

## HABITAT CHARACTERISTICS AND ROAMING AREA OF PROBOSCIS MONKEY (*Nasalis Larvatus* Wurmb. 1787) IN DANAU SENTARUM

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### ABSTRACT

The proboscis monkey (*Nasalis larvatus* Wurmb. 1787) is an endemic and endangered primate, also very depends on its habitat characteristic. This study aims to identify habitat characteristics and roaming area of proboscis monkey. Located at Bukit Semujan within Betung Kerihun Danau Sentarum National Park, during January 2022. The methods use in this research are using scan sampling and ad libitum sampling for daily activities, roaming area of proboscis monkeys are acquired using GPS, and the vegetation type in the habitat where proboscis monkeys are active are inventoried using the checkered line method with the plot size 20 x 20 m. Research was resulted that the proboscis monkey at Bukit Semujan only found in swamp forests with daily temperatures ranging from 25,8°C–26,9°C and daily humidity between 97%-99%. Vegetation like *Shorea blangeran* is dominant and important species that occurred in swamp forest surrounding at Bukit Semujan. The species diversity in the swamp forest classified as moderate (2.76), the species evenness and the species richness index are classified as high (0.90 and 4.02). The diets of proboscis monkeys found in this study are six flora species such as kawi (*Shorea blangeran*), engkurun (*Xanthophyllum affine*), ensubal (*Elaeocarpus mastersii*), kenarin (*Diospyros coriacea*), putat (*Barringtonia acutangular*), tembesu (*Fragrea fragrans*). One group of Proboscis monkey roaming area calculated to be 13.22 ha with daily range have an average of 579.2 meters. Sleeping trees and the edge of the swamp forest have distance 50 m with the night position shift calculated to be around 216.92 meters.

Key words: habitat characteristic, *Nasalis larvatus*, proboscis monkey, roaming area

### INTRODUCTION

Proboscis monkeys (*Nasalis larvatus* Wurmb. 1787) are one of the primates and endemic wildlife of Borneo with a conservation status of endangered. The existence of proboscis monkeys is protected by Indonesia through UU No. 5 of 1990 and strengthened by Government Regulation No. 7 of 1999 concerning Preservation of Wild Plants and Animals which are prohibited for general use, either for trading or for use without a permit (Setiono *et al.* 2014; Iskandar *et al.* 2017). Proboscis monkeys are internationally listed as Endangered in the IUCN Red List Data Book (Boonratana *et al.* 2021). Toulec *et al.* (2020) found that the reason for proboscis monkey's population and habitat kept decreasing are aquaculture and continuous planting of palm oil between 2000-2007. Protected areas in Borneo are increasingly isolated and degraded because of fire, hunting, illegal wildlife trading, logging and forest conversion which caused land cover kept decreasing and affected the population of proboscis monkeys (Stark *et al.* 2012)

The proboscis monkey's habitat is generally in the wetland area, with the main habitat being swamp forest, riparian forest and mangroves (Widiastuti *et al.* 2017), while the proboscis monkey habitat in the Danau Sentarum National Park is a freshwater lake and

swamp forest. Danau Sentarum National Park is one of the conservation areas in Kapuas Hulu Regency, West Kalimantan Province, which is located in the upper reaches of the Kapuas River. Danau Sentarum National Park has an area of ± 132,000 ha, consisting of a collection of seasonal lakes (23%) and several swamp forest formations (± 49%) that are unique and rich in biodiversity (Roslinda *et al.* 2012). The relatively narrow distribution area and the increasing level of disturbance to proboscis monkeys due to forest land conversion, illegal logging, and hunting of wild animals have resulted in the preservation of the proboscis monkey's habitat and population being threatened to extinction (Ginting 2009). Proboscis monkeys are also sensitive to changes in habitat (Suwanto *et al.* 2016) so that changes in the composition of vegetation can affect daily activities. Research on this endemic animal is still relatively a few, especially in the Danau Sentarum National Park area, so further research is needed to support the survival of proboscis monkeys, especially in their natural habitat. Therefore, this study aims to identify and analyze the habitat characteristics and daily space use patterns of proboscis monkeys in swamp forest near Bukit Semujan.

### RESEARCH METHOD

This study was carried out on Januari 2022 in swamp forest near Bukit Semujan in Danau Sentarum National Park, West Kalimantan (Figure 1). Administratively, the management of Danau Sentarum National Park are included in Betung Kerihun and Danau Sentarum National Park. Daily activities of proboscis monkeys are monitored from 05.00 until 17.30 using scan sampling and ad libitum sampling (Altmann 1974). The tools used for this research are GPS, laptop with ArcGIS software, SexI-FS software, DSLR camera, range finder, and measuring tape. The object under study is proboscis monkey (*Nasalis larvatus*) and plants in the habitat use by proboscis monkey.

Collecting data on the space use of proboscis monkeys horizontally is done by following the

movements of the proboscis monkey and recording movement of proboscis monkeys. The group of proboscis monkeys observed was one group and the coordinates of proboscis monkey was recorded using the Global Positioning System (GPS) based on the movement of the dominant male proboscis monkey in the group assuming that the male proboscis monkey is the center of the group (Atmoko 2012). Vegetation type where proboscis monkeys are active are inventoried using the checkered line method in freshwater swamp forest in which proboscis monkey regularly use using 5 plot (Figure 2) with the size of 20 x 20 m to identify tree habitus sub-plot 10 x 10 m, 5 x 5 m, 2 x 2 m for the habitus of poles, saplings, and seedlings for each vegetation proboscis monkeys are active.

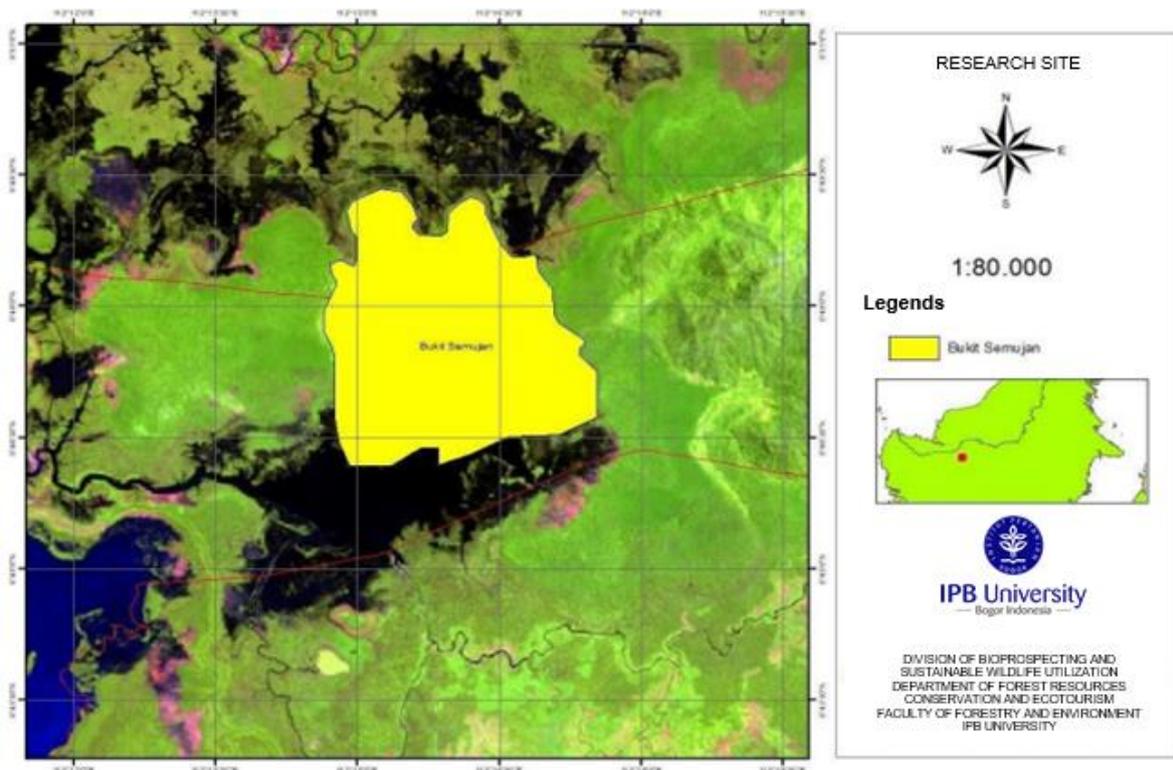


Figure 1. Research site map

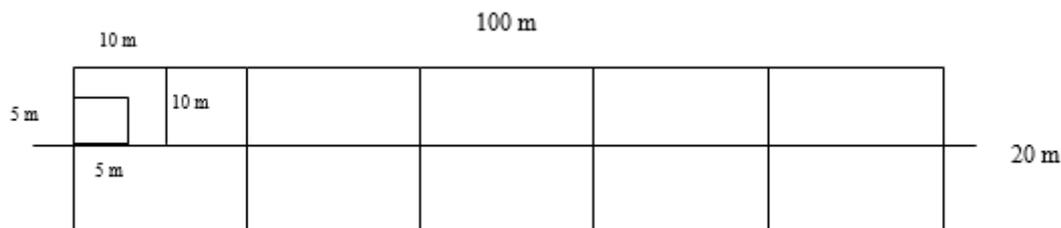


Figure 2. Single plot of vegetation analysis

The daily use of the proboscis monkey's space was analyzed descriptive qualitative and quantitative. Qualitative descriptive analysis was carried out using coordinates of proboscis monkey daily roaming area using GPS that has been overlaid with satellite images using data from observations of proboscis monkey activity. Roaming areas of proboscis monkeys are calculated using the Minimum Convex Polygon method with ArcGIS software. The Minimum Convex Polygon (MCP) is a method that can be used to analyze the smallest polygon that includes all the points visited by groups of animals, namely proboscis monkeys.

Habitat characteristics were analyzed to determine the structure and composition of vegetation by calculating the important value index, namely the sum of relative frequency, relative density, and relative dominance. Plants with seedling habitus and saplings important value index is calculated by adding up the relative density value with the relative frequency. The calculation is done by the formula:

$$\text{Density} = \frac{\text{number of individual of a species}}{\text{total area of sample plots}}$$

$$\text{Relative density} = \frac{\text{density of a species}}{\text{total density}} \times 100\%$$

$$\text{Dominance} = \frac{\text{area of a species}}{\text{total area of sample plots}}$$

$$\text{Relative dominance} = \frac{\text{dominance of a species}}{\text{total dominance}} \times 100\%$$

$$\text{Frequency} = \frac{\text{number of sample plots found species}}{\text{total number of sample plots}}$$

$$\text{Relative frequency} = \frac{\text{frequency of a species}}{\text{total frequency}} \times 100\%$$

**Important Value Index (INP) = Relative Density + Relative Dominance + Relative Frequency**

The richness of plant species in swamp forest near Bukit Semujan can be identify by using the Margalef index formula:

$$Dmg = \frac{S-1}{\ln(N)}$$

Description: S= number of species

N= total of individual

Diversity and evenness of plant species in the proboscis monkey habitat around Bukit Semujan can be determined using Shannon-Wiener index and the Shannon Evenness index:

$$H' = -\sum_{i=1}^S (p_i) \ln(p_i); p_i = \frac{n_i}{N}; E = \frac{H'}{H'_{max}} = \frac{H'}{\ln S}$$

Description:

H'= Shannon-Wiener species diversity index

E= Shannon Evenness Index of Evenness

n<sub>i</sub>= Number of individuals or significant values of species i

S= Total number of species found

N= Total individual or significant value of a species

Criteria for Shannon-Wiener (H') diversity index:

H' ≤ 1: low diversity,

1 < H' < 3: Medium diversity

H' ≥ 3: High diversity

Criteria for Shannon Evenness (E) evenness index:

0 < E < 0.5: population evenness is small

0.5 < E < 0.75: population evenness is moderate

0.75 < E < 1: high population evenness

Margalef Species Richness (D<sub>mg</sub>) criteria:

D<sub>mg</sub> < 2.5: low level of species richness

2.5 > D<sub>mg</sub> > 4: moderate level of richness

D<sub>mg</sub> > 4: High level of species richness

Analysis of vegetation structure diagrams and sleeping trees obtained by knowing the total height, branch free height, and stem diameter to be projected in the diagram with SexI-FS software. The data is projected in the form of two profile pictures dimensions and analyzed descriptively. Analysis of species diversity, evenness of species, and species richness is done by making comparisons of plot (m) starting from plots in the size of 10 x 10, 20 x 20, 40 x 20, 60 x 20, 80 x 20, and 100 x 20.

## RESULT AND DISCUSSION

### 1. Habitat characteristics

#### a. Abiotic components

The abiotic component itself is part of an ecosystem consisting of non-living things. Like as with biotic components, the role of abiotic components in ensuring the survival of organisms, the balance of the ecosystem and is one of the determining factors for the existence of proboscis monkey habitat in Indonesia. Atmoko *et al.* (2017) stated that the movement of proboscis monkeys can also be affected by temperature and humidity. Proboscis monkeys tend to be more active in the morning and evening days which shows that proboscis monkeys are more active at temperatures in the range of 25.8-26.8°C. Proboscis monkeys prefer to sleep in places with cool temperatures for sleeping (Matsuda *et al.* 2011). Winardi (2017) states that resting is one of proboscis monkey's strategies as a reaction to increasingly hot temperatures; which is the reason proboscis monkey often rest, especially at noon. The highest humidity is in the morning and evening with values of 99% and 97% shows that during the day, where high air humidity is one of the proboscis

monkeys' life supports, especially for the process of digestion of food at night (Widiastuti *et al.* 2017).

**b. Biotic components**

Biotic components are part of an ecosystem consisting of living things. Study carried out in the habitat where proboscis monkeys were found, namely in the freshwater swamp forest near Bukit Semujan. This location is rarely passed by people so that there has been no human intervention that has resulted in area cover change. In the study, there were 21 species of plants with growth of stakes, poles, and trees. Number of vegetation at the growth level of trees are 12 species and 3 species ferns, 1 species of rattan, and 1 species of epiphyte. At the growth level of pole there are 5 species and at the sapling growth level, 13 plant species were found. The condition of the swamp forest near Bukit Semujan is flooded in January which causes the vegetation at seedlings growth cannot be attain. Important value index (INP) of vegetation in swamp forest near Bukit Semujan are presented in Table 1.

Trees that have a high INP indicate that the species can live, thrive, and adapt to diverse habitat conditions (Widiastuti *et al.* 2017). Table 2 shows that at the tree growth rate, kawi has the highest INP with an INP value of 80.21%. This study shows that kawi is the type of plant that is most often used by proboscis monkeys in Indonesia activity and as a source of food. According to Anda *et al.* (2018), kawi is a plant that has the highest INP in the Bukit Semujan area, and this species is one of the most popular tree species that supports proboscis monkeys feeding activities and food sources. The growth rate of the pole that has the highest INP is engkurung (*Xanthophyllum affine*) with a value of 88.28%. At the sapling level, kayu taun (*Syzgium chlorantum*) has the highest INP with a value of 29.86%. Anda *et al.* (2018) shows that near the area

Bukit Semujan, at the Semangit Resort, the numbers of vegetation were as many as 20 types of plants, Atmoko and Sidiyasa (2008) found 46 plant species in the Mahakam Delta mangrove forest, and Hardiyanti (2018) shows 7 species of plants were found in the Salimpus River, Kutai National Park. Plants that have INP have a high level of importance in the survival of proboscis monkeys so that they can be used as one of the factors that need to be considered in proboscis monkey conservation efforts (Atmoko and Sidayasa 2008). The diversity of plant species in a habitat determines the potential of the type of plants use for food and the feeding behavior so that it can determine the size of the population of these species in nature (Hardiyanti 2018). These also affect other activities, especially the movement of proboscis monkeys. Proboscis monkey will travel more distance in habitat that doesn't provide vegetation which is often used for activities.

There were 21 types of species from the growth level of saplings, poles, and trees with a total of individuals by 144 individuals. The value of H' in swamp forest habitat is 2.76 which indicates that this habitat has a moderate diversity value. According to the calculation, the value of the species evenness index is 0.90 which indicates that the even distribution of the population in this habitat is high. The value of species richness is 4.02 which indicates that this habitat has a high species richness. According to Hardiyanti (2018), the species richness value index is not the main determinant of the presence of proboscis monkeys in Indonesia a habitat, but the high value of the species richness index can be an opportunity the choice of habitat for proboscis monkeys because of the opportunity for more food sources. The value of the three indices is shown in Table 2.

Table 1 Important Value Index of vegetation in swamp forest near Bukit Semujan

Growth level	Local name	Scientific name	Famili	Important Value Index (%)
Tree	Kawi	<i>Shorea blangeran</i>	Dipterocarpacea	80.21%
	Kenarin	<i>Diospyros celebica</i>	Ebenaceae	37.40%
	Engkurung	<i>Xanthophyllum affine</i>	Polygalaceae	26.91%
Pole	Engkurung	<i>Xanthophyllum affine</i>	Polygalaceae	88.28%
	Engkupa	<i>Ptychopyxis bacciformis</i>	Euphorbiaceae	73.72%
	Kamsia	<i>Mesua xesapetalum</i>	Calophyllaceae	47.04%
Sapling	Kayu taun	<i>Syzgium chlorantum</i>	Myrtaceae	29.86%
	Kebesi	<i>Memecylon edule</i>	Melastomataceae	23.14%
	Sikup	<i>Garcinia celebica</i>	Clusiaceae	20.50%

Table 2 Value of Shannon-Wiener (H'), Shannon Evenness (E), and Margalef Species Richness Index (Dmg)

Index	Plot 10 x 10 (m)	20 x 20 (m)	40 x 20 (m)	60 x 20 (m)	80 x 20 (m)	100 x 20 (m)
H'	1.1186	1.75337	2.36742	2.64594	2.78283	2.76382
E	0.6243	0.79799	0.89707	0.91543	0.91404	0.90780
Dmg	1.6176	2.26863	3.11423	3.74178	4.18487	4.02429

**c. Diversity of food trees**

According to Anda *et al.* (2018) there are 8 types of proboscis monkey feeding trees in Semangit Resort, Danau Sentarum National Park which is kawi (*Shorea blangeran*), putat (*Barringtonia acutangula*), kebesi (*Memecylon edule*), sikup (*Garcinia celebica*), temirit (*Timonius flavescens*), kayu taun (*Carallia* sp.), mentangis (*Ixora mentangis*), and renghas (*Gluta renghas*). Zainudin and Rezeki (2016) stated that the part of the leaf that the proboscis monkeys liked mostly are young leaves and shoots, because the young leaves or shoots contain more protein than the other parts. Fruit and flower production, which is not always available (because it's seasonal), is one of the factor proboscis monkeys eat leaves more often (Atmoko and Sadiyah 2008). According to Boonratana (2003) proboscis monkey usually consumed unripe fruits rather than ripe fruits. Habitats that are disturbed and damaged will cause disturbances to the movement and activity of the proboscis monkeys, so the energy needed will be more than usual. Decrease of food quantities and qualities, along with disturbance in proboscis monkey's habitat, will result in the decline of proboscis monkey's populations. Food of proboscis monkeys in swamp forest near Bukit Semujan are presented in Table 3.

Hardiyanti (2018) found as many as 17 proboscis monkeys feeding trees on the Salimpus River, Kutai National Park. Ginting (2009) found as many as 15 proboscis monkeys feeding trees in the Suka Maju River, Soendjoto *et al.* (2006) found as many as 18 feeding trees

of proboscis monkeys in rubber forest, whereas Nata *et al.* (2019) found as many as 4 proboscis monkeys feeding trees in swamp forest. This is in accordance with Bismark's (2015) statement which states that proboscis monkeys are leaf eaters (foliovore) with proboscis monkeys feeding trees availability in swamp forest are 51.94%, 81.14% in mangrove forest and 80.9% in rubber forest habitat. Swamp forest has the lowest percentage of feeding trees. The low availability of food for proboscis monkeys may affect the population size of proboscis monkeys. Proboscis monkey's food is presented in Figure 3.

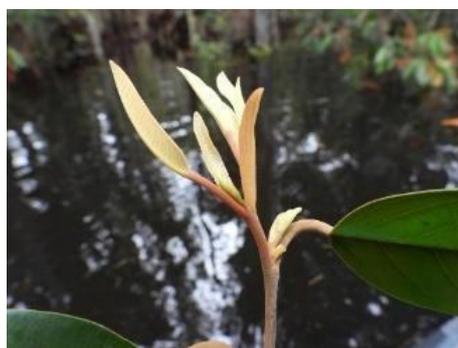
**2. Roaming area of proboscis monkey**

**a. Age classes of proboscis monkey**

In the study of two groups of proboscis monkeys it was observed that the first group had a large number of individuals consisting of 18 individuals and is a multi-male group as well as the second group with the number of group members is 9 individuals. The research focused on the first group by size group of 18 individuals because this group is a group that can be observed during research as well as the complete structure of the observed age classes (infants, juvenile, young adults, and adults). Bismark (2015) states that the group proboscis monkeys vary, namely between 3-25 individuals per group). Proboscis monkeys in swamp forest near Bukit Semujan are presented in Figure 4.

Table 3 Feeding trees of proboscis monkey in swamp forest near Bukit Semujan

Local name	Scientific name	Famili	Eaten parts of leaves
Kawi	<i>Shorea blangeran</i>	Dipterocarpaceae	Leaf shoots
Engkurung	<i>Xanthophyllum affine</i>	Polygalaceae	Leaf shoots
Ensubal	<i>Elaeocarpus mastersii</i>	Elaeocarpaceae	Leaf shoots
Kenarin	<i>Diospyros coriaceae</i>	Ebenaceae	Leaf shoot and fruits
Putat	<i>Barringtonia acutangula</i>	Lecythidaceae	Young leaves and fruits
Tembesu	<i>Fragrea fragrans</i>	Rubiaceae	Leaf shoot



(a)



(b)

Figure 3. Proboscis monkey's food (a) kawi's young leaf (b) kenarin's fruit

Proboscis monkeys can generally live beyond 25 years in captivity, but this is unknown against proboscis monkeys in nature. The age of sexual maturity for female proboscis monkeys is 5 years or later when complete growth of permanent teeth (Atmoko *et al.* 2017). The age class range according to Rabiati *et al.* (2015) used a biological, morphological, and behavioral trait approach that divided the range of years between classes of proboscis monkeys in the form of infant (0-1.5 years during lactation) and offspring (1.5-2 years), juvenile (2-5 years), and adults (5-20 years). Female sexual maturity is generally reached at the age of 5 years, while for males generally at the age of 7 years. The composition of the age class structure in this group can be seen in Table 4.

Matsuda (2008) found that the population of proboscis monkeys around the Sabah River, Malaysia,

has 2-15 groups of one-male groups with the number of individuals in groups of 2-29 individuals. Candra (2021) found that around the river in Danau Sentarum National Park, there are 53 number of individuals of proboscis monkeys with a total of 7 groups. Setiono *et al.* (2014) stated that the number of proboscis monkeys in the Leboyan River and Batang Ketam in Danau Sentarum National Park is approximately 61 individuals with a total group of approximately 8 groups. The number of groups and individuals of proboscis monkeys is affected by the availability of food, habitat conditions and humans' activities, fragmentation and isolation, and proboscis monkey movements (Candra 2021; Setiono *et al.* 2014). The coordinates of proboscis monkey are presented in Figure 5.



Figure 4. Proboscis monkeys in Bukit Semujan (a) Adult Female (b) Offspring (c) Adult Male (d) Juvenile

Table 4 Structure of proboscis monkey's class

Classes	Number of Individual
Adult Male (7-25 years)	3
Adult Female (5-25 years)	4
Juvenile (2-5 years)	5
Offspring (1.5-2 years)	4
Infant (0-1.5 years)	2

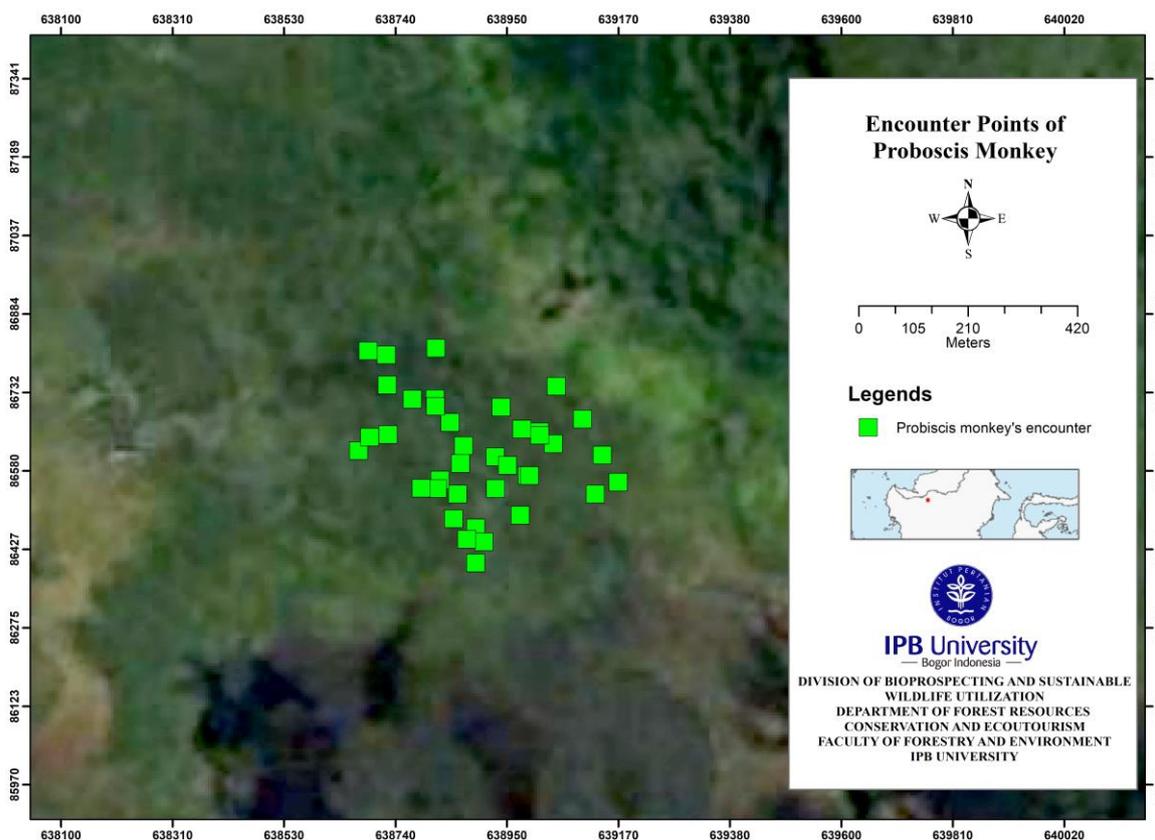


Figure 5. Coordinates of proboscis monkey in swamp forest near Bukit Semujan

**b. Roaming area**

The proboscis monkey's daily movement horizontally is its home range which includes movement to the location where to eat, the location to rest, and back to the location where to eat in the afternoon and search sleeping tree (Atmoko *et al.* 2017). The proboscis monkey's home range is 13.22 ha with the daily roaming ranged from 535-782 m with an average measured daily movement of 579.2 m. Previous research stated that the area of daily movement is different for each location, such as daily movement in Lalau River is 0.0757 ha (Ginting 2009), 0.91 ha in proboscis monkeys in Sukau River (Boonratana 2000), 0.079 ha in the proboscis monkey study in the Tanggul River (Matsuda 2008) and 0.06 ha in Rawa Gelam forest (Iskandar *et al.* 2016).

Roaming area of proboscis monkey at Samunsam river ranged from 0.07 ha-1.35 ha (Bennet and Sebastian 1988). Bennett and Sebastian (1988) stated that the daily movement of proboscis monkeys was influenced by the habit of proboscis monkeys returning to the riverbank as their sleeping location. Matsuda *et al.* (2011) stated that the availability of food affects the daily movement of proboscis monkeys, where the influencing factor of this movement is fruits.

Boonratana (2000) explains that the difference in density The proboscis monkey population, activity and home range are affected by differences in the type of habitat where the proboscis monkey will live move farther in habitats with lower food quality. The roaming area of proboscis monkey in swamp forest near Bukit Semujan is presented in Figure 6.

It is shown that the proboscis monkey's habitat contained many vegetation with sufficient canopy dense to facilitate the movement of proboscis monkeys. Research also cannot be carried out optimally due to human activity factors (observers) detected by proboscis monkeys while observing. This statement is also in accordance with research by Ginting (2009) which states that the daily range proboscis monkeys are affected by high human activity around the roaming areas of proboscis monkeys where movement proboscis monkeys when the primates feel disturbed will be difficult to follow. Observers also have difficulties in following the proboscis monkeys at the research location because of the tight arrangement of the stands so they cannot be passed by the boat. The canopy of the research location is presented in Figure 7.

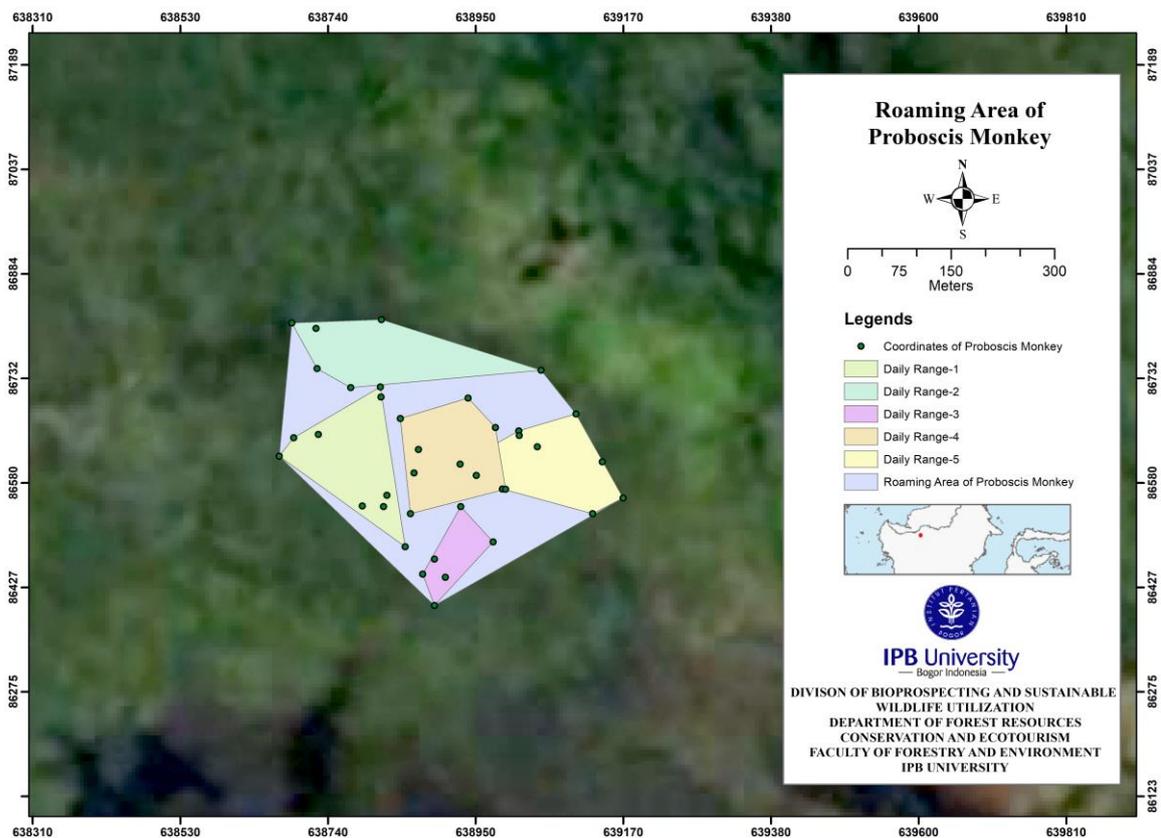


Figure 6. Roaming area of proboscis monkey

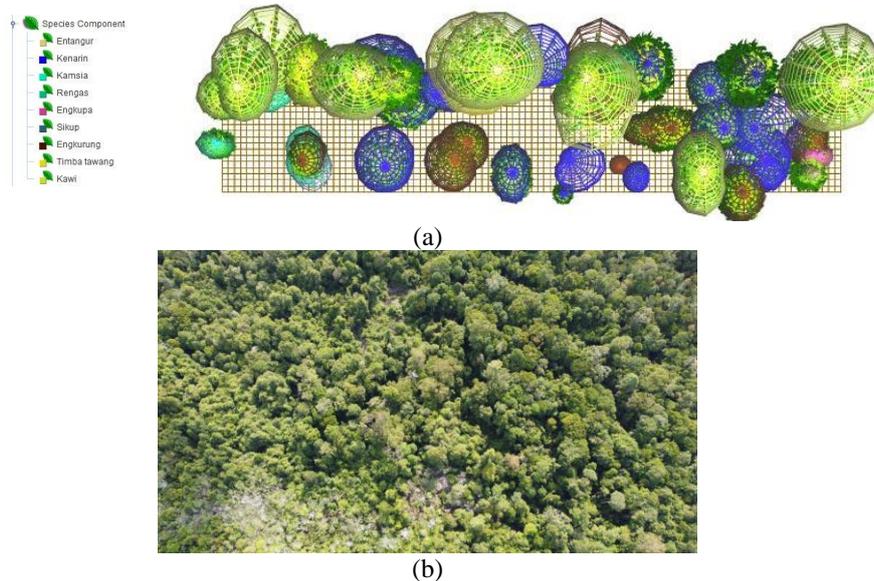


Figure 7. Canopy projection (a) Canopy with diameter >10 cm (b) Canopy image on study location

**c. Sleeping Trees**

The location of the proboscis monkey sleeping tree is located on the edge of the swamp forest ecosystem, with an average distance of 50 m between

dormant trees and the edge of the ecosystem. The distance between the sleeping trees ranges between 86.45-450.24 m. The sleeping tree that is commonly used by the proboscis monkeys in this study is a tree tall with a canopy that is not too dense, the location of

the trees at the edge of the swamp forest, and the location selected has a strategic location to avoid interference from other types or groups. Disturbance was found by other proboscis monkey groups so that the proboscis monkey group was observed tend to change their sleeping location during observation. The location of proboscis monkey sleeping trees are presented in Figure 8.

Lisnaini *et al.* (2020) in his research stated that the selection of the location for proboscis monkeys was motivated by three main things, namely the tree guarantees security from its enemies, the tree provides the proboscis monkey's food needs, especially when waking up and resting before going to bed, and the tree is located on the edge of a river. The choice of *kawi* tree as a bed is also in accordance with Anda *et al.* (2018), proboscis monkeys like trees with large crowns and branches like *kawi* which make this tree a sleeping proboscis tree. The INP calculation results also show that *kawi* is one of the plants that has a high level of importance in the proboscis monkey habitat in the Bukit Semujan swamp forest. Widiastuti *et al.* (2017) stated that proboscis monkeys tend to prefer trees with

upright trunks and not too dense canopy cover, whose tree positions are on the banks of rivers (Widiastuti *et al.* 2017). Site selection and alternating tree bedding and other activities, either at the ends of branches or at the tops of tree crowns, are proboscis monkeys' ways of reducing the likelihood of predatory attacks at night. Selection of sleeping sites and associations of proboscis monkeys on the riverbank are proboscis monkey social behavior in anti-predator strategy. Tall trees will be used as a place for proboscis monkeys to rest to avoid predators, which generally proboscis monkeys will change their bed location every 2-4 nights in a location (Hardiyanti 2018). According to Feilen and Marshall (2014) proboscis monkeys usually choose riverbanks as the location of their sleeping trees with criteria in the form of trees with medium and high heights, trees that have many branches and a canopy that is not too dense (moderate leaf coverage). Trees that are tall and medium in size are the preferences of proboscis monkey's sleeping trees. The selection of sleeping trees with these characteristics is a proboscis monkey's strategy to detect predators and competitors.



Figure 8. Location of proboscis monkey sleeping trees

## CONCLUSION

The proboscis monkey's habitat on Semujan Hill is a freshwater swamp forest with an average temperature between 25.8°C–26.9°C, average humidity between 97%–99%. Kawi (*Shorea blangeran*) is a vegetation with INP highest at the tree level, namely 80.21% which has an important function for proboscis monkeys as place to work and sleep. The diversity of vegetation species in the area is classified as moderate with a value of 2.76, the evenness of species is relatively high with a value of 0.90 and the richness of species is relatively high with a value of 4.02. The proboscis monkey's home range is measured as 13.22 ha with an average daily roaming 1.69 ha. The proboscis monkey sleeping tree has several criteria, such as guaranteeing safety from the enemies, provide food, especially when they wake up and at rest before going to bed, and it is located on the outskirts of a swamp forest with the characteristics are tall tree that has a canopy that is not too dense and has many branches.

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