

## SMALL MAMMALS TRAPS IN COASTAL LOWLAND FOREST AND GARDENS OF YONGSU, PAPUA

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### ABSTRACT

*A study was conducted in Yemang, Yongsu Dosoyo –at the northern site of Cyclops mountains, in Depapre District, Jayapura, Papua. Twenty-four traps were randomly set in 4 trap stations per habitat (garden and forest) with 10 m distance between stations. Each trap stations consist of three traps with three different type of baits during four on four consecutive nights. This paper presents results of this study.*

*Key words: small mammals, lowland forest, garden, Papua*

### INTRODUCTION

Yongsu, at the northern site of the Cyclops Mountains is represent the lowland forest along the coastal site in the northern part of Papua. The area is a part of the Cyclops Mountains Nature Reserve, close to Jayapura, the capital city of Papua Province.

McPhee (1988) reported that habitat modification by human activity has radically affected the diversity and relative abundance of rodent species although it is difficult to observed relationship between diet and habitat. Research conducted from 1979 to 1980 in Papua New Guinea indicate that altitudinal effects and long-term modification of forest for other purposes such as agricultural plantations, logging, mining and roads might have contributed to the difference on the mammals' diversity (Dwyer 1983).

Low capture rate of small mammals may caused by low density of animals, unequal distribution, plenty of food resources available close to the trapping location and inappropriate baits. The study aimed to investigate the presence of small mammals across the coastal lowland forests and gardens of Yongsu. Major purpose of the study is to understand how different baits have impacts on the capture rate of small mammals.

### METHODS

The study was conducted in Yemang, Yongsu Dosoyo –at the northern site of Cyclop mountains, in Depapre District, Jayapura (Figure 1).

The driest month is September (with an average rainfall of 260 mm) and the wettest month is April (mean rainfall 1075 mm). The temperature ranges between

17.2°C – 35.6°C, with annual temperature average of 21.7°C. The humidity ranges between 81.8%-85%. Yongsu is an old village that was abandoned about 50-70 years ago, and then re-occupied when the district was development in the early 1970s (Okoseray E 2000 pers. com. (personal communication). Yongsu has a wide range of habitat including gardens, lowland and mountain forest with altitudes ranging between 100 and 750m above sea level (asl).

The Cyclops Mountains are located along the isolated northeastern coast of Papua between Tanah Merah Bay in the west and Jayapura in the east. Yongsu (02°26S; 140°29E) can be reached by boat from Jayapura within approximately 2.5 hours. Due to its position near to Jayapura – a capital city of Papua Province, areas that are less steep (up to 500 m above Sentani) has exposed to severe pressure from other land use including agriculture, settlements and hunting (Baillie et al. 2009).

The survey was conducted in Yongsu up to 500m asl. Twenty-four traps were randomly set in 4 trap stations per habitat (garden and forest) with 10 m distance between stations to sample small mammals. Each trap stations consisted of three traps baited with three different types of baits (roasted coconut, ripe banana and smoked fish), set in a circle with approximately 5 m distance. At each sites, the general habitat features were recorded.

Different types of bait were used to attract a variety of small mammals, including both meat eating (carnivores) and plant eating (herbivores) animals. Locally made wire-mesh live traps (10 x 20 x 10cm) consisting of a small cage with one spiral spring door in front – and automatically closed when baits were removed (see Figure 2).

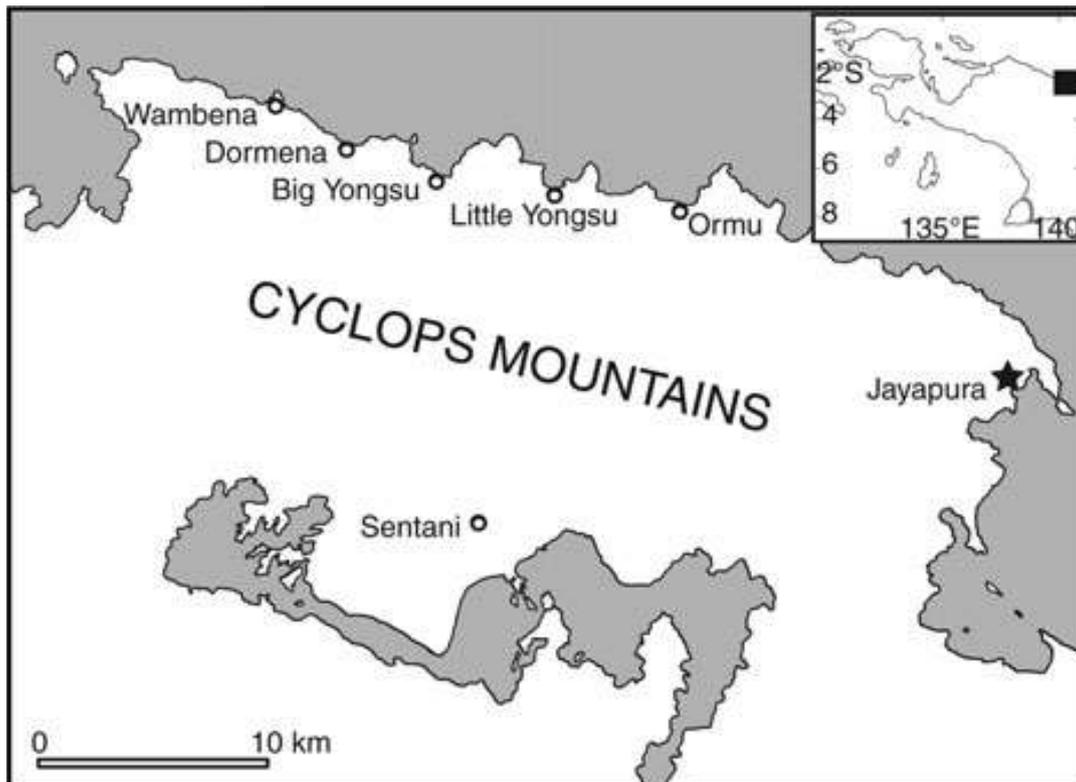


Figure 1. The arrow shows the relative location of the study site on the coastal lowland forest of Depapre north-west of Jayapura (Baillie 2009).

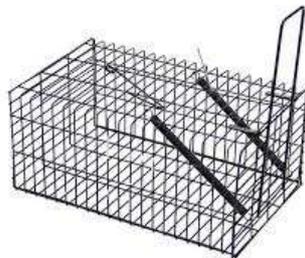


Figure 2. Locally made wire-mesh live trap (Pattiselanno & Arobaya, 2012)

All traps were located at ground level, and were baited and put in position just before sunset (16:00-17:00 pm). In the following morning 08:00-09:00 am, traps were checked and collected. Trap rounds were necessary, to check bait which was often attracted ants and target animals avoid visit the traps. Baits that have consumed by ants were replaced. When animals were captured, bait was removed and replaced by the new ones after the trap washed. Trapping took place on four consecutive nights.

The captured mammals were recorded along with the bait and habitat type. We also identified species and determined the sex, weighed and measured the captured mammals. Identification was based on Flannery (1995) and Menzies & Dennis (1979). Our captured animals

were few, so after measurement was taken they were released at the point of capture.

## RESULTS AND DISCUSSIONS

The trapping period yielded only five captures comprising of four species in a total of four trap nights, (see Table 1). We found traps baited with smoked fish at the garden floor, under the Pandanus tree – nearby the secondary forests were broken. We have no evidence, but we believe carnivorous mammals or lizard may have broken these traps. Traps were repaired and re-set for the next round of observation. Morphometric measurements of the captured species are presented in Table 2.

Table 1. Species captured (N), habitat and type of baits in the study sites

Species	Habitat	Bait	Sex	N
<i>Murexia longicaudata</i>	Forest	Smoked Fish	Male	1
<i>Pogonomelomys mayeri</i>	Garden	Roasted Coconut	Male	2
<i>Melomys lutillus</i>	Garden	Roasted Coconut	Female	1
<i>Paramelomys platyops</i>	Garden	Ripe Banana	Male	1

Table 2. Morphometric measurements

Species	Weight (gr)	Body length (cm)	Tail length (cm)	Hind food (cm)
<i>Murexia longicaudata</i>	229.5	20.0	19.0	3.5
<i>Pogonomelomys mayeri</i>	139.5	14.9	10.1	3.2
<i>Pogonomelomys mayeri</i>	100.0	15.5	12.0	2.7
<i>Melomys lutillus</i>	95.0	12.0	12.7	2.5
<i>Paramelomys platyops</i>	119.5	13.8	12.0	2.7

*Murexia longicaudata* has very short fur with mix colours of brown, black, grey. The proportion of body and tail length is almost the same. Occurs from the sea level to about 1,800m asl known as terrestrial species (<http://www.iucnredlist.org/details/13930/0>).

*Pogonomelomys mayeri* has long and soft fur mixed between light brown, black spots in some parts of the body. Specimen collected from Flannery (1995) without any information on male's body weights.

*Melomys lutillus* is a small species with white fur colour of its belly. It has light brown mixed with grey and white colour of body and bicoloured tail with darker colour at above part. It usually invades old garden plots as soon as grass becomes common within a few months of abandonment (Flannery, 1995).

*Paramelomys platyops*, previously known as *Melomys platyops* with sleek, soft brown fur, short tail and short hindfoot which relative to body size. It has bicoloured tail and paler below.

Nevertheless, Table 1 indicates that roast coconut was relatively effective bait in the garden as compared to smoked fish and ripe banana. In this study, we had a very low capture rate so we can't further analysis the data. The fact that, roast coconut was successfully baited target animals compared the other two, because it was more often used by local hunters around the study sites.

Smoked Fish, however produced stimulating odor, it less preferred in the forest habitat. During the study we experienced severe weather with very high rainfall, thus we suspect high rainfall blocked and reduced the spread of bait odors, and influence the catch. We further discussed with local hunters, and they acknowledged that it was hard to catch hunting prey during rainy seasons as the animals prefer not to roaming around and the rainfall drive away the bait odors. A similar study conducted in the dry season in Tamberau (Pattiselanno & Arobaya, 2012), resulted more catches than the study

This study was a scheduled research training series for young and early career biologists and we failed to anticipate the weather impact of this study. Though, better to have a comparison study in different seasons,

we can't reschedule or look for a possibility to conduct similar study in dry season.

Most of the captured animals were trapped in the garden (n=4). Garden in this study is the converted forest areas that have been used for cultivation purposes. Around the garden are the forest areas with 60-70% of canopy covers. These animals (all rodents) were captured in the gardens, three baited with roasted coconut and one with ripe banana. At the lowland forest of Tamberau, West Papua, peanut butter was the most effective bait used to capture rodent species (Pattiselanno & Arobaya 2012). *Melomys lutillus* and *Pogonomelomys mayeri* could not trap in the Kikori River Basin of Papua New Guinea because logging activities have significantly altered the forest sites into concession areas, and was likely to have a serious impact on the mammalian populations of the area (Leary & Seri 1997).

They further urged that potential migration from other areas and the establishment of settlement into the forest areas decreased the rodent's habitat and it was difficult for them to find enough food. In Tamberau, different species were captured indicated the diversity of small mammal species occurring in Papua and the habitat condition were changed because of land conversion for other purposes (Pattiselanno & Arobaya 2012).

In this study, Shaw Mayer's *Pogonomelomys* (*P. mayeri*) was firstly recorded from the mainland of New Guinea Island. There is no information about the current record of this species, but the assessment of IUCN Red List indicated that it has wide range distribution in New Guinea Island and so far it was suspected, this species also present in Mamberamo, Papua (<http://www.iucnredlist.org/details/17878/0>). According to Flannery (1995), Grassland *Melomys* (*M. lutillus*) has a very patchy distribution in the southern New Guinea. Related to its names, this species is usually/commonly found in grassland areas, but the site it was captured in Yongsu (garden plot) supported the facts that this species does also invade old garden plots.

Flannery (1995) further explains that Lowland *Melomys* (*M. platyops*) is a primarily terrestrial species,

assumed to be present in disturbed habitats. This was supported by our trapping results where it was found in a garden that can be described as “disturbed habitat”. A variety of native and exotic crops were grown in the garden such as *Ipomoea batatas*, *Manihot utilisima* and *Saccharum edule*; and some fruit trees e.g. *Musa* sp. and *Papaya* sp.

Only one mammal, *Murexia longicaudata* (Dasyuridae) was captured in the forest habitat using a smoked fish as bait. The captured animal was trapped in an area of secondary forest with some *Pandanus* sp., moderate leaf litter and no ground cover, described as dense habitat, because in the rainy season when survey was conducted, this area was flooding. As Flannery (1995) mentioned, this species appears to be more abundant at lower than higher elevation throughout the island of New Guinea.

Timber collection in the local community forest ownership increased over time and surged the deforestation rates on the lowland forest along to the coast. Agricultural activities were also documented and hunting track was noticed at the lower elevations along the ridge that might have influenced the presence of the observed animals.

Steidl and Anthony (2000) asserted that as human activities increase around wildlife habitat, sensitive wildlife species may be increasingly affected. Previous studies showed that several different factors including human activities have an impact on wildlife. Different levels of human activities are identified as factors influenced the presence of wildlife in certain habitat. These activities have varied impacts on wildlife and are influenced by the type, duration, frequency, magnitude, location, timing of the disturbance and particular species of interest. They can effect wildlife populations adversely in both the short- and long-term (Steidl & Anthony 2000; Swarthout & Steidl 2003; Mann et al. 2002; Johnson et al. 2005).

## CONCLUSION

All baits used in this study successfully captured the animals, roasted coconut that commonly used by local hunters captured more than other two bait types. Four species were found in this study, three of them were captured in the garden. In this study, we had a very low capture rate so we can't further analysis the data. We

assumed high rainfall blocked and reduced the spread of bait odors, and influenced the catch.

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