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## THE TERRESTRIAL FAUNA COMPOSITION OF THE PEAT SWAMP FOREST OF ULU SEBUYAU NATIONAL PARK, SARAWAK, MALAYSIA

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### SUMMARY

The Ulu Sebuyau National Park (USNP) is located on the lower Batang Lupar river covering areas of mainly peat swamp forests in the Samarahan and Sri Aman Divisions of Sarawak, Malaysia. Surveys of terrestrial fauna were carried out from August to October 2014 and from September to October 2015 in the eastern and north-western parts of the park which consisted of logged-over peat swamp forests. The surveys concentrated on four faunal groups; primates, small mammals, birds and amphibians. Methods employed during the surveys included line transects, mist-netting and live-trapping. Survey results recorded five primate species, seven small mammal species, 72 bird species and 16 amphibian species. Orang Utans are still found in the area as evidenced by nests seen during aerial surveys. Two hornbill species, Black Hornbill (*Antracocerosmalayanus*) and Bushycrested Hornbill (*Annorhinusgaleritus*) were also recorded. The recording of two undescribed frog species (*Hylaranasp* and *Microhylasp*) and the rare false gharial (*Tomistomaschlegelii*) added to the excitement of the survey teams. Results of the surveys unearthing the arrays of species, some new and some endangered and rare show the importance of the peat swamp ecosystem albeit disturbed, in sustaining these species. More studies are therefore recommended.

**Keywords:** Peat swamp, primates, small mammals, birds, amphibians, Ulu Sebuyau, Sarawak

### INTRODUCTION

Realising that conservation of the complex (Ulu Sebuyau-Sedilu-Gunong Lesong National Parks) would be a humongous task and that SARAWAK FORESTRY would require all the assistance it could garner especially corporate partners. Subsequently, SARAWAK FORESTRY was in active discussion with Malaysian Palm Oil Council (MPOC) to collaborate in a project that aims to collect basic information on orangutan and other wildlife species in the two selected sites. The principal objective of the project is to ensure the long term survival of orangutans in the state of Sarawak as the areas in the Complex are crucial peat swamp forests habitats of orangutans. The project would also show that the state of Sarawak, contrary to the belief of some vocal and partisan environmental NGOs, that peat swamp forests are indiscriminately converted to oil palm plantations or other monocultures. It is crucial to collect basic information on the biodiversity particularly orangutan and what other resources in the complex. More importantly the recent information gathered from the locals that indicated orangutans are still found both inside and outside the national parks is verified by ground-truthing. The first phase of this project required SARAWAK FORESTRY to provide the relevant expertise and manpower to collect basic information on orangutan and other wildlife species in the national parks and to furnish a progress report to MPOC.

### STUDY AREA

The Ulu Sebuyau National Park (USNP), gazetted in 2010, is located at the lower part of the Batang Lupar River with an area about 18,300 hectares (Figure 1). The park is a logged-over area, logging having ceased in 2010. The whole study site is a secondary forest habitat with natural regeneration of disturbed forest patches. Generally, the area is flat and low-lying peat land that is prone to flooding and persistent water retention. In this area, even during the dry season, the peat remains water logged with pools found throughout the study site. The USNP can be accessed by boat through Sg. Sebuyau and by land from Kg. Kepyang in Simunjan District.

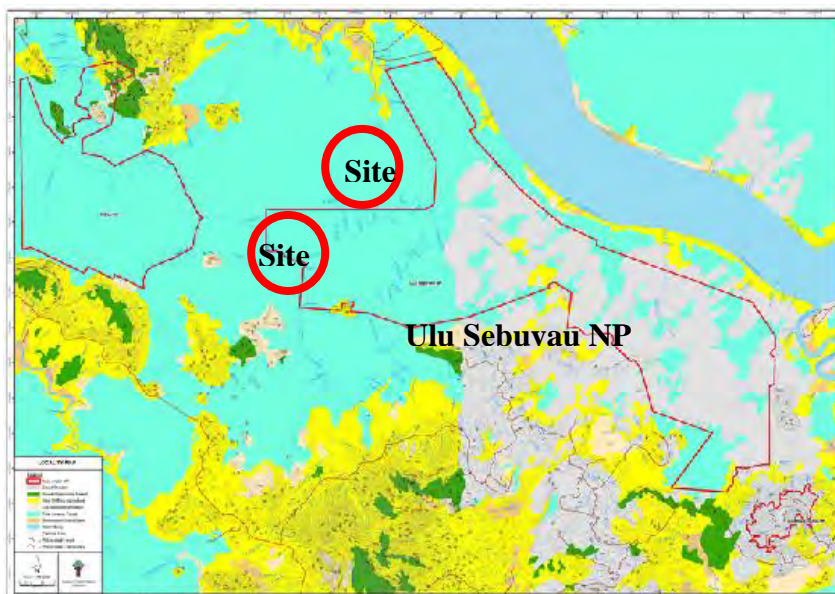


Figure 1: Map of Ulu Sebuyau NP and location of study site (red circle)

## METHODOLOGY

Field surveys were conducted at two (2) study sites as shown in Figure 1. The first survey was conducted from August to October, 2014 at Site I. The second survey was carried out from September to October 2015 at Site II. The data collections were conducted based the standard method as stated below:

### *Line Transect*

For primate and large mammals, survey was conducted using line transect method. Altogether, five (5) transects were established with three transects at Site I and another two (2) transects at Site II. Each transects were 4 km in length running parallel to the other transects at 1 km apart. At Site I, transect was in the east-westerly direction, meanwhile at Site II, transect was in north-south direction. The surveys were done following the trail and the walking speed was about 1 km per hour. Line transect survey was carried from early morning to late afternoon. In this study, survey by boat was also conducted along Sungai Sebuyau and surveys were conducted in the evening around 1700 hours to 1900 hours when weather permitted. The observer will record all animals or nests observed on both side of transect. Animal detections were based on direct sighting and call heard during the survey. Parameters including species, number of individuals and way of detection of animal observed will be recorded. For the orangutan nest survey, parameters such as nest age, nest height and nest coordinates were recorded. In this the study, aerial survey using a helicopter was also carried out to determine the present and distribution of orangutan nest throughout the study areas.

### *Live Trapping*

The survey method used for small mammals' data collection was the 'capture-marked-and-release' method. Live traps measuring 20cm x 20cm x 56cm long were used in this study. Live traps were placed on the ground and also above ground (stumps, dead logs or branches). The traps were placed on both sides along the transect line at 20m intervals for 1km. There were 50 station comprised of 2 traps per station. Ripe bananas were used as bait in this study. The traps were checked at 0800 hours every morning during the study period. Each individual captured were anaesthetized with chloroform and parameters such as location, trap number, height of capture, weight, head and body length, tail length [from anus to end of tail], hind foot length, ear length, sex, reproductive condition and species were recorded. Identification of species was based on *A Field Guide to the Mammals of Borneo* by Payne and Francis (1985).

### *Mist Netting*

The birds study was carried out by way of mist-netting and line transect survey. These methods were used as a tool to monitor bird species composition and distribution. Mist netting involves the operation of an array of mist nets in an area over a period of time. The nets were left open from 0600 hours until 1700 hours. Mist-nets were checked at two-hourly intervals and all captured birds were collected. Bird survey using line transect method requires an observer to walk along a fixed transect for several kilometers. For all birds caught, morphometric details such as age (adult or juvenile), breeding condition (brood patch, etc.), moult, parasite load and general physical

condition (weight, fat deposits) were assessed by the study team. Leg bands were fixed on the birds before release. All birds caught or observed during the study were identified up to species level based on field guides book: *The Birds of Borneo* by Smythies (1981), *A Field Guide to the Birds of South-East Asia* by Robson (2002) and *A Pocket Guide to the Birds of Borneo* by Francis (2005) were used for the identification of the birds.

#### *Stream Line Transect*

Standard method for frog inventory (Heyer *et al.*, 1994) using stream line transect method was applied for field sampling within the selected stream. Sampling of adult amphibians involved visual and acoustic searching using headlights and catching the animals by hand along transect. A minimum length of 500m transects was established along the selected stream during the day. Samplings were carried for at least two hours between 6.00 pm to 10.00 pm. Environmental data such as stream width, nature of substrate, percentage of canopy cover, distance from transect or streams where individual was caught were recorded for species reference. All amphibians caught were weighed (+/- 0.1g), measured (snouth-urostyle length +/- 0.1mm) and identified to species level. Each amphibian identified was photographed (dorso-lateral view, ventral view and head/eyes close-up) for documentation of body colours, eye colour, and other features. All captured frogs were released at the same habitat on the next day.

#### *Camera Trapping*

Camera trapping method was also been applied to large mammals study. Altogether, six camera traps were deployed in October 2015. The distance between each camera was at least 1 km radius. The trapping was carried from October until December 2015.

## RESULTS AND DISCUSSION

#### *Orangutan and Other Primates*

Five primate species were recorded during the survey and these were Orangutan (*Pongo p. pygmaeus*), Proboscis monkey (*Nasalis larvatus*) Cross-marked leaf monkey (formerly known as Banded leaf monkey) (*Presbytis c. chrysomelas*), Pig-tailed macaque (*Macacanemestrina*) and Long-tailed macaque (*M. fascicularis*) (Table 1). During this survey, the Cross-marked leaf monkey was the only primate not encountered during the 2014 study in Site I. Amongst the primate species, the Long-tailed macaque is the most common primate in the area. This was anticipated because the study area is a secondary forest and the macaque was known to survive well in disturbed habitat. Furthermore, Long-tailed macaque is a common primate species found in peat swamp forest and also in the coastal habitat.

Table 1: List of primate species found in Site I and Site II of MPOC project in UluSebuyau NP

No.	Common name	Scientific name	Site II	Site I
1	Orangutan	<i>Pongop. pygmaeus</i>	✓	✓
2	Proboscis monkey	<i>Nasalis larvatus</i>	✓	✓
3	Cross-marked leaf monkey	<i>Presbytis c. chrysomelas</i>	✓	*
4	Pig-tailed macaque	<i>Macacanemestrina</i>	✓	✓
5	Long-tailed macaque	<i>Macacafascicularis</i>	✓	✓

\*no observation

Aerial and line transect surveys conducted in 2014 and 2015 recorded a total of 159 orangutan nests. Of all these nests, 75 nests were observed within the Ulu Sebuyau NP, 27 nests within Sedilu NP and 57 nests were found outside the national parks (Figure 2). In this study, no population estimate was done due to lack of data obtained during the line transect survey.

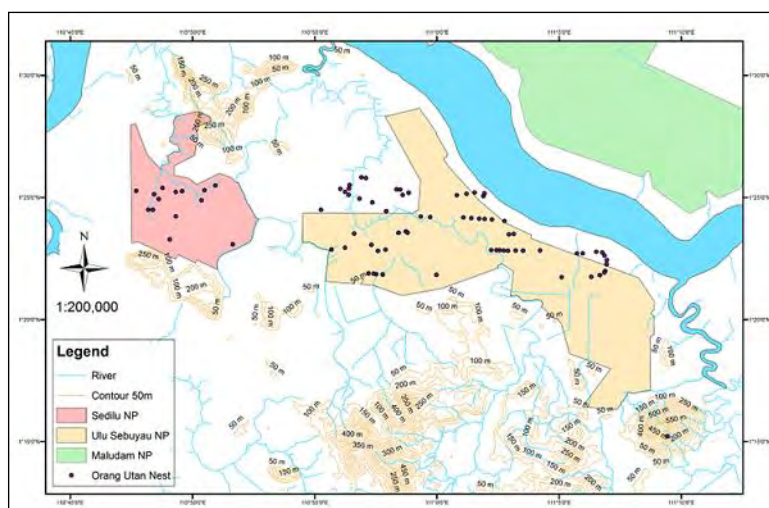


Figure 2: Orangutan nest (black dots) recorded during the aerial and line transect surveys in 2014 and 2015

### Avifauna

A total of 71 species of birds representing 25 families were recorded from the study sites. Site II in Ulu Sg. Sebuyau area site recorded 54 species as compare to only 40 bird species in Site I (Sg. Kepayang). Family Timaliidae recorded the most abundance birds with 12 species, followed by family *Nectariniidae* and *Pycnonotidae*, with both families recorded 7 species respectively. From the study, it was discovered that in Site II, one bird species *Setornis criniger* Hook-billed bulbul is listed as vulnerable IUCN Red List 2015 status. This study also recorded several species of particular interest and this including two totally protected species (Black Hornbill *Anthraceros malayanus* and Bushy-crested Hornbill *Annorhinus galeritus*) listed in the Wild Life Protection Ordinance 1998.

### Amphibians

Altogether a total of 280 individuals frog comprised of six families, eleven genera and sixteen species were recorded from this study. The most common amphibian was the Rhacophoridae family with five species and the least anurans belongs to the families of Megophryidae and Microhylidae with only one species respectively. The Rhacophoridae family was also the dominant anurans in the area with 162 individuals sampled. Meanwhile the Bufonidae was the less common anurans with only 8 individuals which only recorded at Site II. This study also recorded one endemic species the *Limnonectes paramacrodon* or Masked Frog which is also listed as near threatened (NT) under the IUCN Red List 2015. The study also managed to record a rare amphibian species, the frilled tree frog (*Kurixalus appendiculatus*) in the study at Site II. This study also had recorded two potential new anurans species. These undescribed species *Hylaranasp* and *Microhylasp* were recorded at Site I in Sungai Kepayang area of Ulu Sebuyau NP. For the identification purpose 4 life specimens (two specimens for each species) were sent to IBEC/UNIMAS for further species identification.

### Mammals

Trapping for small mammals using live trap was conducted only at Site I. A total of 500 traps/night (100 traps x 5 (total trapping days)) managed to record few small mammal species as stated in Table 2. Mueller's Rat (*Sundamymuelleri*) was the most species captured with a total of 12 individuals. For camera trapping activity, species recorded including Sambar deer, Mouse deer and Wild boar. The two deer were elusive species and not easy to detect using line transect survey method. In this study, the small mammals such as rats and squirrels were not detected using camera trapping techniques. There is no specific explanation to this but experience from other similar studies showed that rodents are not easy to be detected using camera trapping as compare to live trapping technique.

Table 2: List of small mammals captured using live traps at Site I, Sungai Kepayang area in Ulu Sebuyau NP

No.	Family	Common Name	Scientific Name	No of ind.
1.	Tupaiaidae (Treeshrew)	Lesser Treeshrew	<i>Tupaia minor</i>	1
2.		Slender Treeshrew	<i>Tupaia gracilis</i>	1
3.		Painted Treeshrew	<i>Tupaia picta</i>	1
4.	Muridae	Mueller's Rat	<i>Sundamymuelleri</i>	12
5.		Malaysian Field Rat	<i>Rattus tiomanicus saba</i>	1
6.		Dark Tailed tree Rat	<i>Niviventer cremoriventer</i>	1
7.		Ricefield Rat	<i>Rattus argentiventer</i>	1

### *Crocodile*

River survey to determine the present of false gharial (*Tomistomaschlegelii*) was conducted for Sg. Kepayang only at Site I. During this survey, only one hatchling of the species was spotted along Sg. Kepayang. Other evidences found during the survey were including foot print and body track at the puddles that were observed along the survey areas, which the locals believed to be the basking sites of *Tomistoma* species. In Site II, although there was no survey done for crocodile species but few sightings were made on this species especially in the upper part of Sg. Sebuyau during the study in 2015.

### CONCLUSION

The surveys confirmed the presence of the endangered orangutan sub-species *Pongopygmaeuspygmaeus* at Site I and Site II which is located outside of USNP. This also indicated that the Site II area is part of the orangutan habitats that occurred in the Ulu Sebuyau area. The surveys also recorded other endangered species such as the Proboscis Monkey and the False Gharial. The False Gharials were found mainly up river of Sungai Sebuyau and Sungai Kepayang in the USNP.

This study also recorded birds of particular interest. These were two species of hornbills, Black Hornbill (*Anthracoerosmalayanus*) and Bushy-crested Hornbill (*Annorhinusgaleritus*). Amphibian study managed to record one endemic species, the *Limnonectesparamacrodon* or Masked Frog and one rare amphibian species, the Frilled Tree Frog (*Kurixalusappendiculatus*). The study also recorded two undescribed species, the *Hylaranasp* and *Microhylasp* which at the moment was only found in USNP and Maludam NP. The short span of time and the limited funding have resulted in gaps in data and information pertaining to some aspects and components of the project. These would therefore warrant further studies and injection of more funding to plug the gaps in data and information of the whole complex.

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