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We extend congratulations to George C. Munro, who celebrated his 90th birthday on May 10th. Our Society has special cause to honor him, not only for his great contributions to the ornithology of the islands but for his generous support of our organization, to which he has given unstintingly of his time, energy and substance. His unflagging support of conservation makes all Hawaii his debtor. His unassuming manner, his friendliness, and joy of living endears him to those privileged to know him personally, making him indeed the beloved "dean of Hawaiian ornithologists".

THE NENE

By Margaret Titcomb

If the Hawaiian goose, the nene (a name given by Hawaiians and leisurely pronounced nay-nay), is saved from extinction, it will be a triumph of present day conservation effort and technique. As long ago as 1903, and perhaps earlier, R.C.L. Perkins expressed fear and regret that it would disappear. He said, "...apart from the scientific interest attached to the bird, its appearance is striking and beautiful, and it is highly characteristic of some localities, themselves remarkable and almost untenanted by other native birds." Some blame the mongoose for killing the goose. Schwartz names other animals as well: rats, cats, dogs, pigs, and livestock. The nest of the nene is on the ground, vulnerable to all. Other blame is laid to changes in vegetation. And man has played his part. Many years ago the goose was freely hunted. Hawaiians used it for food occasionally. There is a tasty reference by a visiting writer, Boddam-Whetham, many years ago to, "...a tempting repast...amongst other luxuries was a strawberry-fed goose... enveloped in leaves and baked in a hole in the ground."

Munro, writing in 1944, gives a picture of others than Hawaiians - scientists and hunters - reducing the goose population in the late years of the last century:

"We hunted this goose in December 1891 on the rough lava flow of 1801, down nearly to sea level, and up the side of the mountain on the Huehue ranch to about 2,200 feet elevation. It was open shooting season and a party of hunters went over ground at the higher elevation where we had taken specimens a few days before. They found a nest with four eggs, caught two very young chicks and shot a young bird nearly full grown. We were not fortunate in finding young birds. It pained us to kill specimens at a time when the birds had young, but the few we killed were as nothing compared to the numbers the hunter would shoot of this unwary bird. Ten years afterwards Henshaw drew attention to the mistake of having the open season when the birds were breeding. It is little

wonder that the species faced danger of complete extinction in a wild state. There are still a few wild birds and some semi-wild that have been raised by ranchers. It is likely that the ranchers have saved the species in a wild state by this action. The bird is now under protection and it is hoped that those remaining will become sufficiently wary to fight the mongoose from its eggs and young."

This lack of consciousness of what was happening doubtless contributed greatly to its becoming scarce. It is now a news-breaking event to see nene in the wild.

How the nene got to Hawaii we can never know. One or two or more geese, presumably from the American mainland must have been blown off their course in the remote past. By the time human beings reached Hawaii, the nene had adapted itself to conditions here, food and habitat which varied from that of other geese. Though there are some marshy areas and inland pools on the Hawaiian Islands, the nene chose to frequent open lands of the middle slopes of the high mountains of Maui and Hawaii - the outer slopes of Mauna Loa and Mauna Kea; "not at all uncommon on the northwest slope of Hualalai", says Munro; the plateau region between these three heights, "in fair numbers in Kona, Hawaii", noted Wilson and Evans, late in the 1890's, and the slopes and lush areas of the crater of Haleakala, on Maui. Few saw the nene on Maui, in recorded time. Munro says that it was "sometimes reported to straggle to other islands".

The nene accustomed itself to a diet of berries, the Hawaiian ohelo, and popolo, and the wild strawberry. In winter the bird resorted to lower areas of the mountain slopes (Munro noted them at 2,200 feet elevation; Pickering, of the U.S. Exploring Expedition, estimated their habitat at nearer 7000 feet; Dole places it a 5000 to 7000 feet). The nene kept to the lower slopes as long as the vegetation was fresh and green. Peale reported that grass was its "ordinary food". Munro offers evidence of the winter diet being the best for he says, "Those we collected there were much fatter than the specimens we took at about 2,000 feet elevation", speaking of its lower, winter quarters.

Was it preference for the dry-land berries (in spite of Peale's observation) that made it forsake pool areas? Or were most of the pools of the lowlands inland fish ponds, therefore too close to man? Oddly, it now takes to water like any goose when it is kept in captivity. And though the webbing between its toes has atrophied during the centuries to half that in other geese it still is at home in the water. The atrophy of that webbing is evidence of its long stay in Hawaii.

Scott B. Wilson and A. H. Evans, in their "Aves Hawaiensis..." have made a record of scientific and other notices of the nene. William Ellis, surgeon with Capt. James Cook, was the first to make an observation, "Geese...not unlike the Chinese geese", in 1778 (recorded in 1782). The nene acquired a scientific name, Anser sandvicensis, in 1833, given it by N. A. Vigors, who made up a "List of animals in the Gardens of the Zoological Society of London". For a pair of nene traveled to England somehow and were given to that society by Lady Glengall. In the same year, Vigors changed the name to Bernicla sandvicensis, and this name was used by authors from then on. G. R. Gray used the name Branta sandvicensis, in 1871; Munro called the nene Nesochen sandvicensis (Vigors), in 1944, but Schwartz clings to Branta sandvicensis, writing in 1949.

The nene was mentioned in many scientific reports of visits to Hawaii. The best colored drawing of the bird appears in Wilson and Evans' work, a drawing done by F. W. Frohawk.

At the present writing it is possible to see the nene at the Honolulu Zoo, except during breeding seasons. Three have been placed there many months ago. The following description is full and succinct, however, and is quoted from Wilson and Evans:

"Adult male. Head, neck, and throat black, which colour extends a little below the eye and for about two inches down the back of the neck; sides of neck tawny buff,

becoming lighter towards the lower part, the feathers blackish at their bases, giving the neck a peculiarly mottled appearance; breast and belly pale greyish brown, feathers darker on flanks, barred with umber, and almost white at the tips; abdomen and under tail-coverts pure white; upper surface dark umber, the feathers variously barred with brown; rump and tail dusky black. Irises dark hazel; bill and feet black.

"Adult female. The black extending further down the throat and occupying a greater space below the eye; feathers on flanks paler than in the adult male; lower breast not so pale, but uniform in colour with the flanks.

"The young male is similar in colour to the adult female.

"Dimensions - Total length 22.50 inches, wing from carpal joint 16.30, culmen 1.6, tarsus 2.80, tail 6.75."

The following notes as to the nature and habits of the nene are culled from Wilson and Evans, almost word for word:

The bird is easy of approach; in olden times the bird was kept in captivity by the natives, acting as a sentinel by giving loud warning of the advent of a stranger. When one of a flock is wounded the remainder will not leave their companion, so that the collector, if heartless enough, may kill the entire number. One goose was observed to be so attached to its mistress that, on many occasions, it followed her, sometimes as much as fifteen miles - just as a dog might do.

The weird cry of the nene was noted by Peale as like that of the snow goose, very distinct from that of other species.

A sweet, musky scent was noticed in the neck feathers.

As before noted, the flesh is good eating, "delicious" said Peale (in November, when very fat).

As to flight, "when disturbed (it) flies near the surface of the ground, without rising in the air, like the species of North America".

The nene bears confinement well, is hardy, and soon becomes domesticated. Two men reported raising a "considerable number" in Hawaii.

The nest is laid in the grass on the high lava fields (5000 to 7000 feet), and lays two or three white eggs, about the size of those of the common goose. This statement by Judge Dole does not agree with Munro, who placed the breeding season - winter - as the time for living at lower elevation than 5000 feet.

It is interesting that birds have been taken to England successfully at least three times: in 1833, to the Zoological Society, raised also by Lord Derby, at Knowsley, in the same year. These birds bred. In 1887, a pair were sent to the same Zoological Society, by Wilson and Evans. Though they remained healthy, they did not breed. And now, in our time, birds have again been taken to England, and have bred - evidence of their having received treatment they like.

References:

- Munro, George C. Birds of Hawaii. Honolulu, 1944
- Perkins, R.C.L. In Fauna Hawaiiensis. Honolulu, 1903
- Schwartz, C.W. and E.R. A Reconnaissance of the Game Birds in Hawaii. Honolulu, 1949
- Wilson, Scott B. and A. H. Evans Aves Hawaiiensis; The Birds of the Sandwich Islands. London, 1890-99
- Peale and others are quoted in Wilson and Evans' work.

NE-NES AT THE WILDFOWL TRUST IN ENGLAND

By Peter Scott

The Wildfowl Trust, with its headquarters at Slimbridge in England, has been actively concerned with the attempt to save the Ne-ne from extinction since 1950. But Mr. Peter Scott, Director of the Trust, had been interested in the fate of these lovely birds for many years before. In 1938 he was in correspondence with Mr. H.C. Shipman who had even offered him a live pair from his garden at Hilo if they could be personally escorted on the journey to England. But the war came and it was not until the Wildfowl Trust had been established after it that Mr. Scott was able to pursue his interest in this particular species of goose. In 1950 the Trust was invited by the Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii to send a representative to advise on raising the geese in captivity.

Mr. John Yealland, then Curator of the Wildfowl Trust, (now Curator of Birds at the London Zoo) spent four months on the island of Hawaii studying the seventeen birds in captivity and their habitat in the wild state and advising on the best methods of raising the maximum number of young each year. Mr. Shipman kindly presented the Wildfowl Trust with a pair of ne-nes which were brought back to England by Mr. Yealland in April 1950.

Early in the following year both these birds made nests and began to lay eggs. An urgent cable was sent to Hawaii for a male, and the eggs were removed from the two females in order that second clutches should be laid. Exactly seven days from the dispatch of the cable a fine gander arrived at Slimbridge. This was a bird lent by Mr. Shipman to the Pohakuloa project, and Mr. Shipman's kindness in agreeing that it should go to the Trust and the promptness with which it was dispatched were much appreciated at Slimbridge. The two females were also delighted, but unfortunately the gander was in full moult when he arrived, as the breeding season in Hawaii is six weeks earlier than in England, and the eggs were again infertile.

These three geese were named Kamehameha, Emma and Kaiulani.

In February 1952 Emma and Kaiulani started to lay again. As they laid the eggs were removed and dummies put in their place until the clutches (4 and 5) were complete and then the dummies too were removed. The eggs were incubated under bantams and from Emma's first clutch of four eggs two goslings hatched in a snow storm. Of these two goslings one had the normal downy appearance while the other had thin wiry down and was much smaller. From Kaiulani's first clutch of five eggs three strong downy goslings hatched and when it came to her second clutch it was decided that she should be allowed to incubate and hatch her own eggs. That was the last time she has been allowed to do this as, a week before hatching she let the eggs get cold and the whole clutch was total loss. However, four more goslings hatched from Emma's second clutch and a total of nine goslings was raised that year. Two more of Emma's young had the unusual thin hairy kind of down but in spite of this they were indistinguishable from the larger downy ones by the time they had all feathered.

By February 1953 Emma had already become a sick bird, suffering from a failure of the preen gland. In spite of her poor condition she produced, with the help perhaps of some treatment with luteinising hormone, four eggs from which two healthy goslings were hatched. But it seemed that the Ne-ne breeding season was ill-fated this year. Of Kaiulani's first clutch of five eggs, only one hatched and after laying one egg of her second clutch she had a severe prolapse of the cloaca. After treatment she nobly laid a third clutch of five more eggs from which two hatched but only one was raised. So in 1953 only four young were produced which was disappointing after the previous year's nine. To make matters worse Emma finally died in January 1954 after a slow decline and a post mortem showed that her adrenal glands were diseased.

Again only four birds were reared in each of the following years - 1954 and 1955. Nevertheless by June 1955 the Wildfowl Trust had a total flock of twenty-one of these

beautiful birds inspite of a few casualties and disappointments.

In the fall of 1955 a pair was sent to one of the finest waterfowl collections in England at Leckford in Hampshire where they have bred.

At the time of writing the breeding season of the Ne-nes at Slimbridge promises to be far better than in any previous year. There are already 13 goslings and still two fertile eggs are being incubated, while Mr. Terry Jones reports that his pair have produced one gosling at Leckford and a second clutch of eggs is being incubated.

Thus of the present total world population of about one hundred ne-nes, just over a third are in England.

It has been suggested that if the Ne-ne cannot be saved from extinction in its native range it might just as well be allowed to die out altogether and that there is no great value in preserving a stock of birds in captivity. This is not a view which is shared by the Wildfowl Trust. The example of Pere David's deer has shown how a species can be preserved after it has disappeared entirely from its native range until such time as it can be reintroduced. The first Pere David's deer have been sent back to China this year, the survival of the species during the last fifty years having depended entirely on the enterprise and foresight of the Duke of Bedford who maintained in Woburn Park the only herd of these large deer in the world.

Even should the numbers of wild Ne-nes continue to dwindle until they are exterminated in Hawaii it is not unreasonable to suppose that future generations may have a greater sense of responsibility. The creation of suitable habitat for these birds may by then be considered worthy of special effort and in that case it would be very useful to be able to re-establish the species from captive stocks, whether from Hawaii or from England.

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WILD NENE ON HAWAII By David H. Woodside

Last summer, a flock of at least 24 nene was discovered on the northeast slope of Mauna Loa. The first report of this flock was made by Forest Ranger, John Ah San, who saw 8 birds on July 21, 1955. Subsequent investigation of this report revealed that there was a flock of 24 wild nene which roosted on the north side of the Saddle Road near the lower end of the 1935 lava flow. They would fly South every day into the lava country to feed and then return in the evening. The farthest point south of the roosting area that these birds were traced was the 1852 lava flow. They were observed landing on the 1881 flow and droppings indicated that it was visited rather frequently. However, most of the time the birds went to the 1852 flow.

The 1852 flow at the elevation that the nene were observed is mostly very rough aa covered with moss and small shrubs. The flow is fairly well-covered with small ohia trees (10-25 ft. tall). Food for the nene in the form of ohelo and kukaenene is abundant but grasses are practically non-existent. In this particular area, many plants of Hydotis centranthoides were noticed that had the stems and leaves cut off as if nene had been feeding on this plant. Droppings of nene were found around this plant also. Baldwin, in his paper on the foods of the nene does not mention Hydotis centranthoides.

The nene would leave their feeding areas in the late afternoon (4:30 to 6:30 p.m.) in groups of 2 to 13 birds and fly straight in a northerly direction to the roosting area. There they would feed on rat-tail grass and spend the night. In the morning from 7:30 to 9:30, they would leave in small groups (generally within a few minutes of each other) for the feeding grounds. This daily pattern was observed for a period of 10 weeks.

During this time some notes were made on their behavior which may be of interest to those who wonder why the bird is so rare. From the first observation of these birds, I was struck by their tameness. On several occasions, I was able to walk up to within 15 yards of them while they were on the ground. On two other occasions while I was in the open lava flows on their line of flight, flocks of them after seeing me came over to look at me and circled about at some 20 or 30 yards. When on the ground, they are very inconspicuous, but when approached to within 200 yards or so, they would start calling loudly and generally get on an elevated spot. It would have been easy to have shot practically the entire group on many occasions.

Field trips into the country south of the Saddle Road revealed the presence of droppings at several places both on the lava flows and in the kipukas. However, no nesting birds have been found.

March 12, 1956

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The future of the nene brightens with the prospect of a survey which, it is hoped, will lay the foundations for its eventual reestablishment in the wild. Dr. William H. Elder, of the University of Missouri, has been given the Yale-Bishop Museum Fellowship in Pacific Science for ecological research on the nene (*Nesochen sandvicensis*) and will devote the following year to the survey. Dr. Elder's research will be supported also by a grant from the Pan-American Section, International Committee for Bird Protection. The findings of the survey will be awaited with great interest by all.

The series on Hawaiian ornithologists, omitted in this issue, will be resumed in the July number.

JUNE ACTIVITIES:

FIELD TRIPS: June 10 - A bird count, covering the areas of the Christmas count and others not in the 15 mile circle. We will go in small groups. Call Grace Gossard, 78296, for an assignment, if you missed the May meeting.

June 24 - To Pauoa Flats. This is an opportunity to check those rumors of increasing members of native birds on Tantalus, as well as to enjoy a pleasant trip near town. Meet in front of the Library of Hawaii at 8:00 a.m.

MEETING: June 18 - At the Aquarium auditorium at 7:30 p.m. The program will be announced later in the daily papers.

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