THE ECOLOGICAL DISTRIBUTION OF SMALL MAMMALS ON BUGALA ISLAND, LAKE VICTORIA

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INTRODUCTION

Bugala Island is the largest island in the Sese archipelago and is situated in the North-west of Lake Victoria (32°3'E. to 32°20'E, 0°14'S to 0°33'S). Its western coastline is within two and a half miles of the mainland. The altitude of the island never rises much more than 300 ft above lake level, i.e., approximately 4,000 ft above sea level. The temperature is equable with little fluctuation throughout the year. The rainfall is relatively high (85 in. per annum) and although there is usually rain in every month, peaks are attained in April-May and October-November.

Little previous work has been undertaken on the mammals of the Sese Islands. Meinertzhagen (1916) reported on the sitatunga and Carpenter (1920) provided a general account of the mammals he observed between 1911 and 1914. The only work on rodents has been given by de Beaux (1924) which is based on collections made by Dr. F. Bayon from various parts of Uganda. In this account *Komenys* (now *Pelomys*) *isseli*, the only endemic species of rodent so far recorded from the islands, is described.

The vegetation of the Sese Islands was first fully described by Thomas (1941). Four main types of vegetation can be recognised. Forest is common and ascends from the lake shore to the highest elevations; it is dominated by *Uapaca* and *Piptadeniastrum* although in the higher forest a larger variety of tree species are present, including such species as *Maesopsis*. Much of the grassland is dominated by *Loudetia kagerensis;* this species is not infrequently joined by *Hyparrhenia* (Fig. 1) and locally by *Sporobolus*. The grassland and forest form a mosaic over the island and account for most of the vegetation (Fig. 2). Swamps occur in shallow waters and sheltered situations whilst resting farm land, containing a variety of herbs and perennials was to be found in areas which had, until recently, been tilled. The flora of the island is generally poor, largely as a result of a deficiency of plant nutrients in the sandy, deep, porous soil.

The present study was undertaken in April, 1966, when traps were set for the ground-dwelling small rodents and insectivores. The work aimed at determining the distribution of small mammals in the three main types of vegetation that were readily available for trapping i.e., grassland, forest and disused farm land. All the areas trapped were in the area extending from Kalangala south; the remotest being seven miles from Kalangala. The nomenclature adopted for the rodents is that used by Delany and Neal (1966). External measurements were made on each animal collected, the reproductive condition of the females recorded, testes lengths measured and skins and skulls retained. The latter are now deposited in the British Museum (Nat. Hist.), London.

FIGURE 1
Sward of *Loudetia — Hyparrhenia* grassland. The latter is particularly evident with the large inflorescences. A little *Sporobolus* is in the foreground slightly to the left of centre.

TRAPPING METHODS AND RESULTS

Breakback traps were used for collecting and were baited with rat diet 41B. Two patterns of traps were used; a metal commercially produced rat trap and the Museum Special mouse trap. Most of the traps were set in lines with a ten pace interval between each trap. Approximately 75 traps were set each night involving a total of 661 traps nights. Of these 159 were in forest, 324 in grassland and 178 in scrub. A total of 63 specimens were obtained. The catches are summarised in Table 1 where they are compared with the species recorded by de Beaux (1924). The two surveys had four species of rodent in common (*Pelomys*, *Praomys*, *Lophuromys flavopunctatus*, *Otomys*), de Beaux recorded four species (*Grammomys*, *Mastomys*, *Mus*, *Dendromus*) not recorded in the present study whilst *Dasymys* and *Lophuromys sikapusi* were not recorded by de Beaux.

The insectivorous *Lophuromys flavopunctatus* was apparently ubiquitous and fairly common on the island. The occasional trappings of *Praomys* outside the forest are probably the result of traps being set fairly close to forest edge. *Dasymys* was the only species caught

FIGURE 2
Vegetation patterns on the Sese Islands. In the foreground is the *Loudetia* grassland with forest close to the water's edge. The mixture of forest and grassland can be clearly seen on the distant Bunyama Island.

TABLE I
RODENTS OBTAINED FROM BUGALA ISLAND, LAKE VICTORIA

Species	*Forest (159 trap nights)*	*Grassland (324 trap nights)*	*Resting farm land (178 trap nights)*	*Recorded (X) by de Beaux*
Grammomys dolichurus ..	—	—	—	X
Dasymys incomtus	—	6	—	—
Pelomys isseli	—	—	4	X
Praomys morio	6	1	1	X
Mastomys natalensis ..	—	—	—	X
Mus minutoides	—	—	—	X
Lophuromys flavopunctatus ..	4	10	20	X
Lophuromys sikapusi ..	—	4	3	—
Dendromus mystacalis ..	—	—	—	X
Otomys irroratus	—	2	2	X

exclusively in grassland. The similarity between the faunas of the grassland and the resting farm land is probably due, in part, to these two vegetation types blending into each other.

The breeding condition of the females is summarised in Table II. Of the thirty-nine females examined only one was immature and twenty-six (or 68·4% of the adults) in reproductive condition. The small percentage of young animals obtained, the presence of several lactating females and a large number of pregnant animals suggest that although the breeding season was well under way it had not reached a stage when young animals were leaving the nest in large numbers. It is interesting to note this high incidence of breeding during the wettest time of the year.

TABLE II

BREEDING CONDITION OF FEMALES COLLECTED ON BUGALA ISLAND IN APRIL 1966

Species	*No. pregnant*	*No. embryos (average)*	*No. lactating*	*No. in oestrous*	*Total examined*	*% in reproductive condition*
Dasymys incomtus ..	1	3 (3)	2	—	4	75
Pelomys isseli	—	—	2	1	4	75
Praomys morio	1	3 (3)	—	3	5	80
Lophuromys flavopunctatus	10	1 - 2 (1·9)	3	1	21	67
Lophuromys sikapusi ..	2	2 (2)	—	—	4	50
Otomys irroratus ..	—	—	—	—	1	—

DISCUSSION

In this introductory study of the mammals of Bugala Island a number of interesting features emerge. It appears possible that, as neither Bayon nor the author obtained all the species represented on the island, there may still be further species present which will only be obtained as a result of more intensive trapping. Even though this may be the case it seems surprising that several of the species which are common on the mainland have not appeared in either study. These include such forest species as *Hybomys univittatus* and *Hylomyscus stella* and such grassland species as *Aethomys kaiseri*, *Lemniscomys striatus* and *Arvicanthis abyssinicus*.

Bugala Island has probably been isolated from the mainland between 60,000 and 100,000 years. During this isolation one species appears to have evolved on Sese and Kome Islands (*Pelomys isseli*) and several other species appear not to have reached Bugala. Whether the species on Bugala that also occur on the mainland were introduced inadvertently by man or were present on the island at the time of its isolation is a matter of speculation. The habitats occupied by the species present are similar to those in which they are found on the mainland. Furthermore, the island has a relatively poor vegetation which might influence the variety of microhabitats available for the rodents.

No insectivores were obtained in the present study but this could be the result of these animals tending to avoid the traps. The insectivorous *Lophuromys* spp. were fairly common and could possibly fill a major role in this niche.

SUMMARY

1. Forest, grassland and reverting farm land were trapped for small mammals on Bugala Island in April, 1966.
2. Sixty-three rodents were obtained in 661 trap nights. *Pelomys isseli*, *Praomys morio*, *Lophuromys flavopunctatus* and *Otomys irroratus* were obtained in the scrub; *L. flavopunctatus* and *P. morio* in the forest and the last two species together with *Lophuromys sikapusi*, *Dasymys incomtus* and *Otomys irroratus* in the grassland.
3. All but one of thirty-nine females were adult. Of these twenty-six were pregnant or lactating or in oestrous.
4. The rodent fauna of Bugala appears dissimilar to that from the adjacent mainland; the difference could be accounted for as a result of its isolation and the paucity of its vegetation.

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