

The nene or Hawaiian goose (Branta sandvicensis), Hawaiian or koloa duck (Anas wvvilliana), and the Lavsan teal (Anas laysanensis) are considered endangered species in the wild. Coincidentally, all three are noted for limited insular or island distribution, a condition which no doubt contributed to their precarious state. Endemic insular flora and fauna are often ultra-specialized and as such, generally react adversely to rapid environmental changes. If these changes are natural and minor and occur slowly, the plants and animals are often able to adapt. On the other hand, if the changes are sudden and of a large magnitude, then the adaptive changes cannot occur; some species all to frequently disappear altogether. In the past, changes of great magnitude were usually associated with volcanic eruptions, etc.; in some cases, entire islands disappeared, thus eliminating the life forms associated with that island. However, in historic times, it has been the arrival of man to the often remote islands which had created biological havoc.

A case in point is the nene goose. It is probable that no more than 25,000 individuals ever existed but in recent years (since the 1900's), the population has declined dramatically. The nene goose inhabits the slopes of Mauna Kea, Mauno Loa and Hualalai volcanos, on the big island of Hawaii. This habitat is unique and is characterized by heavy precipitation but no permanent water areas. The birds have adapted their life styles to fit this environment. Interestingly, they are among the very few species of waterfowl that normally copulates ashore. They are nonmigratory, a unique distinction for a northern goose. It is suggested that they evolved from the mainland Canada goose. The legs have become stronger along with the nails and the webbing of the feet has become much reduced, enabling the birds to negotiate lava-covered areas.

Once modern man discovered the islands, changes were rapid and dramatic. Introduction of new species, i.e., rats, dogs, cats, pigs and the mongoose, combined with over-hunting, brought about their present plight. The geese were hunted as a source of food and the introduced animals preved on their eggs and young. In the early 1940's, biologists became quite concerned and estimated that there were less than 40 geese left. A local rancher, Richard Shipman, had protected a number of the birds on his property located on the island of Hawaii. In 1950, three birds were sent to the Wildfowl Trust in England in an attempt to get them established in captivity. As of 1979, this effort, combined with that of the Hawaiian Division of Fish and Game, zoos and private aviculturists has resulted in well over 2,000 individuals being reared throughout the world. Many of the geese have now been re-introduced back into the wild on both the islands of Hawaii and Maui.

In collections, nene are relatively easy to maintain and are only mildly aggressive during the breeding season. Fortunately, captive propagation presents no real challenge. Nesting either in the open or under sparse cover, the clutch consists of 3 to 5 buff colored eggs. While the female alone incubates for 29 days, the gander guards the nest and this is when they can become aggressive. At Sea World in San Diego, all eggs are removed from the nest after a full clutch is laid in late winter or early spring (January or March). The eggs are incubated in a Petersime at 99.5°F dry bulb, 84° to 86°F wet bulb. Fertility has not proved to be a problem. Upon hatching, the goslings are placed in a bank brooder for four to six days and fed Purina Startina and fresh ground lettuce, ad. lib. Once out of the brooder they are moved to indoor rearing pens. The amount of protein offered is reduced drastically at this time; if not, splayed legs and, later, drooping wings will result. The birds are maintained to fledging on a diet consisting almost entirely of lettuce with small amounts of Startina and meal worms. It is best if they are kept on grass. If large numbers of young are in a single rearing unit, care must be taken to insure that larger, dominant birds do not pick at the





backs of the less aggressive youngsters.

The Hawaiian or koloa duck occupies the low-lying wetlands of the island group. Their former range was apparently all of the islands except Lanai and Kahoolwe but they are now apparently confined to the few remaining wetlands and rivers of Kaui. As is the case with many endangered species, habitat destruction has been extremely detrimental. Like the nene, they probably were never abundant. It is estimated that there are approximately 3,000 individuals existing in the wild. Delacour gives an account of a population census in both 1923 and 1946-47, compiled by Schwartz. Mr. Woodhouse of the Kekaha Sugar Company estimated that the six square mile Mana Marsh of Kaui contained approximately 2,400 birds prior to its drainage in 1923. When Schwartz surveyed the same area in 1946-47, only 30 birds remained. Hunting, without a doubt, helped to further reduce the population.

In appearance they are nondescript and are distinctly smaller than the common mallard. The female being redder than the female mallard which the male hints at the drake mallard in eclipse plumage. In essence, they can best be described as degenerate, insular mallards.

In the wild they are semi-solitary, often observed singularly or in pairs, although there are accounts in the early 1900's of Hawaiian ducks forming flocks. Like their mainland counterparts, they are ground nesters and lay 6 to 12 pale greenish eggs. The female alone incubates for 26 to 29 days. In 1951, the San Diego Zoo and the Wildfowl Trust received birds which had been reared at the Honolulu Zoo and bred them that same year. Many aviculturists and zoos are reluctant to bother with them due to their tendency to hybridize and their overall dull plumage. At Sea World many young have been reared over the years. Hybridization is a definite problem and birds must be watched continuously if maintained in a mixed collection. It is my opinion that this species must be isolated from closely related species to alleviate this problem. As is the case with all waterfowl species at Sea World, eggs are collected and young are reared by hand. The eggs are incubated at 99.5°F dry bulb reading, and 84° to 86°F wet bulb, in a Petersime Model 4 incubator. A bank brooder is used for the first ten days after which they are transferred to indoor/outdoor runs. The ducklings are offered Startina chow and lettuce as well as meal worms.

Laysan Island is located approximately 700 miles northwest of Oahu, Hawaii, and is the ancestral home of the Laysan teal.

photos by Frank Todd See color photo of Nene Geese on back cover.



Many successful breeders and fanciers use Lambert Kay AVITRON®Liquid Vitamin Supplement. It helps insure that their birds are getting the vitamins they need.

AVITRON is formulated in consultation with respected Avian Nutritionists. Its water and fat soluble vitamins are blended into a palatable formula that mixes easily with food or water. It can be fed directly, too. Each package includes a handy measuring device to help give just the right dosages.

So whether you need the smaller 1/2, 1, or 2 oz. sizes or the economical 16 oz. Aviary size, give your birds AVITRON, the quality name in liquid vitamin supplements.

Available from your local pet supply dealer.

Lambert Kay, Division of Carter-Wallace, Inc., Cranbury, New Jersey 08512 © Carter-Wallace, Inc. 1979





\$14.95 Order Your Copy Now From PALOS VERDES BIRD FARM INC. P.O. Box 1305, Torrance, CA. 90505 Include 50c postage and handling . California residents add 6% sales tax. Retail Store – 4146 West Pacific Coast Hwy, Torrance, CA 90505 (across the street from Sambo's) This little duck has evolved into what some taxonomists consider a full species. Its total domain consists of merely a single island measuring but 3 x 2 miles. Between the years of 1828 and 1911, no less than nine census attempts were made. Only in 1902 did the population appear to be less than 100 birds. However, in 1912 only seven birds were seen. Figures excerpted from the Atoll Research Bulletin of December 31, 1973 by Ely and Clapp indicates the population has never been stable and was prone to extreme fluctuations. These fluctuations, in many instances, appear to be normal.

1828 – small flocks

- 1928 5 main nocks 1902 less than 100 birds 1912 7 1915 13 1916 25 1923 20 1924 2 1930 one female 1951 39 1957 580 to 740 1961 688 to 746 1965 150 to 200
- 1969 479
- 1973 500 to 600

While the 1978 census suggested a population of approximately 350 to 400 birds, there is some reason to believe that at one time the total population was reduced to but a single gravid female.

The Laysan teals' history of decline is reminiscent of the nene and the koloa. The main difference being the generally much smaller population before man-induced pressures caused further reductions. Guano excavation on the island commenced in 1890 and continued until 1910. Apart from the destruction of habitat by the digging, tragic introduction of nonspecialized, prolific rabbits in 1903 resulted in the destruction of the island's vegetation. This loss of natural cover almost caused extinction of the teal in 1912 and again in 1930. Extermination of the rabbits and other species began in 1912 but was not completed. Again, in 1916, the rabbits were abundant and a few were killed by a landing party. In 1923, the Tanager Expedition visited the island and the task was at last completed. However, almost all vegetation had been destroyed and blowing sand was rapidly filling in the lagoon. By 1915, the drifting sand had filled the last source of fresh water on the island. The tenacious birds nevertheless were able to survive. Interestingly, the survival of the teal appears to be linked to the presence of brine flies associated with a brackish water lagoon in the center of the island. During periods of draught when even the lagoon dries up, the brine flies disappear. During such times, the population drops significantly. Indeed, in 1930, the population had declined to a very few birds and only one female was observed. She was on a nest that had been apparently destroyed by a curlew. As mentioned previously, it is believed by some that the entire existing population arose from this single female which was apparently gravid at the time and re-nested.

In appearance, Laysan teal are similar to that of the koloa but smaller and tend to be redder or a washed-out brown color. A white eye ring is always visible although highly variable in size.

It was not until 1958 that these birds were attempted in captivity. Ely and Clapp state that in 1958, 36 adults were collected and transported to the Honolulu Zoo for acclimation and eventual distribution to selected aviculturists in the U.S. and Europe. In the Wilson Bulletin, Ripley reports he received two pair in 1958. In July and August of 1959, one female produced eight young from two clutches of five eggs each. He further states that the Wildfowl Trust had eggs in early spring of 1960. Our experience at Sea World indicates this insular mallard is quite easy to manage. Like the koloa, it will hybridize but not quite as readily. They nest on the ground in vegetated areas. Clutch size is four to eight greenish white eggs; the female alone incubates for 26 days. Breeding commences in late February and continues through August. Rearing techniques are the same as for the Hawaiian duck. Fortunately, this species is well established in captivity at this time.

There can be no doubt that the diligent work by propagators the world over is responsible for the currently healthy populations of the nene and Laysan teal. We do not believe this to be the case with the Hawaiian duck, because in our opinion, no pure ones exist in collections outside of Hawaii.

Captive propagation is not the total answer for the plight of all endangered animals, but in many cases, it has contributed greatly to the continued existence of the species. Few animals in the world better illustrate this than the nene. It is unlikely that this species would have survived if aviculturists had not intervened.

References

- Charles A. Ely and Roger B. Clapp. December 31, 1973. Atoll Research Bulletin. No. 171. The Natural History of Laysan Island, Northwestern Hawaii Islands. Issued by Smithsonian Institution, Washington, D.C.
- S. Dillon Ripley. September 9, 1960. Laysan Teal in Captivity. The Wilson Bulletin. Vol. 72, No. 3.

Jean Delacour. The Waterfowl of the World. Vol. II. 1973.

Frank S. Todd. Waterfowl: Ducks, Geese and Swans of the World. 1979.

COCKATIELS

OCINO

Norm	a	L							•	.25.00
Albin	0	•	•		•		•	•		. 59.00
Pied .		•					,			. 59.00
Pearl				•		•				.75.00

CONURES

Bee Bees						.33.95
Brown Throa	a	ts	i,			.33.95
Half Moons						.25.00
Nandays						.25.00
Patagonian	,				•	.49.95
White Eyes	•			•		.33.95

AI

Blue Fronts 150.00
Lilacs 1-99.95
3-89.95
6-79.95
Baby Blue Crowns. 399.00
Baby Orange
Cheeks
Double Yellow
Heads
Red Heads 112.50
Spectacles
Baby Yellow Napes450.00

Alexandriens 125.00 Red Rumps 55.00 Yellow-Red Rumps 65.0075.00 ks . . 49.95

GRASS PARAKEETS Blue Rosellas . . pr. 450.00

WS

Sexed Macaws per pair Baby Blue Golds . . 995.00 (Hand Fed)

COCKATOOS

Moluccan	 .675.00
Citrons	 .550.00
Greater Sulphur	.525.00
Lesser Sulphur	 .399.00
Sexed	

Moluccans pr. 1,450.00

LOVE BIRDS

WE ARE THE LARGEST PRIVATE BREEDER IN MENDOCINO COUNTY

and the fastest growing bird wholesaler in Northern California We hand-pick our birds, one at a time, looking for exceptionally young, pet-potential birds. We select from thousands of Willits, California 95,00 parrots, macaws and cockatoos and can find just the right breeder birds for your program. We ship nationwide

F. O. B. San Francisco International

(Please send self-addressed, stamped envelope or call for current availability.)

Lenore Street (707) 459-5087

MAZONS	Blossom Heads Indian Ringnec					
ts 150.00	MACA					
3-89.95	Surgically					
6-79.95	Blue-Gold					
Crowns. 399.00	\$1,700.00 p					
	D 1 D1 0 1					

BUTTON QUAIL

Silver pr. 12.00

FINCHES

Black Cheeks 19.98

Bronze Wings 8.75

Cordons 13.50

Cut Throats 9.25

Green Singers 11.25

Heck's Grass . . pr. 125.00

Red Head - Males . . 75.00

Orange Cheeks 9.00

Silverbills8.50

Violet Ears pr. 125.00

Lady Gouldians

AFRICAN GRAYS

Large Congo 300.00 **TOCO TOUCANS**

675.00

LORYS 1 pr. Dusky's.....250.00

(707)-459-3133