

THE ELEPAIO

*Journal of the
Hawaii Audubon Society*



*For the Better Protection
of Wildlife in Hawaii*

VOLUME 26, NUMBER 11

MAY 1966

NENE RESTORATION PROJECT REPORT*
Division of Fish and Game
Department of Land and Natural Resources
Honolulu, Hawaii

BACKGROUND

The Nene Restoration project actually began in 1949 when Mr. Herbert Shipman, a rancher on the island of Hawaii, loaned the Board of Agriculture and Forestry a pair of Nene with which to start a propagation project. Mr. Shipman had the only captive flock of Nene in existence at that time.

Initially this program was financed by a \$6,000 legislative appropriation from the Territory of Hawaii. Originally, the program was designed to study both the Nene in the wild and rear them in captivity for eventual release. The ecological wild study portion was not approved by the Board of Agriculture and Forestry at that time, however, the formal phase of the ecological study began in 1956 when Dr. William Elder from the University of Missouri received special grants to undertake an ecological investigation of the wild Nene. Meanwhile, Nene were successfully raised at the Pohakuloa Project each year until the flock numbered 38 in 1957.

The following are some positive steps taken toward the goal of preservation and restoration of the Nene prior to the inception of the federally financed program:

1. A preliminary ecological study conducted by Dr. William H. Elder, one of America's foremost waterfowl authorities, financed by private funds, was completed which revealed the nesting grounds of the wild Nene where a substantial number of young birds were reared and the summer range of practically all of the wild Nene on Hawaii.

2. This nesting area, containing some 8,100 acres of Keauhou Ranch, was set aside as a sanctuary by negotiating a cooperative agreement with C. Brewer & Co. and the Bishop Estate.

3. The Nene was declared the official bird of the Territory of Hawaii by action of the Territorial Legislature.

4. The captive flock of Nene at Pohakuloa was increased to 39 birds.

5. As a result of the facts revealed by the ecological study and the positive steps taken in Hawaii, a Bill was introduced in the U.S. Congress to authorize the U.S. Fish and Wildlife Service to spend \$15,000 a year for a period of five years, to carry out a program of research and management to insure the preservation and re-establishment of the Nene in its former known habitat. This Bill was strongly endorsed by the top conservation organizations in the United States and was passed by the 85th Congress as Act 891 during the closing days of the session. Use of these funds was made available during the month of November, 1958.

With the availability of federal funds, Mr. Richard E. Griffith, Chief of the

*Ronald L. Walker's contribution.

Wildlife Division, Region 1, U.S. Fish & Wildlife Service, came to Hawaii to survey the program and formulate plans for future work. His initial visit resulted in two men being assigned to the program. David H. Woodside, Biologist, was designated overall Project Leader whose principal duty was to conduct the ecological phase of the project as well as supervise the entire program. Mr. Ah Fat Lee was assigned as propagationist in charge of the rearing project at Pohakuloa, Hawaii.

1958-1959 SEASON

The first year the federal project was very successful with the following results:

1. Nine wild Nene nests were located in and around the Keauhou Sanctuary area. Their progress was carefully followed and recorded which produced much valuable information heretofore unknown. Prior to this time, only one Nene nest had ever been observed by a scientist. It was found that the fertility of wild Nene was extremely high as compared to the captive birds at Pohakuloa.
2. Fifteen additional Nene were reared at Pohakuloa bringing the total population to 54 birds for the project. This was the best production experienced since the project began.
3. A cabin was constructed at the Keauhou Nene Sanctuary and preparations were made for the first release of pen-reared Nene into wild habitat.

Many prominent authorities on waterfowl from all over the world have visited the Nene project over the years and the project has benefited greatly from their invaluable experience in waterfowl.

1959-1960 SEASON

The second year of the federal project produced even further gains toward the ultimate goal of restoring the Nene.

Seventeen additional Nene were produced at the Pohakuloa station, which brought the total raised in captivity to 71.

Twenty Nene, including one, two, and three-year old birds, were placed in a carefully planned 1-acre release pen located on the Keauhou Sanctuary within the breeding range of the wild Nene on March 17, 1960. The Pohakuloa pen-reared Nene were wing clipped before being released so they would remain in the open topped pen long enough to become acclimatized and learn to eat the wild food in the sanctuary area. The plan worked extremely well with a few birds leaving the pen as their flight feathers grew out but returning to eat and rest within the pen. Gradually the entire flock left the pen and established themselves in the general vicinity of the release area. For approximately six months, 14 of these released birds were observed regularly and during the following breeding season, as many as nineteen were noted. By the 1960-61 breeding season, two of the released birds paired with wild Nene in the area and a pair of released Nene composed of a two-year old gander and a four-year old goose appeared to be selecting a nest site near the release pen.

Our studies show that the scheme of gently releasing pen-reared birds into wild habitat to mingle and mate with wild Nene is working out ideally and since the initial release was so successful, it was felt that additional releases in other areas to supplement the Keauhou release site were desirable. An area in North Kona, lands of Keauhou 2 was selected as it was still inhabited by a few wild birds and was known to be a nesting area a few years back. An agreement was drawn up with the W. H. Greenwell Ranch and the Bishop Estate and a second sanctuary was created.

1960-1961 SEASON

On April 5, 1961, eleven additional young Nene were released in the Keauhou Sanctuary to strengthen the previous release. On May 23, twenty Pohakuloa reared Nene were released in the newly created Keauhou II site, following the same method used at Keauhou. Total released came up to 51 Nene.

The problem of low fertility and hatchability remained a strong challenge at both the Pohakuloa project and at Severn Wildfowl Trust in England where Nene are also being propagated. In order to pin-point the difficulty and to find a solution, studies were continued on the mechanics of hatching and rearing to determine if this was the primary limiting factor. To investigate this phase more thoroughly, Mr. Wesley M. Batterson, Biologist with the Oregon State Game Commission, was asked to come to Hawaii and review all aspects of the propagation phase during the 1960-61 breeding season. Mr. Batterson is noted for having raised numerous species of birds that had never been raised before in captivity, and among these Mr. Batterson has had a great deal of success in breeding Emperor geese and Ross' geese considered to be extremely difficult-to-rear birds. With such a background, we wanted Mr. Batterson to duplicate as nearly as possible the unique techniques he had so successfully employed in Oregon.

Also, in order to raise the fertility-hatchability rate at Pohakuloa, a pair of adult wild Nene and one young bird were captured in the Keauhou area during March of 1960 for breeding purposes. This pair produced four young during their first season in captivity. During the 1960-61 breeding season, a total of 32 Nene were produced, making the total reared in captivity at Pohakuloa, 103.

In August, 1960, Mr. Rose Leffler, Assistant Secretary of the Interior and Mr. Lansing A. Parker, Assistant Director, Bureau of Sport Fisheries and Wildlife, U.S. Fish & Wildlife Service made a thorough field inspection of the project at Pohakuloa and the Keauhou Nene Sanctuary and this resulted in the formulating of plans to extend the Nene project an additional 5 years and to increase the annual allotment from \$15,000 to \$25,000. There is a Bill pending in the U.S. Congress now to increase the scope of the Nene project.

International interest in the Nene project has always been great. At the 10th Pacific Science Congress held in Honolulu in 1961, a Resolution was passed recommending that the United States government amplify and strengthen the Nene Restoration program.

1961-1962 SEASON

During this breeding season, 45 goslings were successfully reared at Pohakuloa, (total to this date--148) and 36 of these placed in the release pen on Hualalai on May 8. During the next few months these birds and several from the first release were seen in the sanctuary area feeding on wild foods, apparently adapting well to their new surroundings. Another five birds from this year's production were shipped to the island of Maui for release there.

Field trips by biologists revealed further evidence that wild and pen-reared birds were accepting each other as hoped for when the releases were made in areas of known Nene populations. For instance, on one occasion prior to the 1962-1963 breeding season, a goose from the 1960 release and a gander from the 1961 release were seen paired, and another couple consisted of a wild bird and a released bird.

The largest number of wild Nene seen at any one time during the summer of 1962 was 30, crossing the highway between Mauna Loa and Mauna Kea.

1962-1963 SEASON

Fifty-four Nene were produced at the rearing project during this season bringing the total number brought up in captivity since the project's inception to over 200. Five additional birds were sent to Maui to augment the release there, and 42 were released at Keauhou II in September. A total of 129 Nene had thus been liberated on the island of Hawaii.

Several interesting observations have been made during the ecological survey trips. One nest was discovered in March, 1963, at Keauhou, tended by an unbanded goose and a banded wild gander--the male was banded as a gosling several years previous. The homing instinct is apparently quite strong in released birds. Six released birds from the Keauhou II area were observed over a period of a week up to

15 miles away in a direction towards the Pohakuloa project. On one occasion a pair of Nene, one unbanded and the other a 1961 Keauhou release bird landed on the Pohakuloa pens and stayed in the vicinity for several days.

One setback occurred at the Hualalai sanctuary when it was discovered that during the flightless period, released Nene were falling prey to wild dogs. The remains of four birds were discovered, and immediate and intensified predator control measures were taken.

At the Pohakuloa rearing site a large prefabricated building was constructed to centralize all feeding, incubating, brooding and rearing facilities. Domestic geese were procured for experimentation with incubation and hatching techniques, as mortality during this state of the Nene's development continues to be a problem. The Silky bantam chicken flock was selectively manipulated to produce high broodiness foster mothers.

1963-1964 SEASON

Thirty-eight goslings were reared during the year, making a total of 240 Nene raised successfully at the Pohakuloa project over the years. Pure wild-blooded stock was again added to the project flock when a wild gosling was caught and brought back to Pohakuloa, and two out of three eggs salvaged from an abandoned nest at Keauhou hatched in the project pens. In addition, an unbanded gander was caught at Pohakuloa and added to the captive flock. This gander and its mate, a goose released in 1961, had again returned to the rearing pens and were disturbing the captive flock. The goose was also caught and sent to Maui with 7 young birds for release in Haleakala. Twenty-four young birds were held at Pohakuloa for release during their first complete post-nuptial molt next year.

During the course of the ecological survey, five nests were discovered in the Keauhou sanctuary. Two of these were tended by wild pairs, one by a goose banded in the wild, one by a released gander and a wild goose, and the fifth was a deserted nest with 2 eggs. Although predator control measures were applied throughout the season, three of the clutches were destroyed by mongoose. The fourth nest was abandoned, but the eggs were salvaged and brought back to Pohakuloa for hatching.

CURRENT SEASON

During the winter of 1964-1965, 41 goslings were produced at Pohakuloa. (Total to date--281) Eighteen of these birds and one old gander were released at the Keauhou II sanctuary on Hualalai in April; six others were released at the Keauhou sanctuary with 24 one-year old birds retained since last year, on March 15. The total number thus released on Hawaii now numbers 178. The birds were placed in the release pens before they had completed their juvenile molt. It was felt that this technique would produce better-flying birds than realized when the primaries were pulled. Eight young birds are being retained as future breeders and the remaining nine will be released on Maui in July of this year.

Very strong homing instinct was exhibited by a goose raised at Pohakuloa. This goose was caught and released on Maui in July, 1964. It returned to Pohakuloa in January of 1965 with a mate (a gander sent from England and released on Maui) and was caught and re-released at the Keauhou sanctuary. Shortly after being released, this pair built a nest in the nearby Hawaii Volcanoes National Park. Two of the 3 eggs laid were hatched, and the goslings were thriving when last seen four weeks after hatching.

Broods were seen in both sanctuary areas. A brood of 3 young from birds banded in the wild was seen at Keauhou and another brood of three young from a pair of wild bird was seen just outside the Keauhou II sanctuary.

In addition, a brood of four young from a pair of unbanded birds was seen in Kipuka Ainahou. This area lies midway between the Keauhou sanctuary and the summer roosting grounds of the Nene on the slopes of Mauna Kea.

The future of the project and study now awaits action of the State and the United States Governments.

6/15/65

EDITOR'S NOTE: 1965-1966 Season's report will be published as soon as it is available.

NENE News:

HONOLULU STAR-BULLETIN, March 22, 1965, page A-10: POLITICS, MONEY REVOLVE AROUND PLIGHT OF NENE by Helen Altonn.

Confusing news: The Interior Department has recommended to Congress \$150,000 for the Nene project for five years as requested by the Wildlife Branch of the State Fish and Game Division, but a plan of a different nature, a proposal for a \$150,000 appropriation to lease 5,000 acres of land and ponds in Hawaii for bird sanctuaries, was urged by the Director of the Department's Bureau of Sport Fisheries and Wildlife before a Congressional subcommittee last week.

HONOLULU STAR-BULLETIN, May 27, 1965, page E-11: MATSUNAGA ASKS ADDITIONAL AID FOR NENE GOOSE--Star-Bulletin Bureau, Washington.

"An appeal was made to a House subcommittee today by Representative Spark M. Matsunaga for the Federal expenditure over the next five years of \$125,000 to help preserve the Hawaiian Nene Goose from extinction.

"Joining with him by submitting statements to the House Fish and Wildlife subcommittee on behalf of the future of Hawaii's official State bird were Senators Hiram L. Fong and Daniel K. Inouye.

"...The amount now allowed is \$15,000 a year.

"...Inouye, who has introduced a companion bill in the Senate, said the Nene Goose program of the past five years has proven to be successful but it is far from complete. He warned that a premature ending of the program would cause a severe setback to the Nene conservation program."

HONOLULU STAR-BULLETIN, June 2, 1965, page C-4: PROGRAM TO SAVE THE NENE GOOSE GETS A BOOST--Washington (AP).

"The Bureau of Sport Fisheries and Wildlife reported modest success in a program to save the Hawaiian Nene Goose from extinction.

"Lansing A. Parker, associate director of the bureau, told a House Merchant Marine and Fisheries Subcommittee that the conservation program will be continued, and that additional authorization by Congress is not necessary.

"Parker testified on a bill by Representative Spark Matsunaga...to extend for five years the special Nene Goose restoration program authorized by Congress in 1958 and to increase annual appropriations from \$15,000 to \$25,000.

"Parker said the special act expired last June 30, but \$15,000 is being spent this year and another \$15,000 is budgeted for next year under general authorization in the Migratory Bird Conservation Act and the Fish and Wildlife Act of 1956....

"The objective, he said, is to build up habitat sufficient to sustain a wild population of at least 500 on Maui and 500 on the island of Hawaii...."

THE SUNDAY STAR-BULLETIN & ADVERTISER, July 18, 1965, page A-19: NENE IS 'CLIPPED' FROM INTERIOR'S BUDGET REQUEST by Fred W. Bennion, Director, Tax Foundation of Hawaii.

"The Territorial Legislature, in 1956, resolved that the Nene...be declared and adopted as the bird emblematic of the Territory.

"Since that time successful efforts have been made to preserve this bird. The most recent try for federal funds to lease 5,000 acres as a refuge, however, met with failure. The \$150,000 item was clipped from the Interior Department budget request....

"...The subcommittee--and subsequently the House itself--eliminated over \$3 million in requests to buy or lease 19,000 added acres of land for refuges for rare birds facing possible extinction.

"A spokesman for the Department's Bureau of Sport Fisheries and Wildlife told subcommittee members the acreage was needed for more 'nesting and breeding grounds for whooping cranes, Florida sandhill cranes, New Mexico ducks, and the Hawaii Nene.'

"A subcommittee member estimated the request for 5,000 more Texas acres at a cost of \$1.1 million, figured out to \$200 per acre. On the basis of 1964 Bureau figures, he said, the added land cost would be 'about \$35,000 per bird.' It was noted that granting another request for another \$1 million to buy 5,000 additional acres in Florida for about 700 sandhill cranes would 'come to about \$1,400 per crane.'

"The cost of leasing 5,000 acres in Hawaii for the Nene refuge would be much more modest and amount to only about \$100 per bird.

"As pointed out by the Bureau spokesman, figuring the refuge program on the basis of individual numbers of birds in existence leads to some rather staggering per bird figures. We all agree.

"However, the subcommittee report does make it easier for us to understand why the committee members cut Hawaii's \$150,000 and if by so doing they also saved about \$3 million in other similar proposals."

HONOLULU STAR-BULLETIN, August 5, 1965, page 1: TO BE FREED ON MAUI, NENE IMMIGRANTS ARRIVE.

"Two-dozen squawking young nene from England plus a pair from Connecticut returned to the land of their forefathers last night....

"Temporarily the birds are being lodged at the Honolulu Zoo, but on Monday, State Fish and Game men will release them in Haleakala Crater on Maui. That will be the 10th release of nene in Hawaii.

"Peter Scott, operator of the Wildfowl Trust, a private wildfowl sanctuary at Slimbridge, England, raised the four and twenty gray birds and donated them to Hawaii. They spent two weeks quarantined in New Jersey.

"Dillon Ripley, of Litchfield, Connecticut, gave the State two nene more.

"Most of the birds' crates were labeled 'Hawaiian goose--the world's rarest goose, bred by the Wildfowl Trust--fourth release in their native land.'

"These geese are descendants of three birds sent to the Wildfowl Trust by Herbert Shipman, of the Big Island, some 16 years ago....

"The ages of the 26 nene range from less than a year to about two years....

"They will be air-freighted to Maui,...and the wildlife biologist, Joseph Medeiros, will release the birds in Haleakala in a wire pen stocked with foods they have eaten in captivity. Thus they will be protected from predators and become accustomed to the place, and in a few weeks when their clipped wing feather grown back, they will, presumably, fly off.

"In 1949, Walker said, there were less than 100 nene in existence, but now there are over 500 in Hawaii, plus a few more in captivity in various zoos and sanctuaries elsewhere. About 50 are in captivity here....

"The first release was in 1959, a decade after the nene preservation program began, and the latest one was last April, Walker said. Nene have so far been released six times on Hawaii Island and three times on Maui...."

HONOLULU ADVERTISER, January 22, 1966: N.H. SENATOR WANTS TO 'COOK' HAWAII'S GOOSE--Washington (UPI) (Margaret L. Smith's contribution)

"Senator Norris Cotton, R-N.H., demanded a goose-by-goose investigation yesterday of Federal funds spent to preserve Hawaii's State bird, the Nene.

"He charged in a letter to the General Accounting Office that the Interior Department has spent \$30,000 to protect the Hawaiian goose for the past two years without specific congressional authorization.

"He asked acting Comptroller General Frank H. Weitzel to find out 'the amount expended, per goose, by the Federal government and by the State of Hawaii, for the propagation of its official state bird.'...

"Cotton said the restoration program has resulted in the release of fewer than 150 geese to their natural surroundings. That works out to \$500 per goose, he said....

"A 1958 law authorized a \$15,000-a-year expenditure to save the nene goose, but

Cotton said the law expired on June 30, 1964. Despite this, the Fish and Wildlife Service 'sought, obtained and obligated' appropriations totalling \$15,000 in fiscal 1965 and an identical amount the following year, he charged...."

HONOLULU STAR-BULLETIN, January 22, 1966, page A-3: NENE COSTS QUESTIONED, 'WILD GOOSE CHASE'--Washington (AP).

"Is the U.S. Fish and Wildlife Service engaged in a wild goose chase? Senator Norris Cotton...put that question to the General Accounting Office in connection with a Federal program to restore the population of the Hawaiian nene goose....

"'Is the agency,' he asked, 'on a wild goose chase, or do they have legal authority to 'go where the wild goose goes?'"

HONOLULU ADVERTISER, January 25, 1966: MATSUNAGA JOINS NENE DEFENDERS--Washington (UPI) (Margaret L. Smith's contribution).

"Rep. Spark M. Matsunaga...said yesterday Federal expenditures on the nene goose have been 'made with full legal authority and for a worthy cause.'...

"'Man's search for beauty and truth has been going on since time immemorial,' Matsunaga said. 'To allow the extinction of the nene goose in the name of economy would be tantamount to an abandonment of this search...'"

HONOLULU STAR-BULLETIN, January 26, 1966, page A-10: WILDLIFE SERVICE BACKS PROGRAM FOR NENE GOOSE--Washington (AP).

"The U.S. Fish and Wildlife Service has defended its spending of funds to continue its program in Hawaii for the preservation of the Nene goose for the past two years.

"Samuel Jorgenson, chief of the agency's Office of Endangered Species, informed the office of Senator Daniel K. Inouye that it is confident of the agency's legal authority under the general provisions of the Fish and Wildlife Act of 1956...."

THE SUNDAY STAR-BULLETIN & ADVERTISER, February 13, 1966, page A-11: GOVERNMENT WILL CONTINUE NENE RESTORATION EFFORTS--Washington.

"Senator Daniel K. Inouye was assured by the U.S. Fish & Wildlife Service yesterday that it will continue its Nene restoration program 'until this worthwhile conservation project is completed.'

"Inouye, in turn, said he would support every effort to make the Nene restoration program a complete success.

"Senator Norris Cotton...had question earlier this month whether the Fish & Wildlife Service had authority to spend \$15,000 a year to preserve the wild goose.... Cotton said later that he didn't want to see the Nene become extinct--he was merely concerned about the legality of the Federal expenditures.

"Abram V. Tunison, Acting Director of the Fish & Wildlife Service's Sports Fisheries and Wildlife Bureau told Inouye yesterday that \$15,000 was allocated in fiscal 1965 and 1966 for the Nene restoration project. He said funds are in the President's 1967 programmed budget for continuing the work.

"'The bureau expects to cooperate in succeeding years,' Tunison said, 'until this worthwhile conservation project is completed.'...

"'The species is still in a precarious state,' he said. He said the present stock of 17 pairs, owned by the State of Hawaii, cannot produce enough birds to accomplish the original objective of re-establishing the species to a point where it can survive. However, he said Federal and State biologists are now in a much better position to determine what needs to be done to perpetuate the Nene than in 1958....

"He said requirements for successful completion of the Nene restoration program include: (1) Modernization of propagation facilities to allow better handling of the captive flock. (2) Better tenure on sanctuaries through purchase of long-term leases. (3) An annual release of not less than 50 Nene over a five-year period. (4) Continued control of predators (dogs, wild pigs and mongooses). (5) Further study of habitat to determine the most effective and economical means of developing the most favorable combination of habitat factors.

"These factors should be good enough to sustain a wild population of at least 500 Nene on both Maui and the Big Island, he said."

HONOLULU STAR-BULLETIN, March 25, 1966, page C-1: IT COSTS \$502 PER BIRD TO PRESERVE NENE GOOSE--Washington (AP).

"...The Accounting Office said the Federal government spent \$77,250 on the nene goose program during the five years that ended June 30, 1964. Hawaii spent \$16,146.

"That figures out, that G.A.O. said, to \$502 for each of 186 geese reared in captivity, and \$635 for each of the 147 geese freed in their natural Hawaiian habitat."

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SUNSET, August, 1964, page 40: ENGLAND'S FAMOUS WATERFOWL PARK (Ruth R. Rockafellow's contribution).

The article is illustrated with a photograph of a flock of nene under the caption, "NEARLY EXTINCT species, the NE-NE were bred at Wildfowl Trust, now on Maui," and a map of the park area with explanation, "SLIMBRIDGE is 115 miles from London, 24 miles from Bristol, 13 from Gloucester."

Severn Estuary in England is described as "a waterfowl preserve that is neither the usual refuge nor a specialized zoo." The Wildfowl Trust at Slimbridge is located on land which has been in the Berkeley family for more than 800 years and has the largest collection of waterfowl in the world, with about 2,000 birds to be seen the year around.

"Of the 147 known species of ducks, geese, and swans, 125 may be seen at the Wildfowl Trust. (The British term 'wildfowl' is synonymous with 'waterfowl' as commonly used in the United States.) Three of the virtually extinct NE-NE...were sent to the trust several years ago. They were cared for and successfully bred, and eventually 70 of them were returned to the islands and are living on the island of Maui, in Haleakala National Park....

"The trust has 50-foot-high towers from which you look out over the Severn. From September to mid-March as many as 5,000 wild geese (predominately white-fronted geese, on migration from Russia) stop here to feed.

"At any time of the year, you may see the large collection of birds in open air pens, including such distinguished ones as the Australian black swan on loan from Sir Winston Churchill.... You will also see waterfowl species from all six continents of the world. Wing-clipping suffices to keep them penned. An additional 200 full-winged birds, capable of flight, stay here by choice."

As a part of the bird-banding program anyone may "adopt" a wildfowl for 5 shillings. "You may choose mallard or teal (both always available), or widgeon, pintail, shoveler, tufted duck, pochard, barnacle goose, white-fronted goose, and mute swan. If 'your' bird is recovered--chances are about one in seven--you will be sent a full report of the details. Regardless of whether it is caught, you will receive the trust's annual bulletin describing the year's significant recoveries. You may arrange such an adoption as a gift by mail. Write to the Wildfowl Trust, Slimbridge, Gloucestershire, England.

PACIFIC DISCOVERY, March-April, 1965, pages 18-21: THE GOOSE ON THE DUCK STAMP by Ormal I. Sprungman (Euphie Shields' contribution).

This interesting article is illustrated with the migratory bird hunting stamp together with the pictures of Stanley Stearns painting and the watercolor drawing used to make the stamp. It also shows the nene habitat on the slope of Mauna Loa at about 6,500 feet and the nene on Shipman Ranch and a full-page beautiful picture of the engraving of nene from VOYAGE AUTOUR DU MONDE SUR LA CORVETTE LA BONITE, 1836-37 by Eydoux and Souleyet.

NATIONAL GEOGRAPHIC, November, 1965, pages 744-754: SAVING THE NENE, WORLD'S RAREST GOOSE by S. Dillion Ripley (Ruth R. Rockafellow's contribution).

Have you seen this article? Some of the captions for the excellent photographs by Gerry Chong are as follows:

1. Two nene on 'a'a lava rock: Curious and alert, nene geese of Hawaii perch atop jagged lava. Slaughtered for food, the species neared extinction half a century ago. Now a joint British-American effort is restocking the wild habitat with birds

raised in captivity.

2. Five flying nene: Airborne skein of nene glides over Hawaii Island on wings that span four feet. Ornithologists believe that *Branta sandwicensis* may have evolved from wandering North American birds stranded on the island's volcanic slopes at least half a million years ago.

3. Dr. Ripley and nene: The author, S. Dillion Ripley, Secretary of the Smithsonian Institution in Washington, D.C., rears nene at his Connecticut home to help restore the Hawaiian flocks. Here Dr. Ripley inspects a wild bird he caught in a patch of shrub-covered lava 6,000 feet high on Hawaii's Mauna Loa Volcano.

4. Remarkably tame nene permit the author's party to approach within a dozen feet, close enough for eavesdropping on their low conversational moan.

5. Help from Britain: In 1952 the Wildfowl Trust in Slimbridge, Gloucestershire, began to breed nene in England with two females and a gander from Hawaii. Ten years later, the first of 93 offspring returned home.

6. At Honolulu International Airport, the crated birds nibble lettuce.

7. Later, Boy Scouts pack the geese across Maui's cindery Haleakala for eventual release in the wild.

8. Journey's end: Geese reared in captivity are freed on the secluded, rain-drenched eastern rim of Haleakala, on Maui Island, where trade winds form cloud rivers at the crater's edge. Here the nene, state bird of Hawaii, grows plump on grasses, herbs, and berries.

9. Map of Haleakala National Park, Maui.

10. Map of the saddle region, Hawaii.

11. No man has done more to save the nene than rancher Herbert C. Shipman, who began raising the rare geese in 1918 at his country home, Keaau, near Hilo, Hawaii. Though a seismic sea wave in 1946 drowned most of his nene, Mr. Shipman saved 11, enough to replenish his flock.

12. Priceless clutch of nene eggs requires frequent turning by the mother, who nudges them with her bill. Incubation takes 28 to 31 days.

13. Nene foot shows little webbing compared with that of the Canada goose and reflects nonaquatic habits. Young nene take to the air in 10 to 12 weeks; as adults they are annually grounded from four to six weeks because of molting. The wild goose is endangered by predators, poaching, and its shrinking habitat.

14. Fuzzy gosling, eight days old, merits tender care of breeder Ah Fat Lee at the State Division of Fish & Game's Pohakuloa Station. If present programs continue for ten more years, conservationists believe the world nene population will rise to a safe 2,000.

FOR JUNIOR MEMBERS:

Because NENE is our STATE BIRD, and because it is RARE, and because we want to SAVE it, this month's entire issue is devoted to this interesting rare bird, so the two articles--How Smithsonian Bands Pacific Seabirds and What to Do if You Find a Band--were not included. I hope to have them out as soon as possible.

Since last year in March we talked about NENE in detail, for its story I refer you to Volume 25, Number 9, pages 73-75.

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Is your plover still here? Is it handsomely dressed in the breeding plumage? Some of the birds I have been watching have left with only few spots of black feathers, whereas others with their black and gold plumage are still here. What tells them when to leave? By comparing notes we may eventually find the answer, so please tell us about your observations.

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Have you found any nesting bird? If you ever find a nest with brooding bird, be careful not to disturb the bird, but take copious notes and send your observations to Kojima, 725-A 8th Avenue, Honolulu, Hawaii 96816.

READERS' NOTES:

HAWAII TRIBUNE-HERALD, March 14, 1966: PRESERVATION OF TREES ASSURED, KALOPA FOREST TO BECOME STATE PARK by Howard Pierce (Margaret Titcomb's contribution).

With Kalopa Forest now designated to become a state park facility in the near future, Hamakua District Development council has won its long fight past many obstacles to preserve the area's last remaining sizable natural woods tract.

The new state park, an over-all development of 615 acres, contains 100 acres of undisturbed natural forest, of which a special feature is a grove of ancient 'ohi'a trees. Largest of these is five feet in diameter and 17 feet in circumference.

A site survey and layout of the first increment for development is scheduled to get under way before the end of March.

...Final establishment of Kalopa Forest State Park has resulted from a community drive that began three years ago when the acreage was being eyed for clearing to be put to sugar cane growing.

Now Hamakuans' united drive to save this natural resource for local enjoyment, as well as for a tourist attraction, has paid off.

...The 100 acres of undisturbed native forest and its giant 'ohi'a are considered by the district council as sufficient assets to justify preservation for all time of this unique tract for use and enjoyment by all people of the State.

...Now Kalopa Forest State Park is on its way to join the family of state parks around the Big Island as a new and important link in the entire series that also includes Wailoa River, Mackenzie Shore, Mauna Kea, Manuka Arboretum, and Hapuna Beach (soon to be constructed).

BIRD NOTE from Mrs. Mabel R. Becker, 614 Kaha Street, Kailua, Oahu, received Mar. 21, 1966:

For more than a year there has been a white-headed linnet visiting my feeding tray. The top of the head is pure white but no other white markings. The others have the usual bright colorings.

ALOHA to our new members:

Elizabeth Dyer, 232 Cheltenham Road, Newark, Delaware 19711.

Eric Ecklor, 3259 Huelani Drive, Honolulu, Hawaii 96822.

Jane S. Nevin, 926 Spencer Street, Honolulu, Hawaii 96822.

MAY ACTIVITIES:

May 8 - Field trip to Poamoho to study the forest birds. Bring lunch, water, and if possible, your car. Transportation cost (\$1.00) to be paid to the drivers. Meet at the Library of Hawaii at 8:00 a.m.
Leader: Mike Ord, telephone: 256-320.

May 9 - Board meeting at the Honolulu Aquarium Auditorium at 7:30 p.m.
Members are always welcome.

May 16 - General meeting at the Honolulu Aquarium Auditorium at 7:30 p.m.
Program for the night: Dr. Laurence W. Quate, Bishop Museum's Entomologist, will talk on his recent trip to Sudan.

HAWAII AUDUBON SOCIETY EXECUTIVE BOARD:

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