The number and daily activity of the Egyptian Goose in Queen Elizabeth National Park, Uganda

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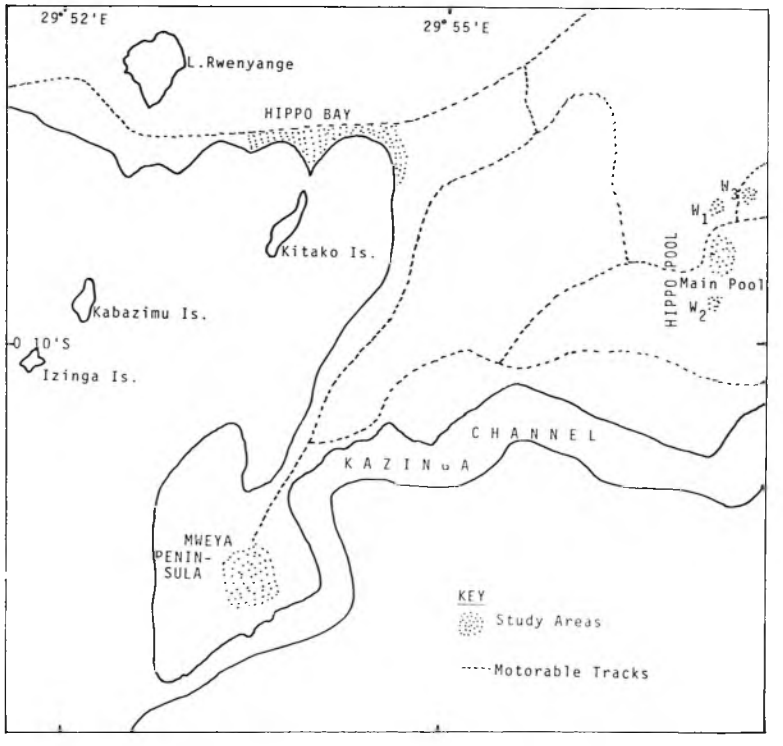
Introduction

The Egyptian Goose *Alopochen aegyptiacus* is not a true goose and is related more to the Shelducks in the tribe Tadornini. In Africa it is widespread. It occurs in over 21 conservation areas in East Africa, including the Ugandan Murchison Falls and Queen Elizabeth National Parks and Entebbe Bird Sanctuary. In the Queen Elizabeth National Park, the goose is one of the commonest birds on the shores of the lakes, rivers and wallows. Despite its wide occurrence, the Egyptian Goose has received little study in the wild. Brief mention on feeding and general behaviour was given by Jackson (1938). Fairbain (1952) and Pitman (1965), and records of fluctuations in the numbers and survival of broods of the Egyptian Goose in Queen Elizabeth National Park were given by Eltringham (1973, 1974), but detailed ecological studies are still lacking. It was the aim of this project to collect some data on the population and activities of the species to help in assessing the role it plays in Queen Elizabeth National Park.

The study areas

The observations were made in three areas: The Hippo Pool, Hippo Bay, and Mweya Peninsula during March to July (inclusive) 1977 (Figure 1). The Hippo Pool described by Edroma (1973) covers an area of about 50,000 m^2. It has four wallows, the main Hippo Pool and three other small wallows marked W_1, W_2 and

Figure 1. Study area and names of places mentioned in text.



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W_3. The wallows are surrounded by up to 0.5 km wide belt of overgrazed mosaic grassland with few scattered thickets and large bare grounds. During the study, the water level was high, and as well as Egyptian Geese there were large numbers of other birds, e.g. the White-faced Ducks *Dendrocygna viduata,* Yellow-billed Ducks *Anas undulata,* etc.

Hippo Bay, a 2 km shoreline of Lake Edward, is characterised by bays and rocky escarpments and is heavily populated by hippopotamus *Hippopotamus amphibius* and several bird species, e.g. the Egyptian Geese, cormorants *Phalacrocorax carbo,* pelicans *Pelecanus* spp., Yellow-billed Storks *Ibis ibis,* terns *Chlidonias* spp., etc. The shallow muddy waters are used as feeding grounds by several wading birds such as the African Spoonbill *Platalea alba,* plovers *Charadrius* spp., teal *Anas* spp. and pochard *Aythya* spp. The other bird species commonly seen in the area are the Goliath Heron *Ardea goliath,* egret species, the Hadada Ibis *Hagedeshia hagedash,* and the Sacred Ibis *Threskiornis aethiopicus.* The area is covered by grasses, sedges, thickets and a few trees.

Mweya Peninsula is an overgrazed grassland.

Methods

Most observations were made using binoculars from a land rover parked 20-50 m from the birds. The activities of feeding, preening, resting, walking, calling, displaying and being alert (for individual birds in each group of 20-30 birds) were recorded at four-minute intervals, a method used by Din (1971) on pelicans. The birds were continuously observed from dawn to dusk for 14 hours on all the study areas. Any food materials ingested were recorded. A total of 20 birds (10 males, 10 females) were shot at 1200 hours (peak of second morning feeding time) from the three study areas to determine the body size and weight and stomach contents. Birds in the field were sexed on the basis of size and behaviour. The sex of the shot birds was confirmed by post-mortem.

A weekly census was conducted at the Hippo Pool, Hippo Bay, and Mweya between 1000 and 1100 hours when all the birds were resting or feeding. The rainfall data were also collected at weekly intervals. A single general survey of the goose population was carried for the whole Park.

Results and discussion

Daily movements and activities

The birds studied at the Hippo Bay and Mweya Peninsula roosted on Kitako Island and in the other islands in Lake Edward while those at the Hippo Pool roosted in a small wallow (W_1) nearby. These sites had fringing vegetation and raised banks on which the birds spent the night. Birds from Mweya left between 1930 and 2000 hours in flight groups of 5-8 whereas those at the Hippo Pool walked towards the wallow while feeding. The birds usually flew over the fringing vegetation before landing in the wallow.

The geese usually moved away from the roosting grounds at dawn (0600-0630 hours) to the feeding grounds. On cool, rainy days, the birds usually stayed longer at Mweya camp, leaving much later, 1100-1300 hours instead of between 0900 and 1000 hours. On two rainy occasions, they remained at the camp the whole day. They returned to feed much earlier between 1400 and 1500 hours instead of around 1700 hours. On hot days, they stayed near water pools or on the shores where it was cooler. High temperatures especially in the afternoon caused panting.

The distance travelled between roosting and feeding ranged between 0-0.5 km for the birds at Hippo Pool and Hippo Bay and 2-3 km for those which came to Mweya Peninsula. The flight groups shown in Figure 2 were usually small (2-8 birds). On landing, the birds remained alert for about one minute scanning other animals in the area, and then they preened. Preening was sometimes preceded by wing and body shakes. After preening, feeding commenced and was continued until the early morning peak (0800 hours). Thereafter, they bathed and preened again. Bathing and preening were followed by a second phase of feeding which reached a peak around 1200 hours.

During the day the geese therefore

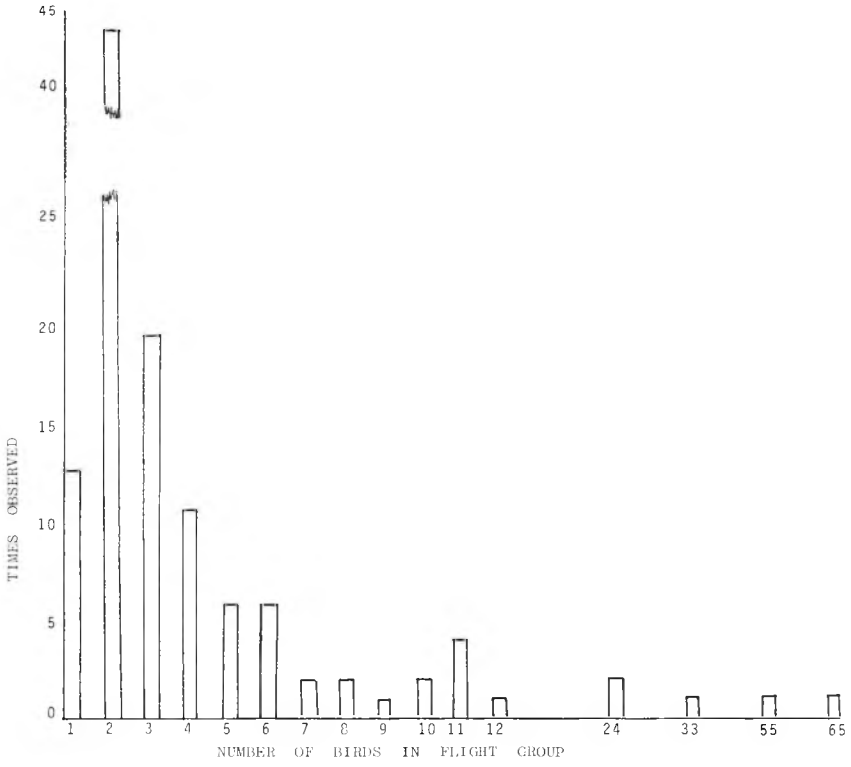

Figure 2. Flight groups of Egyptian Geese: 99 observations involving 512 birds.

engaged in three main activities: feeding, preening and resting occupying at least 70%, 15% and 10% of the time respectively. The rest of the time (5%) was spent on the other activities, including flying, bathing, calling, walking, swimming, displaying and drinking. The partern of the daily activities based on continuous observations of groups of 20-30 birds at the Hippo Bay and Hippo Pool are illustrated in Figure 3 and Table 1. Feeding was interrupted by bathing and preening, and by resting during the hot hours of the afternoon. Feeding was particularly intensified during early morning (0700-0900), midday (1100-1300) and the cool evening hours (1800-1900).

New arrivals were not allowed to join a feeding group unless they belonged to that group. However, two separate groups feeding side by side for a considerable time could eventually mix and form a large group. Single birds and juveniles were able to join any group without aggression. The majority of the observations on feeding were in groups of 2-8 birds (Figure 4). Feeding groups were defended by vocal warning. If the warning was ignored, a dominant male or female or occasionally both, ran to the new arrivals with a threat display posture (open beak) and chased them away one by one. Fights were rare since the newcomers readily gave in. After a successful chase, the dominant pair performed a triumph ceremony. The expulsion on several occasions caused the dominant birds also to chase away all the other birds they had been feeding with before the aggression.

During feeding, a few members of the group remained alert. Such birds occasionally stood on a raised ground (e.g. ant-hill) and scanned the surrounding areas.

The birds drank mainly in the hot hours of the afternoon and later in the evening. Drinking at any one time lasted for not more than two minutes.

Periods of intense feeding were usually interrupted by periods of resting. The resting females commonly lie down on

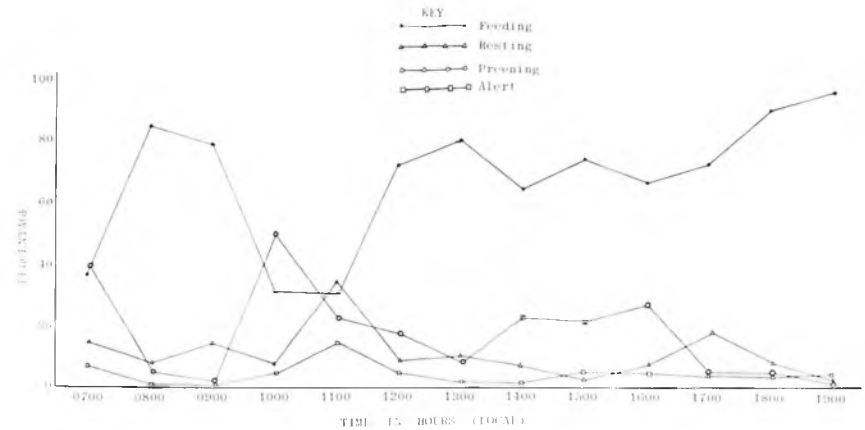

Figure 3. The daily activity of the Egyptian Geese based on a group of 20-30 birds.

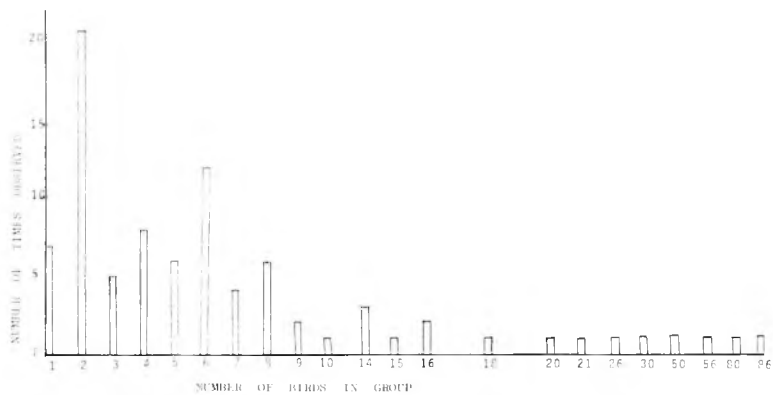

Figure 4. Feeding groups of Egyptian Geese based on 116 observations involving 851 birds.

Table 1. The average daily activities (% time spent) of the Egyptian Goose in Rwenzori National Park.

Study area	Feeding	Preening	Resting	Alert	Others
Hippo Pool	72	13	9	3	3
Hippo Bay	68	17	11	3	1
Average	70	15	10	3	2

the ground with the neck folded over the back with the head and bill tucked under wings. Males generally stand on both legs with the neck folded and tucked under the feathers. Males and females will stand on one leg, the second one being folded under the body. It was most probable that resting was accompanied with sleeping. The resting period varied from 10 to just over 30 minutes at a time. Some individuals of a group slept while others stayed alert, the two activities alternating. After resting, a goose usually stood up on both legs, scared off any other birds in the surrounding area and then stretched its wings and legs. A wing flap sometimes preceded by a body shake and preening followed before the bird moved off following the others in the feeding group.

Numbers and distribution

The geese occur near the lakes, rivers, Kazinga Channel, water pools and wallows; none was seen on the salt lakes of Katwe, Nyamunuka and Kikorongo. The population counts in July by boat from Lakes George and Edward, and Kazinga Channel, and by land rover from the Hippo Pool, and from the other pools in the Park, gave an estimated total of 10,600 birds. This gave a Park-wide density of about 5.4 birds per km^2, which was probably an underestimation since no thorough search was made in the smaller wallows and rivers of the Park. While the survey was on water, some of the birds were probably on land, and not therefore counted. The adult population ranged from 40-400 in the Hippo Pool, and 90-150 from the Hippo Bay.

Food and biomass

In the present study, large quantities of herbage were ingested (Table 2). Although the birds normally grazed leaves, they showed a tendency to prefer inflorescences and seeds when these were available. Seeds and inflorescences of grasses *P. repens, S. pyramidalis, D. aegyptium, E. tenuifolia* and *E. cilianensis* were found in substantial quantities in the stomach contents. The leaves of *C. dactylon, B. decumbens, C. gayana, C. orientalis, S. pyramidalis* and *T. berteronianus* were abundant in the crops and gizzards. *C. dactylon* was one of the commonest species ingested, being the largest component in 19 of the 20 birds. Forbs including *A. pungens* were found in moderate quantities in all the birds and *T. terrestris* in 9 of the 20 birds. The other food types taken from the dustbins included rotting banana peels, posho (maize meal), millet husks and grains left after beer-making, sweet potato peels and maize grains.

The contents of the gizzard and crop for the 20 birds averaged at 3.2 g and 6.2 g respectively. Assuming that these were filled 3-4 times a day, the daily consumption was estimated to be 29.2-36.6 g fresh weight.

In the present study, the males were larger and heavier than the females (Table 3), the former averaging 2,455 ± 100 g and the latter 1,940 ± 40 g. Flight muscles (comprising *Pectoralis major* and *minor)* contributed between 16.8% and 20.8% of the body weight, and the bird had a large gizzard (4% to 5%).

The Park's estimated population of

Table 2. Crop and gizzard content analyses based on 20 Egyptian Geese from Rwenzori National Park.

Plant species	Number of gizzards in which found	Relative importance	Plant part eaten
Alternanthera pungens	20	B	Leaves
Cynodon dactylon	19	A	Leaves and inflorescences
Sporobolus pyramidalis	19	B	Leaves and inflorescences
Tragus berteronianus	16	C	Leaves and seeds
Eragrostis tenuifolia	10	C	Inflorescences
Tribulus terrestris	8	B	Leaves and stems
Chrysochloa orientalis	7	B	Leaves
Chloris gayana	9	C	Leaves
Chloris pycnothrix	2	B	Leaves
Eragrostris cilianensis	5	C	Inflorescences
Panicum repens	6	B	Seeds
Dactyloctenium aegyptium	3	C	Inflorescences
Brachiaria decumbens	8	C	Leaves

Key: A = Very important food (at least 75%) in quantity.
B = Important food (at least 50%) in quantity.
C = Less important food (below 50%) in quantity.

Table 3. The weight (g) and length (cm) based on 20 Egyptian Geese (10 males and 10 females) collected from Rwenzori National Park.

	Weight			Length				
	Body	Flight muscles	Gizzard	Body	Wing	Tail	Bill	Intestine
Males:								
Average	2445	469.8	100.4	69	64.9	16.6	9.5	245.0
S.D.	200.8	22.4	12.4	2.1	4.4	0.16	1.4	37.1
Range	1950-2740	378-532	92-109	67.77	59.69	16-17	9-10	201.292
Females:								
Average	1940	344.2	87.8	64.0	61.2	15.7	8.6	213.0
S.D.	87.5	10.4	13.4	3.16	4.6	0.8	1.16	17.36
Range	1850-2080	330-355	73.105	63.67	56.67	15-17	8-9	193.226

Egyptian Geese thus represents a biomass of 11.254 kg per m^2. The birds would consume between 108 and 145 tonnes of fresh herbage per year.

In Queen Elizabeth National Park, Egyptian Geese occur in habitats which can support a larger population than there is at the moment. The reasons for this await further investigation.

Acknowledgements

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Summary

Daily observations were made on the numbers and activities of the Egyptian Goose *Alopochen aegyptiacus* in three areas of the Queen Elizabeth National Park in Uganda. Numbers of the birds in the study areas fluctuated depending on availability of water. The Park-wide population was estimated at 10,600, giving a low density of 5.4 birds of 11.254 kg of biomass per km^2.

The birds spent the day-time away from the roosting sites, primarily in feeding (70%), preening (15%) and resting (10%). The birds were more active on cool, rainy days. There was a strong family bond. The birds tended to congregate in large numbers at night, when food was scarce or when they were scared. They mixed well with birds of other species or with other animals.

Feeding was virtually throughout the day with peaks during the early morning, midday and the cool evening hours. The birds ingested over 30 g of grass and herbs, with a tendency to prefer inflorescences and seeds when available, from at least 16 species. Feeding grounds were defended by vocal warning, chasing and fighting.

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