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Fluctuations in the numbers of wildfowl on an equatorial hippo wallow

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From 1968 until 1972, a study was made of brood survival in the Egyptian Goose *Alopochen aegyptiacus* on a large hippo wallow in the Ruwenzori National Park, Uganda. The opportunity was taken to record the number of adult geese of this and other species of wildfowl. Although the distribution of wildfowl in East Africa is well known, there is very little information on the timing of their local movements.

During the course of the study, thirteen species of Anatidae were recorded on the wallow. Other species of wildfowl which are on the check list of the park but which were not seen comprise the African Pochard *Aythya erythrophthalma*, White-eyed Pochard *Aythya nyroca*, African Pygmy Goose *Nettapus auritus*, Spur-winged Goose *Plectropterus gambensis* and White-backed Duck *Thalassornis leuconotus*.

The wallow, situated only 16 km south of the equator, is a popular tourist attraction containing several hundred hippopotamus and a wide variety of aquatic birds. It is also used extensively by other large mammals, including lions, for drinking or bathing. It is situated near a track and its co-ordinates are 29°59′E, 0°09′S. The wallow is roughly oval in shape, being 500 m long and 230 m wide at its broadest point, an area of about 0·09 km². Much of the surrounding area is bare earth due to grazing and trampling by the large mammals. Clumps of *Capparis tomentosa* form dense thickets near the water's edge and a few candelabra trees *Euphorbia candelabrum* grow inside some thickets. Unobstructed views of the wallow are, however, possible from much of the shoreline.

The depth is nowhere more than a metre, subject to fluctuations in water level between the wet and dry seasons. In 1971, it seemed about to dry out but about half of it remained wet and good rains in the latter half of the year flooded it again. In May 1972, floating plants of Nile Cabbage *Pistia stratiotes* spread across the wallow and completely covered it in less than 6 weeks. This did not have much effect on the hippopotamus but it radically altered the composition of the avifauna. Many of the waders left but Jacanas *Actophilornis africanus* and Cattle Egrets *Bubulcus ibis* increased spectacularly. However, the wallow appeared to lose its attraction as a nursery for Egyptian Geese, although the adults remained, and the study was, therefore, terminated.

Methods

Counts were made with 10 × 50 binoculars, driving around the wallow in a Landrover and recording the numbers on a sketch map. The counts, made between 16.00 and 17.00 hours, took from 20 min to an hour to complete, depending on the density of the birds. A total of 325 counts were made, just over six a month. Details of the weather were noted but there appeared to be no significant correlation with the number of birds recorded.

Results

Palaearctic migrants

Garganey *Anas querquedula* (Figures 1 and 2)

Figure 2 shows the number recorded each season from October to April. The first usually arrived in early October but numbers remained very low until December. All had departed by the end of April. The fluctuations during the palaearctic winter are curious since no two seasons were alike. The 1968–69 season showed a more or less steady rise to peak numbers in January which were maintained until March when there was a steady decline. The impression is that the Garganey remained throughout the winter. In the following season, there was a similar but rather steeper build up to a peak in January, but numbers then declined until mid-February when there was a slight but marked increase followed by the steady decline from mid-March seen in the previous season. Season 1970–71 was different again. Numbers rose as in previous years but continued to increase until March. Again, there was the rapid drop in numbers between mid-March and April. A few minor peaks while numbers were building up between December and March possibly

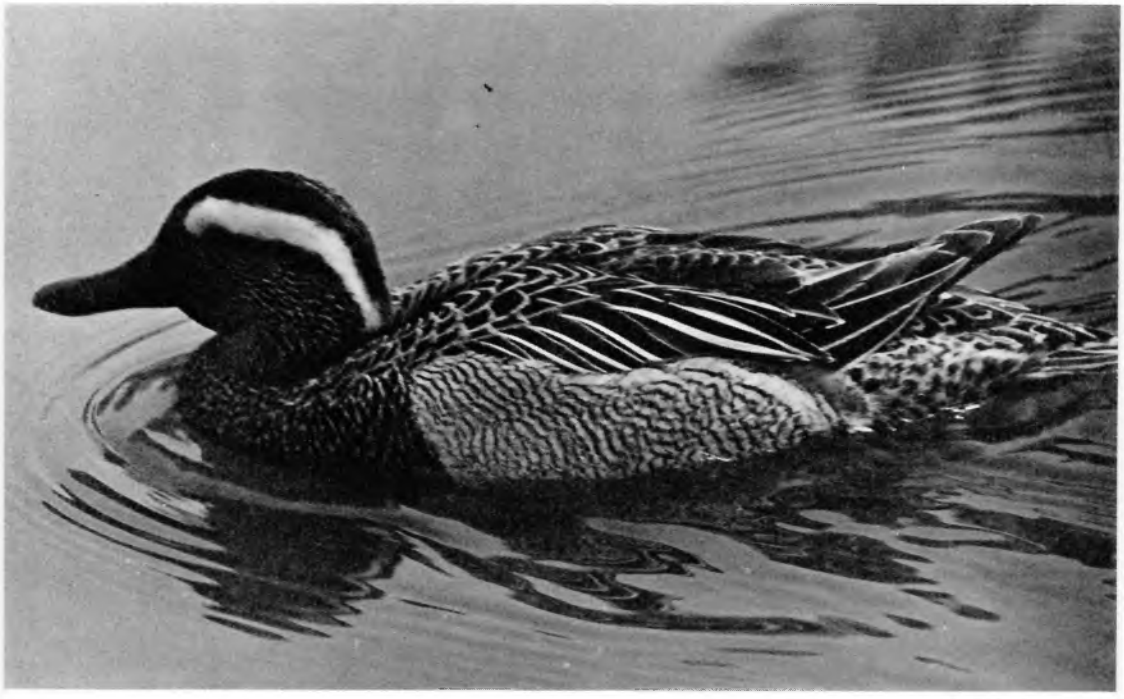


Figure 1. Male Garganey *Anas querquedula* in full breeding plumage at Slimbridge.

E. E. Jackson

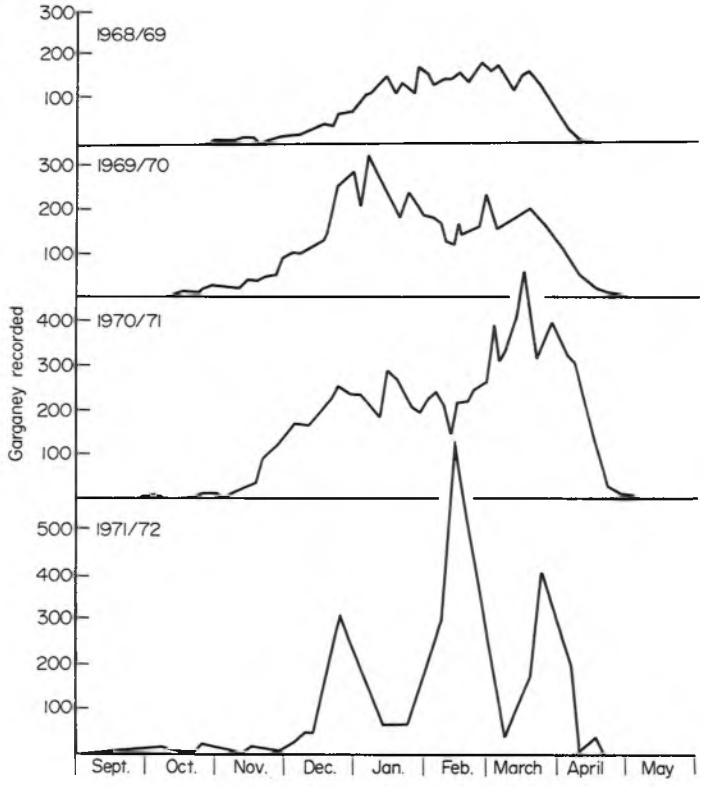


Figure 2. The number of Garganey recorded on each visit to the hippo wallow during the palaearctic winters from 1968 to 1972.

represented waves of passage migrants. Season 1971–72 was very different from the others with three distinct peaks, the first in late December, the second and biggest in the first half of February and the third one in late March.

There is certainly no regular pattern of migration. It is possible that some birds remain all winter, but the pronounced peaks particularly towards the end of the season imply waves of passage migrants. The very large peak in February 1972 is more ambiguous. Its short duration precludes the possibility that the birds were overwintering and they may have been making an early return to their breeding grounds. An alternative explanation is that the Garganey seen are only part of a larger population and that the fluctuations recorded are due to local movements. Counts in other parts of East Africa might throw some light on these. The numbers involved on the hippo wallow are negligible relative to the total number of migrants leaving the palaearctic region.

For most of the time that Garganey are in Africa the males are in eclipse, but by March most have moulted into the breeding plumage and the sexes can readily be distinguished. Table 1 shows that males predominated in all years except 1971 when the sexes were about equal in number. The overall ratio was 1 male: 0·9 females. Possibly the sexes migrate separately.

Table 1. Sex ratios in Garganey on the hippo wallow in March/April

Year	No. of birds sexed	No. of males	No. of females	Sex ratio (male: females)
1969	612	341	271	1:0·79
1970	932	517	415	1:0·80
1971	3,684	1,815	1,869	1:1·03
1972	1,223	803	420	1:0·52
Totals	6,451	3,476	2,975	1:0·86

Northern Pintail *Anas acuta*

No Pintail were recorded during 1968–69. As with Garganey, the pattern of movements in the three succeeding seasons differed markedly (Figure 3). A few were present intermittently throughout November and December 1969 but it was not until January that they arrived in any numbers and rapidly built up to a peak of 111 on 29 January, but were gone a few days later. A second, smaller peak followed in mid-February and possibly a third, even smaller peak in early March after which none was seen. The pattern in the next season was not so very different except that a small but significant number were present during most of November and December. There were again three distinct peaks but the second was the largest and reached a total of 250. The departure of the birds was more prolonged and some were present until the middle of March. The third season 1971–72 showed a radically different pattern. None was seen until 14 December, but thereafter there was a rapid rise to a peak of 213 on 14 January. During the rest of the season there was a progressive decline interrupted in early February and March by irregularities which might perhaps represent the second and third peaks of previous seasons. The departure was delayed as a few Pintail lingered into April.

There is a suggestion of three peaks which, as with the Garganey, may represent passage migrants. No doubt the timing of the migrations varies with the weather on the breeding grounds further north.

The Pintail were much shyer than the other species. They tended to keep to the middle of the wallow in a single large flock, but could be counted satisfactorily through binoculars. However, they readily flew if a tourist vehicle approached too closely.

Other palaearctic migrants

Other species of palaearctic migrants occurred only sporadically and were probably vagrants. Some Green-winged Teal *Anas crecca* were usually present each year. In 1969–70 the first Teal was seen on 16 December and some remained until 27 February. The maximum seen at any one time was four. In 1970–71 one Teal was seen on 4 November but no more were recorded until 10 December. The maximum total was eight. Only one was seen during the 1971–72 season, on 16 October.

Some Common Shoveler *Anas clypeata* appeared in the 1970–71 season. The first was a group of three on 26 October. Numbers reached a maximum of eight, and some birds were present most of the time until 1 February. Both males and females were present. The only other Shovelers seen were three on 14 February 1972.

Other rare palaearctic migrants were seen during the 1970–71 season. Some European Pochard *Aythya ferina*, up to a maximum of four, were present continuously from 10 December until 25 January.

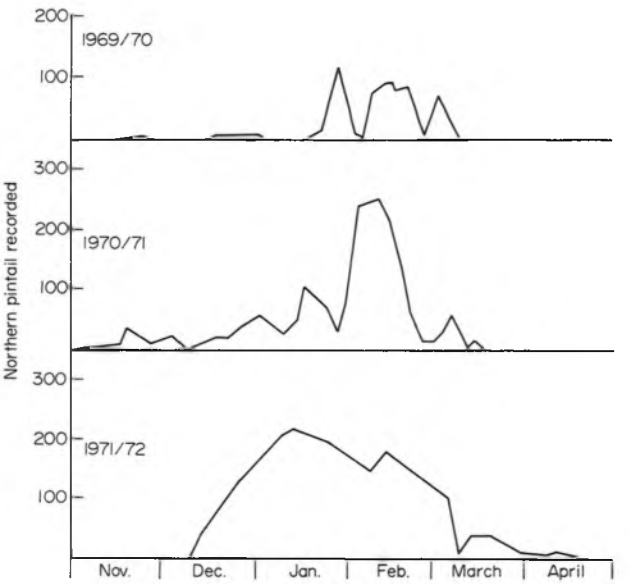


Figure 3. The number of Northern Pintail recorded on each visit to the hippo wallow during the palaearctic winters from 1969 to 1972.

They provide only the second record for the species in East Africa. The first was also from this hippo wallow, seen during the previous season by Dr M. P. L. Fogden.

A single Tufted Duck *Aythya fuligula*, on 11 January 1971, completes the list of palaearctic species.

Resident Ethiopian species

Five species were most frequently seen.

White-faced Whistling Duck *Dendrocygna viduata*

This was usually present each month although it has been seen only once, on 8 October, since June 1971. Possibly it was affected by the near drying-out that year. There is no consistent seasonal pattern in the appearance of the species except that numbers were always high in October. Some large flocks were then present in 1969 with the maximum of 139 on 27 October.

Egyptian Goose *Alopochen aegyptiacus*

The only species present 100% of the time was the Egyptian Goose. This is easy to count since the birds are most reluctant to fly and merely run away if approached too closely. For the most part, however, they are very tame and do not move very far. There was little danger, therefore, of birds being counted twice through flying from part of the wallow to another. The average number recorded was 167 but there were considerable variations from this figure as can be seen from Figure 4. The geese were usually on land and rarely entered the water except to bathe or to feed on algae near the shore. There were always a few, however, using the half submerged hippos as perches. Occasionally, large rafts of birds were found on the water, particularly at the northern end.

The monthly means plotted in Figure 4 show no consistent pattern over the years, though maximum numbers tended to be present between July and October, 1968 being excepted. There was no obvious correlation with rainfall. No doubt the geese using the wallow do not form a distinct population and their home range extends over a wider area of the park.

It is worth recording that the species in the wild, at least in the Ruwenzori Park, is nothing like as aggressive as is suggested by Johnsgard (1965) who says that because of their aggressive disposition they are not gregarious to any extent. This was certainly not true of the birds in the park which often

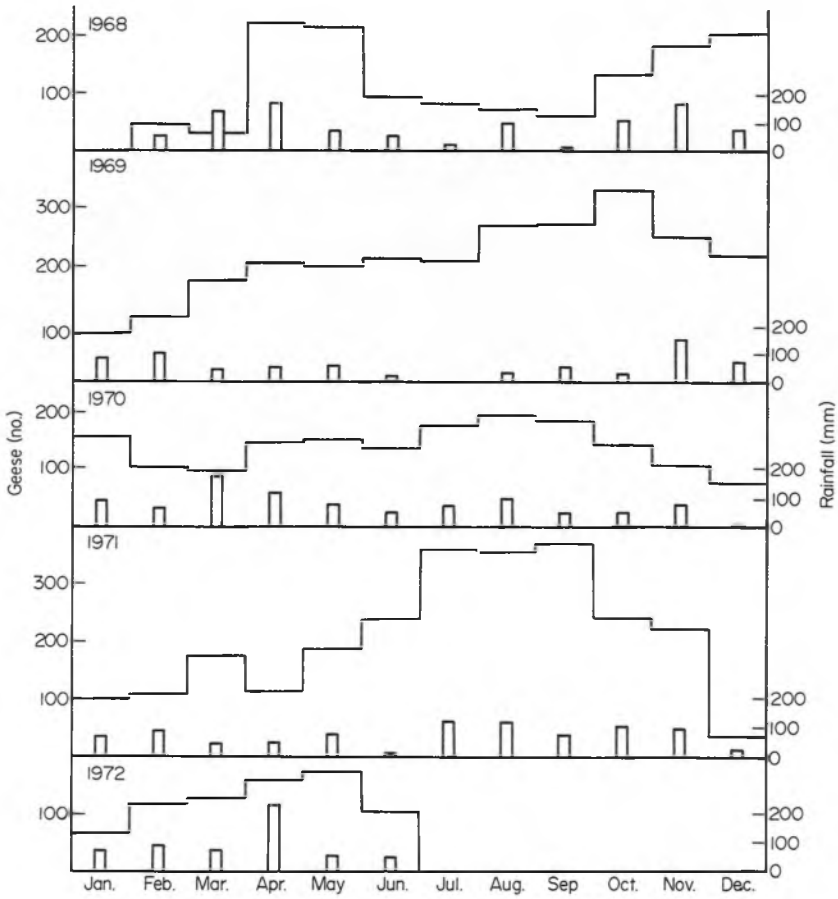


Figure 4. Histograms: the average number of Egyptian Geese present each month on or near the hippo wallow from 1968–1972. Columns: monthly rainfall at Mweya, about 10 km south-west of the wallow.

occurred together in flocks of fifty or more. Pitman (1965) also records exceptional flocks amounting to several hundreds. Mated pairs were sometimes aggressive to other geese, particularly other pairs, but were remarkably tolerant of birds in non-breeding flocks.

Hottentot Teal *Anas punctata*

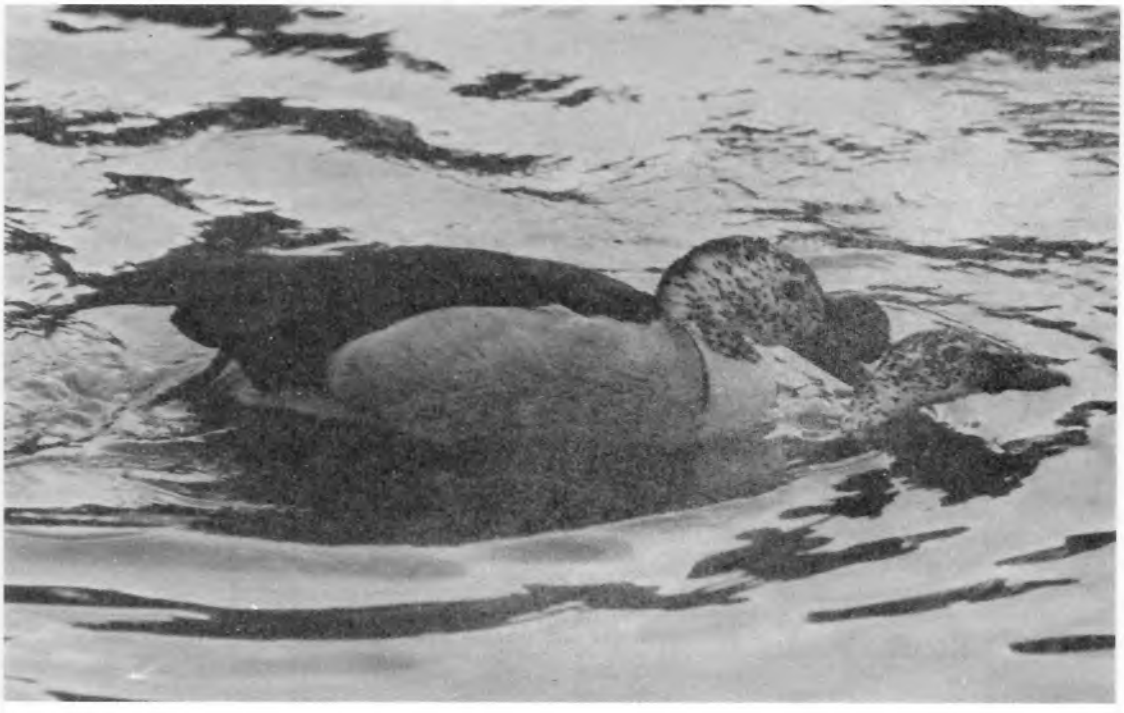
This was only a sporadic visitor and the maximum seen at any one time was only ten.

Red-billed Pintail *Anas erythrorhyncha*

This was one of the most regular visitors although there are some long gaps. Numbers were usually less than a dozen except for a time in the second half of 1970 and early 1971 and again in 1972 when some larger flocks appeared. The maximum seen was forty-eight on 13 March 1971.

Comb Duck *Sarkidiornis melanotos* (Figure 5)

This was very irregular in its appearance and the maximum was no more than eighteen. Pitman (1965) mentions that the Comb Duck is probably polygamous in East Africa. Only one brood was seen during the present counts and that consisted of six young accompanied by a pair, an adult male and female. There were only fifty-seven males out of a total of 407 sexed birds. The distribution by group size is shown in Table 2. In most cases (68%) there



Philippa Scott

Figure 5. Copulation in the Comb Duck *Sarkidiornis m. melanotos* at Slimbridge.

Table 2. Group sizes of Comb Duck seen on the hippo wallow

Group size	Total groups	Single sex		Mixed	Unsexed
		All males	All females		
1	95	14	59	–	22
2	65	–	39	13	13
3	27	–	16	3	8
4	22	1	11	4	6
5	13	–	4	5	4
6	7	–	2	4	1
7	2	–	–	1	1
8	1	–	–	–	1
9	1	–	–	–	1
10	1	–	1	–	–
11	1	–	–	1	–

were either one or two birds. The groups of mixed sexes comprised a high proportion (43%) of pairs. Many of the males in the bigger groups were juveniles or not in breeding condition. Those that were, i.e. with well developed combs on the bill, were mainly solitary. These results are not conclusive and do not preclude the possibility of polygamy but they are more in keeping with a monogamous situation.

The Comb Duck is another species with a reputation for aggressiveness and Johnsgard (1965) says that the sexes do not associate much because the females try to avoid contact with the much larger males. The fact that quite a few of the adult males were solitary tends to support this contention but on the other hand no sign of aggression was noticed between the sexes or between members of the same sex. The situation may have been different if the birds had been breeding. It is possible that the excessive aggression reported in this and some other species of wildfowl is seen only in collection birds and results from the artificial conditions of captivity.

Other Ethiopian species

The Yellow-billed Duck *Anas undulata* was rare. This is surprising since it is not an uncommon bird in Uganda and large numbers frequent a swamp north of the road between Masaka and Mbarara no more than 150 km from the Ruwenzori Park. The species did not occur at the wallow until a single bird arrived on 19 October 1970 and it remained there until 3 May 1971. A second bird appeared in March 1971.

A party of eleven Fulvous Whistling Ducks *Dendrocygna bicolor* visited the wallow on 22 October 1969, but all but one had gone 2 days later. This individual remained until 9 November.

The Ethiopian species show no regular

pattern of movements at the wallow. Not much is known about the local movements of these species but Mackworth-Praed & Grant (1957) say that the Comb Duck is 'definitely migratory in Kenya', the Red-billed Pintail 'somewhat migratory' while the Hottentot Teal is 'subject to considerable seasonal movements'. It is also likely that the other Ethiopian ducks on the wallow show seasonal movements or have large home ranges of which the wallow is only a small part.

Conclusions

Although the area of water studied is relatively small, and the total numbers of wildfowl counted not large, the frequency and regularity of the counts is novel in East Africa. The timing of the influxes of the palaearctic migrants at an equatorial site is of particular interest; indeed any quantitative data on these species in Uganda were hitherto lacking. The causes of the fluctuations would seem to lie outside the immediate neighbourhood of the wallow. The results emphasize the desirability of counts over several seasons before conclusions are drawn regarding the importance of any particular wetland as waterfowl habitat.

Acknowledgments

Although most of these counts were made by myself, there were times when I was away on business or on leave when the counts were continued by one or other of the following: G. P. Coleman, N. A. Din, A. H. Harcourt, J. M. Kenyi, K. D. Slotten, P. Stidolph, G. William, M. H. Woodford and J. R. Wyatt. To all these persons I am very grateful. Mr Kenyi also helped in the analysis of the data. I would like to thank Professor G. V. T. Matthews for his critical review of the manuscript.

Summary

Counts of wildfowl were made on an equatorial hippo wallow in Uganda from February 1968 to June 1972 at an average rate of six counts each month. Thirteen species of wildfowl were recorded including six palaearctic migrants. The Egyptian Goose *Alopochen aegyptiacus* was the only species present on all occasions but its numbers varied considerably. No obvious pattern was apparent. Other Ethiopian species appeared erratically. Up to 700 Garganey *Anas querquedula* and 250 Northern Pintail *Anas acuta* occurred during the palaearctic winter. The pattern of movements differed markedly each year and it is suggested that many of these were passage migrants resting on their way to or from wintering areas further south.

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