel by the National Park Service.

The pen is situated at the edge of an ancient aa lava flow. It encompasses about an acre of good grass cover, mostly mesquite (Holcus lanatus) and Mountain pili (Panicum tenuifolium), plus sheep sorrel (Rumex acetocella) and gosmore (Hypochaeris radicata).

The pen was constructed of one-inch poultry wire, six feet high supported by steel posts. An additional three foot piece of one-inch wire was clipped to the bottom, buried one foot and turned out for a foot or more and covered with earth. All of the materials were hauled some 12 miles on mules furnished by the National Park Service.

Prior to placing the nene in the pen, the perimeter and immediate vicinity are heavily baited with poisoned meat. This is done to eliminate mongooses, feral cats or

dogs which might be in the area.

Releases have generally been made during the summer months, late June or early July. Birds were first transported in cardboard crates and packed in on foot by Fish and Game Division personnel and volunteer scout groups. Later shipments were made by crating 3 birds or less to a box and transported by a mule pack train.

Releases have been made every year from 1962 through 1970 with the exception of 1967. Table 23 gives a breakdown of the origin of the birds that were liberated on Maui.

As birds were uncrated in the release pen the clipped primary wing feathers were pulled. The terminal two flight feathers were left in tact so as to protect the re-growth of the inner feathers. Birds of one release were brailed, but the brails were removed in a few days to prevent permanent deformity of the growing bone structure.

The nene of the original release, 1962, remained in the general release area for the most part until April 1963. During April and the next two months, a gradual departure from the release area was noted until late June, when only six birds remained in the area.

In the 1963 release, the pattern differed in that the movement of birds out of the area began the latter part of November. By the end of December, all nene had left the release area. This pattern was again repeated in 1964, as birds began leaving the area in mid-November.

As indicated above, birds of the 1962 release remained in the area until April 1963, when they began leaving. By the time that the second release was made, there were but two nene in the area. During the next several weeks original release birds returned and by September 5, nine not seen for several months were now associating with the 1963 release.

Between 1968, when the first nests were found, and 1971 a total of 38 nests were found in the vicinity of the release pen on Haleakala. Eleven young were known to have hatched, five of which were found dead as very young birds. These five dead goslings were found near the nests in which they had been hatched. These deaths were correlated to exceptional heavy rain storms shortly after hatching. There have also been unusually bad hail storms and sometimes violent winds in the past few winters. The snow in recent years has been some of the heaviest on Haleakala in more than 40 years of observation.

Three mature young were found with their parents in May of 1971 and have been seen flying about the Crater. Other birds could have been reared that we are unaware of. In January 1972 one of the nene produced last year was observed paired with an England reared bird.

We believe the restoration project of nene in Haleakala Crater has been a success. The first birds were released there only in 1962. The great majority of the birds have remained in the Crater, they have done well, they have nested and hatched young, and very few losses of adult birds have occurred.

We have found that there is a tendency of Maui nene to return to the same locality for nesting and sometimes to the same site; however, we have also found that certain birds move to nesting localities which of course is desirable in dispersing the birds and extending their range.

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Editor's note: The following tables were omitted (only the headings/are listed here):

1 Summary of Production at Pohakuloa from 1953-1954 through the 1971-1972 Breeding Season

2 Fertility of Eggs in Relation to the Age of Geese (The percent fertility of all eggs laid by Shipman strain geese was 54.5%. Fertility of eggs laid by geese of different ages ranged from a low of 7.4% to a high of 75%. The percent fertility of all eggs laid by wild strain geese was 76.7%. Fertility of eggs laid by geese of different ages ranged from a low of 41.4% to a high of 100.0%.)

3 Hatching Success as Related to Method of Incubation (Ducks were used to supplement nene for incubating eggs during the early stages of the propagation program. The hatchability was comparatively poor because the geese were predominantly Shipman strain geese. These blood lines had been found to have low fertility and hatchability.)
4 Weights in Grams of 52 Adult Nene during 1969
5 Dates of First Eggs at Pohakuloa
6 Egg Weights in Grams of 32 First Clutches Laid during the 1968-1969 and 1969-1970 Seasons
7 Gosling Weight in Grams of 32 First Clutches laid ditto
8 Egg Shell Weights in Grams of 32 First Clutches laid ditto
9 Number of Eggs Laid in Relation to Age of Geese
10 Rainfall for Keauhou Sanctuary in Inches
11 Rainfall Records for Keauhou 2 Sanctuary Area in Inches
12 Rainfall Records for Kahuku Sanctuary Area in Inches
13 Summary of Nene Nests and Broods in the Wild 1965-66 Season
14 Summary of Nene Nests and Broods in the Wild 1966-67 Season
15 Summary of Nests and Broods in the Wild 1967-68 Nesting Season
16 Summary of Nests and Broods in the Wild 1968-69 Season
17 Summary of Nests and Broods in the Wild 1969-70 Season
18 ditto 1970-71 Season
19 Observed Survival of Nene Released at Keauhou
20 ditto Keauhou 2
21 ditto Kahuku
22 Observed Survival of All Nene Released on Hawaii
23 Nene Restoration Project Record - 1949 to May 1972

Also, included in this report is Figure 1: Map of Hawaii showing Nene Data

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Without Cahill Will Maui's Nene Survive?

By Jerome J. Pratt

From my distant observation post on the Mainland I can see a need for vigilance by Hawaii's conservationists to insure the continued success of the "Nene Park" project at Haleakala National Park upon the departure of Russ Cahill.

Cahill's resignation as park superintendent in April 1974, is a tremendous loss to Hawaii and Alaska's gain. With his wife and three children, Russ will settle in Gustavus, Alaska, to write about ecology and land management. Alaska needs leaders like Cahill as much as Hawaii, and perhaps he will be more effective in Alaska because of a better political attitude toward natural resources.

To establish the Haleakala nene project, Cahill had to defy bureaucratic opposition by the National Park Service and the Bureau of Sport Fisheries and Wildlife at the Washington level. (See "Research study proposal for investigation of behavior of the Hawaiian goose under the 'Nene Park' plan," THE ELEPAIO, October 1972, Vol. 33, No. 4, pp. 33-34). Without his professionalism in fighting bureaucracy, those like the head of Hawaii's Department of Land and Natural Resources, and the federal money-dolers in Washington may try to kill Haleakala's low-budget nene project to save face for their extravagant less-effective program.

A recent report on the success of the Haleakala project appeared in THE MAUI NEWS, February 28, 1974, entitled, "Nene offspring thrive up at Haleakala Park." In an interview, Russ Cahill stated that a number of people are responsible for the success of returning nene to their native habitat on Maui. Those he mentioned for a specific role were Herbert Shipman of the Big Island; Sir Peter Scott of England; and Jerome Pratt, former administrator at Haleakala. To be placed in the same category as Shipman and Scott by an informed biologist of Cahill's caliber is indeed an honor.

Of course, the nene park concept was conceived by Mr. Scott in 1962, and I modified his plan to meet the requirements at Haleakala. I was confident the plan would work if given a trial (Pratt 1971), and it was easy to get Cahill's support when he became superintendent of the park.

Over the years members of Hui Manu O'Maui have been concerned with the plight of the nene and the Hawaiian stilt, but they have lacked the courage to fight the political system. Cahill is one of the few ready to stick his neck out in behalf of Hawaii's

ecological wealth.

There are some members of the Haleakala National Park staff eager to carry on with the nene project, but its success or failure will depend upon the attitude of superintendents in the years ahead. Presently, Hawaii Volcanoes National Park is in good hands, but Cahill was the first biologist ever assigned to run Haleakala; his predecessor gave priority to "hippies" over the nene at a great expense to the birds and the taxpayers.

The Haleakala nene project is designed to run five years commencing in 1972. The objectives are to determine the reproductive capability of the plan, and re-establishment of the species in adjacent potential natural range. It is to culminate in a formal scientific paper on the behavior of the nene under the concept.

Upon completion of the five-year research phase, the project should continue as a source of supplemental birds to augment the wild flock. The ultimate goal is to remove the nene from its current precarious status as an endangered species.

The Hawaii Audubon Society can help by encouraging the continuation of this valuable and economical means of assisting nature and providing an educational facility at the same time.

Literature Cited

Scott, Peter, 1962. A Project for a Nene Park in Hawaii. The Elepaio, 22(11)
Pratt, Jerome J., 1971. A Breakthrough for Maui Nene. The Elepaio, 32(3)
Pratt, Jerome J., 1972. Research Study Proposal for Investigation of the Hawaii Goose under the "Nene Park" Plan. The Elepaio, 33(4)

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Letter from Rene D. Sylva, Pāia, Maui, 21 October 1973 concerning some 9.49 acres at Pauwalu Point near Keanae, Maui, declared surplus by the federal government and which would be available to the local government. The land consists of 8.1 acres of relatively level land heavily covered with vegetation and 1.39 acres of access easement. It is about 38 miles east of Kahului.

I am writing to you today as I'm concerned with a serious matter concerning the birds of Moku Mana at Pauwalu Point, Keanae, Maui. As you know, 9.5 acres at Pauwalu Point has been declared surplus by the Federal government. I strongly urge the Hawaii Audubon Society to use its influence and claim the 9.5 acres for a reserve for the protection of the birds.

There are three possible agencies that could possibly use Pauwalu Point as a reserve. First, the Bureau of Sports Fisheries and Wildlife. Second, the Natural Area Reserve Commission. Third, the State Fish and Game Division.

If you agree with me that the birds of Moku Mana are worthy of protection, then please work out some kind of a plan to notify the different government agencies involved.

A bird count was made of Moku Mana and nearby cliffs, on Saturday, June 3, 1972 with a boat. The check was made at about 8:30 a.m. The sea was glass smooth, and the wind was dead Kona (southerly). The check of Moku Mana islet indicated there were approximately 100 Great Frigatebirds (Iwa) on the islet. Some of the birds had a red throat, indicating males. Approximately 40 of the birds had a white throat and patch, indicating females. Approximately 30 with white heads, indicating juveniles. Moku Mana has a yearly established Great Frigatebird population of three to four dozen birds. The high count on the 3rd of June is believed caused by the lack of wind.

A bird count was also made of the Noddy Terns (Noio Koha) of Moku Mana and nearby cliffs and islets. The count indicates there were approximately 175 Noddy Terns in that area. Over 80 nests were counted. Some of the birds are believed to be the White-capped Noddy (Noio). It is believed that the white Fairy Terns also nest in that area, although none were seen on June 3rd. I recall seeing over 300 Noddy Terns in the Moku Mana area.

Moku Mana, a prominent point of land, is an islet off the northern shore of Maui's Keanae district. It is an area of natural beauty and unusual rock formations. The small bay, Keanae side of Moku Mana has an unusual rock formation that looks like a huge European cathedral. This cathedral like formation cannot be seen from an aircraft or from land; only from a boat moving almost under the rock formation, can this natural beauty be enjoyed.

A small islet, Moku Hala, is also located in this bay. Several dark caves along the 100 foot high cliffs face, with birds nesting in some of them can also be seen.

The small bay on the Hana side of Moku Mana has a small pointed islet (Manahoa Rock)

with a pointed rock balancing on it. This bay also includes two huge natural caves and two smaller ones. The huge cave on the left has an opening that goes under Pauwalu Point into the next bay. We were able to maneuver our boat through the cave and into the next bay. This area is of historical value as it is believed to be one of the areas where Hawaiian Royalty and especially Maui's King Kahekili, are famous for leaps into the ocean from the high cliffs.

I believe Pauwela Point, Moku Mana, Moku Hala and the cliffs nearby, should all be a Marine Reserve, for the Marine birds that nest in that area. I give these reasons. First, Moku Mana is believed the only islet near Maui where the Great Frigatebird ('Iwa) establishes itself. Second, Pauwelu Point is believed the best area where the heaviest concentration of Noddy Terns nest on Maui. Third, boats are already starting to move in that area and are a threat to the birds. Fourth, I believe more and better protection is needed: a properly marked and dedicated reserve is the answer.

The fact that juvenile Frigatebirds are found on Moku Mana, indicates to me that it is a migratory rest stop for the birds coming from the leeward islands to the southern islands. Part of the flight pattern of the Great Frigatebirds is directly over Pauwalu Point. For this reason, and the fact that the Noddy Terns are also nesting on Pauwalu Point, I do not believe the 9.5 acres should become a public recreational area.

Reply from Acting President Wayne Gagne, 19 November 1973

...We are informed by Steve Montgomery, Natural Areas Specialist, State Natural Area Reserve System Commission, that this land will eventually be added to the Natural Area System. Sunao Kido, Chairman of the Board of Land and Natural Resources, and Dr. John Maciolek, Chairman, Natural Area Reserves System Commission, are in accord with this decision. The Society agrees with this decision. What remains is the actual transferral which will take some time to work through the various bureaucratic channels and intervening red tape. ...

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Field Notes from William P. (Pat) Dunbar, USNS Furman, 29 April 1974

...A fellow member of the Golden Gate Audubon Society told me snowy owls had been observed on the sand dunes north of Pt. Reyes. Never having seen one, I drove out there, to no avail. A week or so later another call to say there was an owl in Alameda, staying in the general area of a large apartment complex. ...Not knowing exactly where to look I was walking around carrying two cameras. Two young people walking by asked if I was looking for the snowy owl; if so, it was just around the corner sitting on the roof, and sure enough it was. I watched it for several hours, and local resident told me it had been there about a week. I took numerous pictures--stills and movies. /Pat was kind enough to send a beautiful color picture of the bird on the roof. MAHALO/ As you probably know the snowy owl is an Arctic bird that only flies south when food shortages force it. It is not uncommon in Oregon and Washington, but rare in California. I was told this is the first one on record in the Alameda area since 1894.

The last few days I've been able to watch booby birds (red-footed, I believe) catch flying fish. Yesterday there were three of them. They seem to know that the ship disturbs many flying fish causing them to "fly" out of the water. Quite often the birds just perch on top of the ship's beams and when the fish comes up out of the water the bird flies after it, quite often picking it out of the air. As yet I've not been able to get any picture of it doing so.

This ship in which I'm a third mate, sails between Seattle and Guam making about ten trips a year. ...

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Plover Watching

From Christine Jones, 24 April 1974: On April 10 I was passing Iolani Palace (King Street side) and noticed a young woman sitting on the grass eating an orange. As I passed, she threw a bit of it to a golden plover about 10 feet off. The bird, which was in partial breeding plumage, ran up to within 6 feet of the girl, but a couple of English sparrow reached the orange first, and the plover turned and ran off, seeming not at all alarmed. According to Reilly's AUDUBON ILLUSTRATED HANDBOOK OF AMERICAN BIRDS, the plover is known to eat seeds and berries as well as its more usual diet of insects, crustaceans and so forth. Has anyone observed a plover eating fruit, or taking any food at all from a human

being? I still can't get over the tameness of these birds, accustomed as I am to the wildness of Mainland shorebirds! ...The Shriners Hospital plover seems to have departed as of last week. What a gorgeous bird it had become!

From Barbara Macaulay, 15 April 1974: In response to your request for observations on the changing breeding plumage of the plovers I took an early morning walk (7 a.m.) around Kapiolani Park on Sunday, April 7th. I observed no less than seven pairs of golden plovers. In each case one of the pair exhibited marked change in plumage with the black belly and chest clearly outlined with white. The other member of the pair did not exhibit such marked change in plumage with only the lower abdomen becoming black. I wonder if this is the male changing sooner than the female or what? It was very clear that in each pair one member had changed plumage more than the other. Is it possible the plumage of the male and female is different?

From Erika Wilson, 21 April 1974, 7:50 a.m.: Light rain, cool, windy; State Capitol lawns. Last sighting of an individual in full breeding plumage that I have been watching each morning while waiting for the bus. 24 April 1974, 4:30 p.m.: Sunny with scattered clouds, windy; Fort Shafter Interchange on H-1. Last sighting of an individual in full breeding plumage which I check on each afternoon on my way home from work. 30 April 1974, 7:00 p.m.: Clear, no wind, cool; University of Hawaii near Hamilton Library. In the dusk I heard a Golden Plover call; I saw its silhouette against the sky as it sailed on narrow wings over the Library. It was too dark to see the condition of its plumage.

Any answers to the questions? If you have any information, please share your experiences with other members by writing to Kojima, 725-A 8th Avenue, Honolulu, Hawaii 96816. Also, does anyone know whether or not a monarch butterfly feeds on the kiawe blossoms? Please send in your observations; especially, to you junior members, I hope you'll take this opportunity to share your experiences through THE ELEPAIO. MAHALO.

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Kawainui Marsh - a Plea for Help

During the next few months, the ultimate fate of Oahu's largest fresh water marsh will probably be determined. Formally a 450 acre inland lake, encroaching vegetation has gradually reduced the open waters of Kawainui. Yet gallinules, coots, koloa and herons still utilize the area. Native 'opae and 'o'opu frequent the streams, along with juvenile mullet. Presently, more than 750 acres are owned by the City and County of Honolulu. Plans for a regional park, to include a waterbird sanctuary within, have been in the works for over 10 years. A resolution was passed in the 1974 legislature urging the City to take decisive action on the park proposal when it comes up for review soon.

Unfortunately, nearly 260 acres of land, much of it bordering the Pali highway, is still in private ownership and must be acquired by the City for inclusion into the regional park. A shopping center, larger than the present day Ala Moana site, is being considered for part of this land parcel. The associated congestion, pollution, noise and visual disturbance would surely be incompatible with the proposed park and sanctuary. Several other less objectionable sites for a windward shopping center complex are possible.

It is critical that individuals and groups,such as the Hawaii Audubon Society,play a significant role in the realization of the regional park plan, with its enormous conservation, and education potential. The regional park will serve the recreational and educational neeeds of all Oahu and requires support from outside the Windward community. The Lani-Kailua Outdoor Circle is spearheading efforts on this project and can use all the help they can get. Make yourself heard! Robert Shallenberger

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Transect of California, 21-27 June or 12-18 July 1974

Point Reyes Bird Observatory is offering an exciting way to learn more about the natural history of California's major habitats on an east-west transect from Mono Lake to Monterey. Last year, 233 species of birds and 46 other vertebrate species were observed. The course includes mammals, reptiles, birds, trees and flowers--all in unpopulated areas of California. Only 16 people with leaders Rich Stallcup, Bill Clow, Bob Stewart and Art Earle! Cost: $150. For further information: Write Meryl Stewart, Box 442, Bolinas, California 94924. Check made out to Point Reyes Bird Observatory is your reservation.

Field Notes from Charles van Riper, III, 22 March 1974, Mauna Kea, Hawaii

...Am really into the field work up here and am having some good, although cold times. The 'Amakihi are in full nesting now, and I have a number (over 50) nests found already and about 10 active right now. ...

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Request for Information on Nesting Birds

In the March 1967 issue of THE ELEPAIO, Andrew J. Berger listed a number of "Problems for Hawaiian Bird Students." Only three of the many introduced species have been studied at all. For many, there is no published information on the nesting activities of the birds. Members of the Society can add a great deal to our records of the nesting activities of both introduced and native species if they will call when they find a nest of any species. Dr. Berger has agreed to coordinate the nest-record program. If you find a nest, please call him at the Department of Zoology of the University of Hawaii, telephone 948-8655 or 948-8617. MAHALO NUI LOA for your interest and KOKUA.

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CONGRATULATIONS! to Harry Whitten for winning one of the eleven annual conservation awards for outstanding contribution to the environment. THE ELEPAIO has used many of his very informative articles from his "Our Environment" column, HONOLULU STAR-BULLETIN. MAHALO.

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ALOHA to new members:

Lawrence M. Bartlett, 1412 Kewalo St, Apt 202, Honolulu, Hawaii 96822
Elizabeth B. Bennett, 778 Wiliwili St, Apt 202-C, Honolulu, Hawaii 96814
STS3 Douglas Roselle, USS Flasher SSN 613, FPO San Francisco 96601
Dr. Sally True, 1560 Kanunu St, #1521, Honolulu, Hawaii 96814
Hawaii 2000 Outdoor Recreation Center, PO Box 1141, Hilo, Hawaii 96720

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Because of critical paper shortage the annual index for Volume 34 will be mailed to members only upon request, so if you are interested in receiving a copy, please send in your reservation before July to Kojima, 725-A 8th Avenue, Honolulu, Hawaii 96816.

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HAWAII'S BIRDS, a field guide, is available for $2.50 postpaid, Airmail 65¢ extra. Send in orders to: Book Order Committee, Hawaii Audubon Society, PO Box 5032, Honolulu, HI 96814.

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JUNE ACTIVITIES:

9 June - Field trip to Aiea Loop Trail to study native forest birds. Bring lunch, water and if possible your car. Transportation cost ($1.00) to be paid to the drivers. Meet at the State Library on Punchbowl Street at 8:00a.m. Leader: Mrs. Erika Wilson, telephone 523-1843.

10 June - Board meeting at McCully-Moiliili Library, 6:45 p.m. Members welcome

17 June - General meeting at Waikiki Aquarium Auditorium at 7:30 p.m.
Program: Importance of Hawaiian Pomace Flies (Drosophila spp.) in the Development of Evolutionary Theories by Steven Montgomery

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