POPULATION STRUCTURE AND REPRODUCTIVE CYCLE OF *PRAOMYS JACKSONI* (DEWINTON, 1897) AND FIRST DATA ON THE REPRODUCTION OF *P. MISONNEI* VAN DER STRAETEN & DIETERLEN, 1987 AND *P. MUTONI* VAN DER STRAETEN & DUDU 1990 (MURIDAE) FROM MASAKO FOREST (KISANGANI, ZAIRE)

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Abstract. The three *Praomys* species occuring in Masako forest have a different distribution over the four habitats investigated. *P. jacksoni* is the most common and widespread species whereas *P. misonnei* and *P. mutoni* are less common and restricted to particular habitat types. The population structure of *P. jacksoni* is very similar from year to year with a predominance of adult animals in each month. Reproduction is continuous throughout the year and variations in intensity are more pronounced between years than between seasons. Data on the reproduction of two newly described species, *P. misonnei* and *P. mutoni*, are presented.

Key words: Rodentia, *Praomys*, Zaire, population biology.

INTRODUCTION

During a 3-year study data were collected on the population dynamics and reproduction of rodents from Masako forest near Kisangani (DUDU, 1991). Beside *Praomys jacksoni* (De Winton, 1897), which is the most common rodent species in this forest, two new species of the genus *Praomys* were described, *P. misonnei* Van der Straeten & Dieterlen, 1987 and *P.mutoni* Van der Straeten & Dudu, 1990. Since no data are yet available on the biology of these newly discovered species we present data on their distribution and reproduction in comparison with that of *P. jacksoni*.

MATERIAL AND METHODS

From December 1984 to November 1986 rodents were collected in the Masako forest using Victor snap traps placed in four different habitats; primary forest, old secondary

forest, fallow land and very wet habitats along rivers which are inundated periodically (Fig. 1).
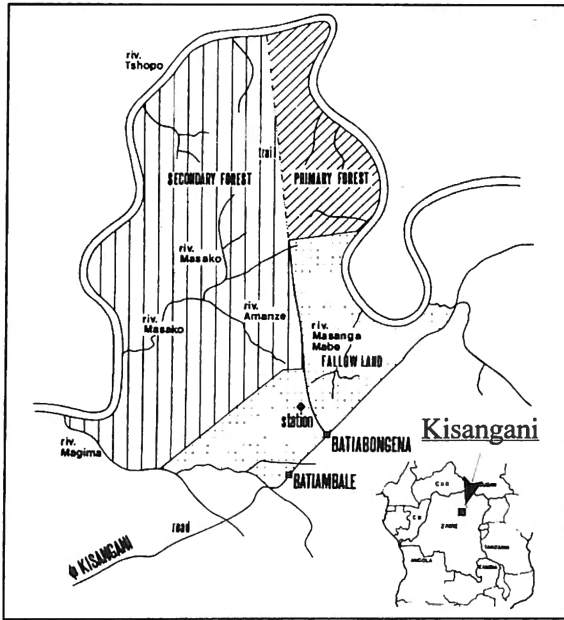

Fig. 1. – Situation map of Masako forest with the different collecting sites.

According to their weight animals were grouped as juveniles, subadults and adults. Because only few individuals were collected of the last two species data were grouped into 3 month periods.

RESULTS

In total 938 *P. jacksoni* (552 males: 386 females), 33 *P. misonnei* (22 males: 11 females) and 34 *P. mutoni* (21 males: 13 females) were captured.

In Table 1 the occurence of the three *Praomys* species in the different habitats is given. None of the species was evenly distributed over the four habitat types (*P. jacksoni* $c2 = 18.255$, $p = 0.0003$; *P. misonnei* $c2 = 9.121$, $p = 0.0277$; *P. mutoni* $= 194.321$, $p = 0.0000$). *P. jacksoni* was the most common of the three *Praomys* species with a preference for fallow land and secondary forest. While *P. misonnei* was captured in all habitat types except riverine habitat, *P. mutoni* seems to occur primarily in this kind of habitat. Captures of *P. mutoni* in the other habitats were always situated close to small rivers. The distribution of the three species over the different habitat types was significantly different (Pearsons $c2 = 250.9$, $df = 6$, $p < 0.0000$).

The removal data reveal that the sex ratio of *P. jacksoni* is strongly male biased ($n = 938$, $sr = 0.59$, $X2 = 29.4$, $p < 0.001$). In *P. misonnei* and *P. mutoni* the sex ratio is also biased in favour of the males although not significantly (resp. $sr = 0.67$ and $sr = 0.62$).

TABLE 1

Number of captures of the 3 Praomys species within the different habitat types
(number of captures per 100 trap nights between parenthesis)

Habitat	Trap nights	P. jacksoni	P. missonei	P. mutoni
Primary forest	800	47 (5.9)	4 (0.5)	0 (-)
Secondary forest	6200	466 (7.5)	22 (0.4)	6 (0.1)
River borders	1300	57 (4.4)	0 (-)	27 (2.1)
Fallow land	5400	405 (7.5)	9 (0.2)	1 (0.02)

The weight distribution of the collected *P. jacksoni* indicates that all age groups are equally present throughout the year (Fig. 2).
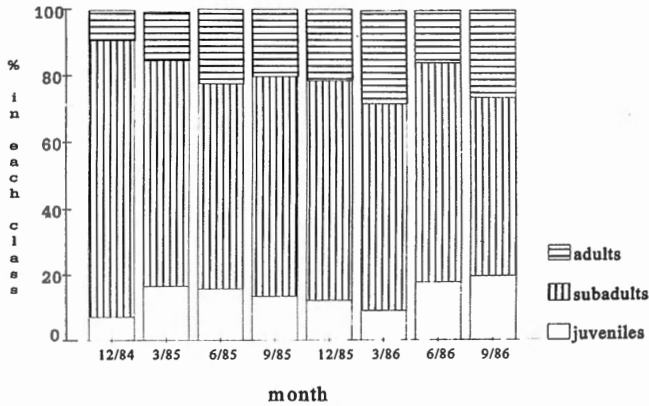

Fig. 2. – Distribution of the different age classes of *Praomys jacksoni*.

The percentage of sexually active adult males (scrotal) and females (perforated, pregnant or lactating) of *P. jacksoni* is presented in Fig. 3. It is clear that there is little or no seasonal variation in reproductive activity whereas differences between years are more pronounced. The few data that are available for the two other species also indicate that reproduction is continuous throughout the year.
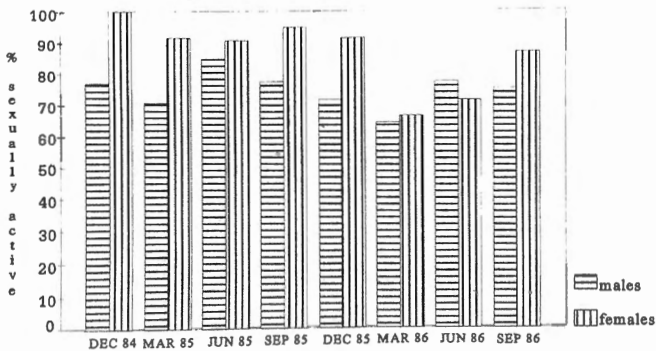

Fig. 3. – Percentage of male and female *P. jacksoni* sexually active.

Overall litter size is small in all species (*P. jacksoni*: 2.8 [n=113], *P. misonnei*: 2.3 [n=3], *P. mutoni*: 2.7 [n=3]) and pregnant females were found in each period for which observations were made.

DISCUSSION

Of the three *Praomys*-species that were found living in Masako forest, *P. jacksoni* was the most common and occured in all 4 habitats investigated. *P. misonnei* and *P. mutoni* were less abundant with a more restricted distribution. *P. mutoni* was found exclusively in riverine vegetation alongside rivers where *P. misonnei* was never caught. Further studies should indicate if this is due to interspecific competition or use of different resources (for instance food).

The biased sex ratio found for the three species may be due to the removal trapping technique used in which males, ranging over larger distances, have a higher probability of being trapped (FRYNTA & ZIZKOVA, 1994).

Reproductive characteristics seem to be very similar for the three species and reproduction is continuous throughout the year which is typical for equatorial tropical forest species (DELANY, 1964; DUPLANTIER, 1989).

P. jacksoni can be characterised as a K-selected species which is probably also the case for both other *Praomys*-species. The continuous reproductive activity, low litter sizes and high survival rates can be regarded as an adaptation to the constant forest conditions (climate, food availability etc.) (DELANY, 1972).

REFERENCES

DELANY, M.J. (1964) – A study of the ecology and breeding of small mammals in Uganda. *Proc. Zool. Soc. Lond.* **142** (2): 347-370.

DELANY, M.J. (1972) – The ecology of small rodents in tropical Africa. *Mammal Rev.* **2** (1): 1-42.

DUDU, A.M. (1991) – Etude du peuplement d'insectivores et de rongeurs de la forêt ombrophile de basse altitude du Zaïre (Kisangani, Masako). *Ph.D. thesis. University of Antwerp*, 171+121 pp.

DUPLANTIER, J.M. (1989) – Les rongeurs myomorphes forestiers du nord-est du Gabon: Structure du peuplement, démographie, domaines vitaux. *Rev. Ecol.* **44**: 329-346.

FRYNTA, D. & M. ZIZKOVA (1994) – Sex ratio in *Apodemus sylvaticus* (Rodentia: Muridae): A comparison of field and laboratory data. *Acta Soc. Zool. Bohem.* **57**: 183-192.