PRESENT STATUS OF THE LARGE MAMMALS IN THE KUTAI NATIONAL PARK, AFTER A LARGE SCALE FIRE IN EAST KALIMANTAN,INDONESIA

Teruo Doi
Department of Biology, Faculty of Science,
Kyushu University 33, Fukuoka, 812 Japan.

I. INTRODUCTION

Only a brief survey by Wilson and Wilson (1975) was conducted in the Kutai tropical forest of east Kalimantan, Indonesia before a large scale fire in 1982-1983. Even in their study period, they warned the influences of selective logging on fauna in the forest. However, any scientific surveys had not conducted before the fire. Therefore, the original fauna of the mammal in the area have not be unknown. After the fire, Wirawan (1985) made intensive surveys supported by IUCN (International Union for Conservation of Nature and Natural Resources) on the vegetation in the area and also conducted a brief survey on mammals. In 1985, the Kutai National Park was established by the Government of Indonesia according to the recommendation from IUCN.

The purposes of this study are to clarify the present situation of large mammals in the Kutai National Park and to discuss the state of recovery of them after the fire by compared to the results of Wirawan (1984)

This study was supported in part by a Grant-in-Aid for overseas scientific survey from the Japan ministry of Education, Science and Culture.

II. STUDY AREA AND METHOD

The Kutai National Park is located in the Bontang area, East Kalimantan, some 50-100 km north of the capital city Samarinda. The area stretch 60 km from the coastline to the inland area, between the Sengata river and the Sungai river. It lies between the equator and 0° 35' North latitude and between 117° 00' and 117° 30' East longitude (Fig.1).

The distribution and abundance of mammals in the Kutai National Park were studied by following two methods:

1) Route census was done on foot along the former logging read of Kayu Mas. Most of animals were found by eyes and sometimes aided by binocular(x9). At the same time, the numbers of animal tracks and dungs (or dung sites) were recorded in a limit distance as 3.0 Km around at five camp sites, Teluk Kaba, Km 9, 24, 37 and 45 (Fig.1). The route survey at a site was repeated at least on successive two days. On the second day, the newly traces were easily examined and counted.

2) Ad libitum observation was carried out in each study site to increase the encounter opportunities to animals. That was made by walking quietly in the forest or by ambuscading into animals at a suitable site for watching. Additional data was collected from the encounter records to the animals by the members of the research team and by the assistants of the National Park Office, who made the encounter records during their walking on the road and moving around their study sites.

III. RESULTS AND DISCUSSION

Direct Observation

During the study period of 53 days from July 20 to Sept.10, 1986, 122 times of the encounter to mammals were recorded. The frequencies of species encountered and the locality of the encounter were shown in Fig. 2-a, b, c and d. Although the identification of a observed species was very easy on primates (except leaf monkey) and on ungulates, it was difficult to do on

carnivores and rodents. In these figures these groups were tentatively summarized in family. Orang utan, Pongo pygmaeus, that is considered to be the most important protected species in the Kutai National Park, was observed frequently around Km 9 and Km 45. And the nests of this species were also observed commonly around these sites. Gibbon, Hylobates muelleri, was observed at the same sites as orang utan. At these sites, the vocal calls of this species could be heard in every morning. Above two arboreal primates were not observed around Km 24 and Teluk Kaba (a few number of Orang utan were rehabituated at Tuluk Kaba by the project of the Kutai National Park Office were excluded from this data). They might not be prefer the secondary forest of which canopies were open. On the other hand, two species of Macaque monkeys as pig-tailed, Macaca nemetrina, and long-tailed, M. fascicularis, were observed frequently in the riverine forest but not in dense natural forest. Proboscis monkey, Nasalis larvattus, was observed only around Teluk Kaba. Their main habitat was considered to limit in the mangrove forest (mangal) along the coastline. As for the leaf monkey (genus Presbytis) was characterized that it might be rarely observed only in the unburned dense natural forest. And the identification of species had to be confirmed because of their scarce records. All six primate species found in the present study have been reported before the fire (Wilson & Wilson,1975;Rodman,1978) and after the fire (Wirawan,1985).

Banteng, Bos javanicus, that is also considered to be one of the most important species in the Kutai National Park, was not so rare in the study area. Although the records of direct encounter during the study period were only five times, their signs of presence such as foot prints, dungs, and tossing in scrubs and young trees were found in everywhere of the study area (Fig.2b) As this species always observed on 2-5 individuals at the same time, it might be considered to have a firm social relationship between individuals. This fact suggested that the sociological and ecological studies on this species in near future might contributed to study the evolutionary subjects such as origin of the social structure and adaptive radiation of Bovidae. Samber, Cervus unicolor, bearded pig, Sus barbatus and barking deer Muntiacus muntjak, were very common in the study area. They distributed widely from the forest to the open land in the area.

Especially, bearded pig was most abundant species in this study area.

As for the carnivore species, it was very difficult to identify the species by the observation because of their nocturnal activities. Only one species was identified as Malay civet, Vicerra tangalunga, which visited every night to the campsites of Km 45, 37 and 9 for foraging garbages (Fig.2c). Mustelidae mammals was observed at Km 24 only three times by the assistants of National Park. The observation records were not so clear, but it was considered to be a Otter, Lutra sp., by their oral statements. The species in Feridae was directly observed only three times, and all observations were not so long time period to identify the species. However, from the scarce observation records, they could not be identified to the species which were known in the area as a leopard cat, Feris bengalensis, and a flat headed cat, F. planiceps. Two individuals of feral dogs, Canis familiaris, were observed at a time on the road along the river near Km 9. They might be come from a village of surrounded areas.

An arboreal small mammals such as squirrels (Scsiuridae) and treeshrew (Tupaiidae) were seldom observed in the forest. Only 9 times of observations were recorded during the study period (Fig.2c). There were considered to be four species of Sciruridae by their body sizes, however, the species were not identified because of scarce informations.

Animal traces.

Numbers of traces of mammals along the route in a limited distance 3.0 km at each study site were also shown in Fig.2 a b, c and d. In these figures, a group of fecal pellets and dungs was counted as one trace and a series of foot prints that was considered to be made by one individual was also done as one trace. Columns (solid:number of trace of pellets and dungs,vacant:that of foot prints) above the level in graph show the total number of traces on the first day and those below the level show the number of new traces on the next day in each survey route. From these figures, a relative abundance of animals among study sites might be found. Furthermore, the resident of animals in study period might be known by the below column. A general tendency of the abundance and the distribution

of ungulates shown by the direct observation records was also confirmed from the number of traces in Fig.2b. New traces of Banteng were limited around the sites Km 37 and 45. This fact suggested that Bantengs might move in long distance and shift its home range in a short time period. By the trace survey the presence of mouse deer was confirmed. Up to date, two species of mouse deer, Tragulus javanicus and T. napu are known in the Kutai National Park (Wirawan 1984), however the identification of species on this small deer could not done only by the foot prints (see Appendix 2).

The abundance of the carnivore species was significantly noticed at Km 24. This site seemed to be suitable habitat for them. Generally, the density and the diversity of prey animals in the secondary forest were rich compared to those in dense natural forest. Therefore, the carnivore species could get high quality and quantity of food resources around Km 24.

Wirawan (1985) recorded the presences of 8 species of mammals along the logging road of Kayu Mas from Teluk Kaba to Km 45 (just the same area of the present study) after the fire in 1982-1983. Details of this description were as follows; From Teluk Kaba to Km 9 : Proboscis monkey (encounter), Gibbon (vocal call) , Banteng, Samber, Mouse deer (foot print), From Km 9 to Km 24 ; Orang utan, Gibbon, Loris (encounter), Banteng, Samber (foot print) From Km 24 to Km 37; gibbon (vocal call), Samber (encounter) Banteng and Barking deer (foot print). Km 37 camp site; Orang utan (nest) , Banteng (encounter, foot print) From Km 37 to Km 45 ; Samber (encounter, foot print). Gibbon (vocal call). All of the above species (except Loris) were reconfirmed by the present study. He suggested that the ungulates seemed to prefer the open place of logging road and the forest of open canopy. In these places, the ground had dense growth of grass and herb species on which herbivores fed. The tendency of increase of these ungulates populations in the present study was appropriated to his suggestion. It was generally known that some ungulates and rodents species preferred the early succession stage of forest such as primary or secondary forest after logging to the stable climax forest because of the abundance of their food resources. Therefore, it might be concluded that the large herbivores species were in the progress of a recovery in a part of the Kutai National Park, where the

open area increased by the fire. However, some problems were also recognized that the recovery of the arboreal species such as presbytes monkey, squirrels and tupaies which characterized the fauna of tropical rain forest was not sure. Further detail study was necessary to clarify the problems.

As to Malayan sun bear, Helactos malayanus, a few members of the present research team recorded the marks of its claws on the tree trunk around Km 37 and 45. The presences of this species might be confirmed, but the species might be rare along the former logging road of Kayu Mas. This species was also considered to be one of the most important species in the Kutai National Park. As its behavior is strictly adapted to dense forest and its reproductive rate seemed to be very low, the recovery of the bear population was worried after the fire. The study on this species was a pressing need.

Any collection of specimen have not done for identification of species, especially on small mammals and nocturnal carnivorous in the present study, and also the study of ecological and sociological aspects on mammals have not carried out. The research included the home range and range use of some important species might be carried out in near future by using the new method such as radio-tracking for the conservation and the management of the mammals in the Kutai National Park.

IV. SUMMARY

The forest of the Kutai National Park in East Kalimantan, Indonesia was burned by a large scale wild fires in 1982-1983. Just after the fire, Wirawan (1985) made a check list of mammals and reported that the existence of pockets of forest that were not affected by the fire and the survivals of some mammals in the area.

A brief survey on large mammals was conducted in the same study area of Wirawan (1985) from August to September,1986 by the methods of direct observation and animal traces count.

The fauna of larger mammals was not so clear changes from

the result of Wirawan (1984). Large mammals might change their life to the new circumstances by their potential ability of adaptation to the environmental alternations. Consequently, the population of large herbivore mammals in the present study area might increase their numbers in the primary and secondary forest those were developed after the fire rather than in the pockets of primary forest those were not affected by the fire. However, the some arboreal species had lost their large scales of the habitat after the fire. They might be survived in the limited pockets of unburned forest. The recovery of such animal populations seemed to be inferior to the terrestrial ones.

V. REFERENCES

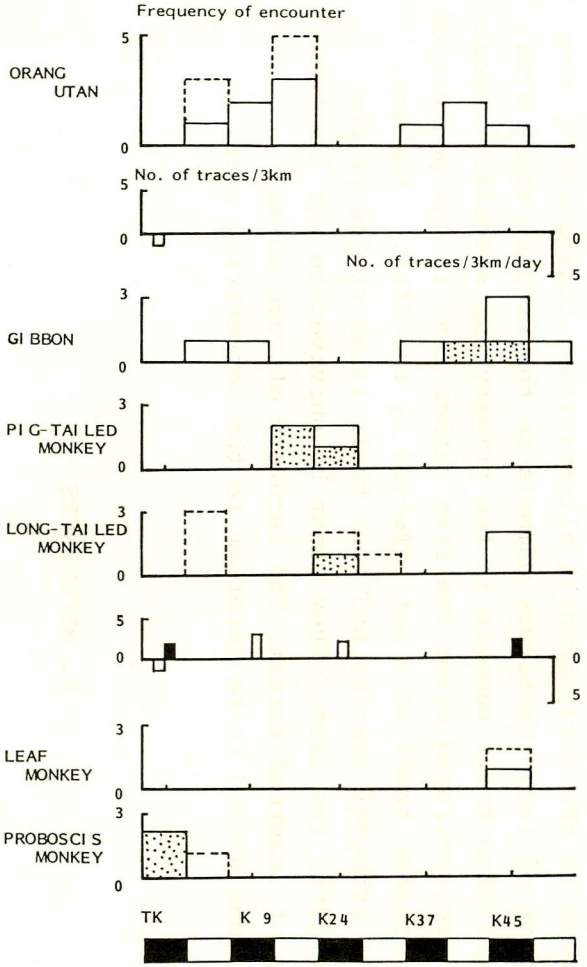
Rodman,P.S.(1985) Diets, densities and distribution of Bornean primates. P.465-478.in "The ecology of arboreal folivores"(Ed.G.Montgomery).Academic Press,London.

Wilson,C.C. & W.L.Wilson(1975) The influence of selective logging on primates and some other animals in east Kalimantan. Folia primatol.23:245-274.

Wirawan, N.(1985) Kutai National Park. Management plan 1985-1990.WWF/IUCN Report no.10.WWF,Bogor.

Fig. 2. Frequency of encounter(big column) to the mammals by the author(dotted), the member of team(vacant) and the assistants of wildlife office(chained). Numbers of animal traces(small column) of fecal (solid) and of footprint(vacant). Detailes in text.

Fig. 2a.(primates)



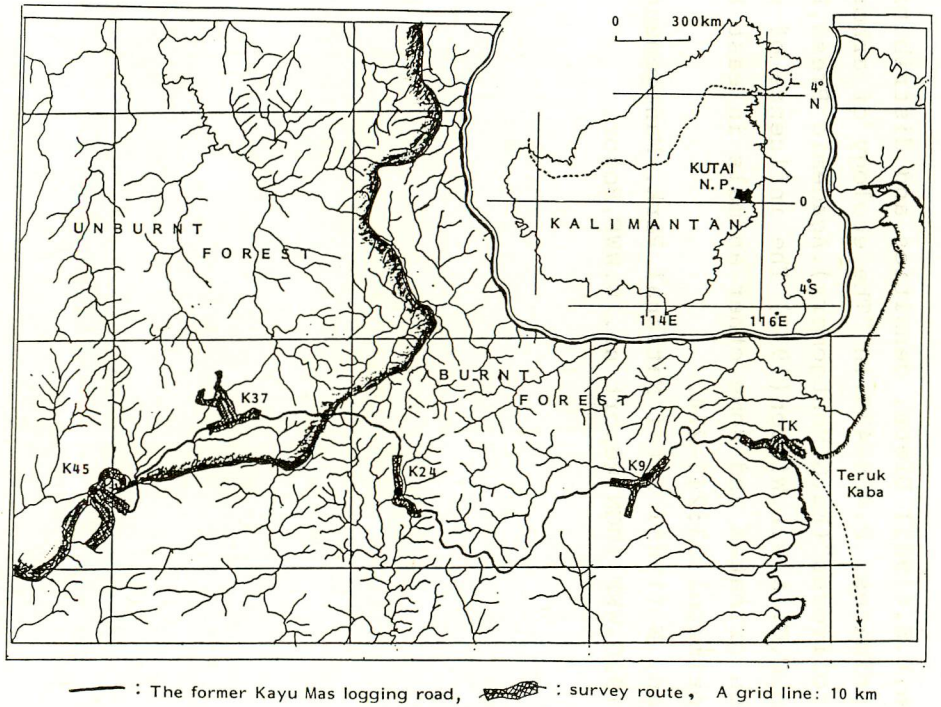


Fig. 1. A map of study area and the border line between burned and unburned forest.

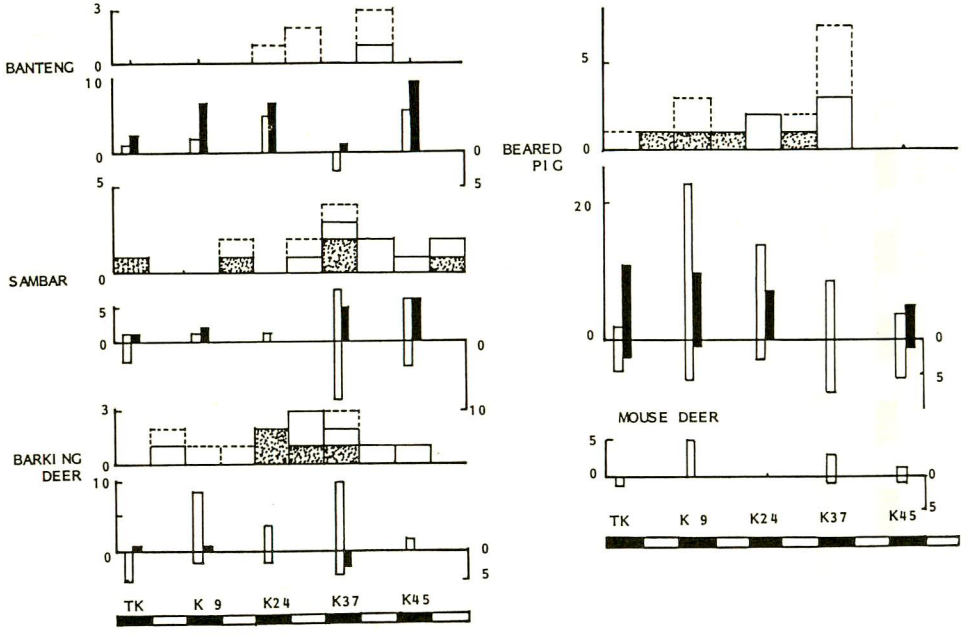


Fig.2b. continued (ungulates)

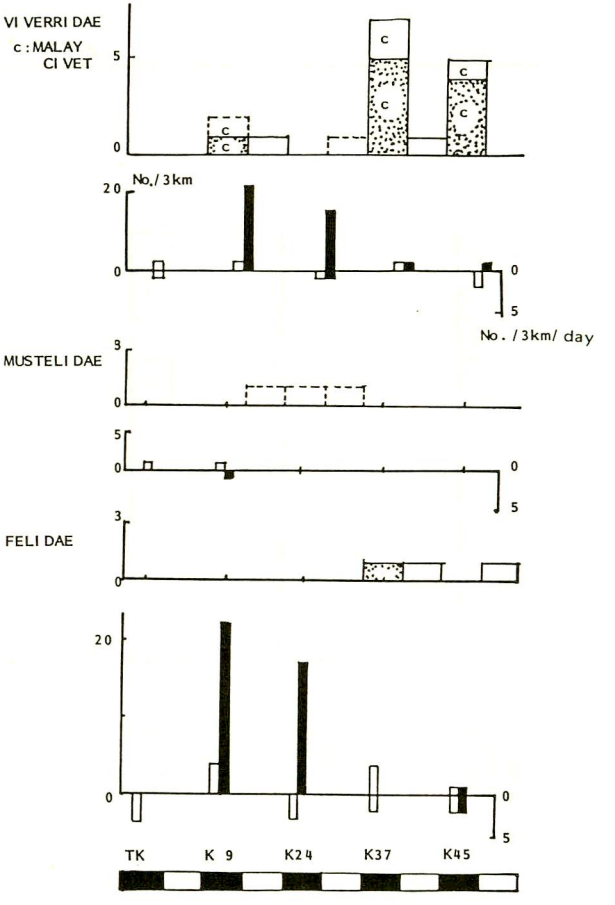


Fig.2c. continued (carnivors)

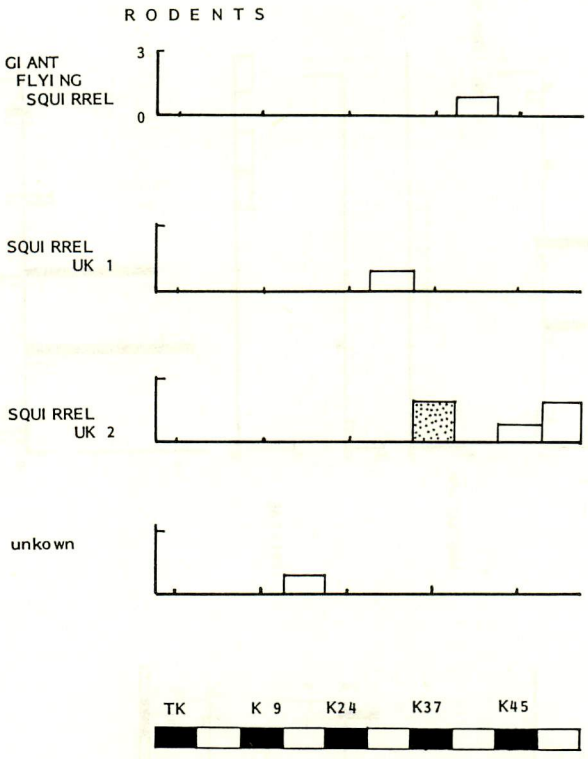


Fig.2d. continued (rodents)

Appendix 1. A check list of mammals confirmed along the former Kayu Mas logging road in the present study. Asterisks means the species confirmed on the same road by Wirawan(1984).

species	en-counter	foot print	dung	vocal call	others
(PRIMATES)					
* orang hutan (Pongo pygmaes)	X	X		X	nest
* Bornean gibbon (Hylobates muelleri)	X			X	
* Proboscis monkey (Nasalis larvatus)	X				
long tailed macaque (Macaca fascicularis)	X	?	?	X	
pig tailed m. (M.nemetrina)	X	?	?	X	
leaf monkey (Presbytis sp.)	X			X	
(ARTIODACTYLA)					
* Banteng (Bos javanicus)	X	X	X	X	tossing
* Sambar (Cervus unicolor)	X	X	X	X	antler
* Barking deer (Muntiacus muntjak)	X	X	X	X	
* Mouse deer (Tragulus napu?)		X			
beared pig (Sus barbatus)	X	X	X	X	
(CARNIVORA)					
sun bear (Helactos malayanus)					claw mark
otter (Lutra sp.)	X	?	?		
Malay civet (Viverra tangalunga)	X	?	?		
Viverrid sp.1 and sp.2		?	?		
leopard cat ? (Felis bengalensis)	X	?	?		
flat-headed cat ? (F.planiceps)	X	?	?		
(RODENTIA)					
giant flying squirrel (Petaurista petaurista)	X				nest hole
squirrel sp.1 and sp.2	X				
unknown sp.	X				
porcupine (Hystrix sp.)					spine
(CHIROPTERA)					
Rhinolophidae ?	X				

Appendix. 2. Sizes of the hoofed mammals foot prints in the Kutai National Park. Areas enclosed by chain indicated the mean value with a 95 % confidence limited in each species.