

THE MAMMALIAN FAUNA OF TABIN WILDLIFE RESERVE

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INTRODUCTION

The small mammal trapping in and around the limestone outcrop in Dagat, Tabin Wildlife Reserve (TWR) formed part of a larger research project that examined the responses of North-Bornean non-flying, small mammals (< 1 kg) to selective logging and the establishment of large-scale oil palm plantations. Other sites within the Tabin area where small mammal trappings were conducted under this project were at the primary and selectively logged forests on the western side (near the border of the oil palm plantations) and at the Core Area, in the central part of the Reserve. In this report, results are presented of the small mammal trapping conducted in and around the Dagat limestone hill. An up-to-date checklist of the mammals occurring in the Reserve is also presented. The conservation value of TWR for mammalian fauna is briefly discussed.

MATERIALS AND METHODS

The Dagat Limestone outcrop is located in the northern part of TWR. Except for the limestone ridge, which is covered by primary forest, the surrounding areas have been selectively logged. The limestone outcrop is, thus, a small 'island' of primary forest in a 'sea' of regenerating secondary forests (for more detailed information of the Dagat limestone area, see elsewhere in this volume). TWR (120,521 ha) itself is mostly logged forests where selective logging was carried out in most parts of the Reserve from 1960 to 1989. Only the central part (also known as Core Area) and several minor patches (including the Dagat limestone outcrop) have remained unlogged. The natural vegetation of Tabin is that of lowland dipterocarp rain forest. At present, TWR is surrounded with large oil palm plantations along more than half of its boundary.

For sampling small mammals in Dagat, a standardised method using line trapping with locally made wire mesh live-cage traps (17 × 30 × 10 cm) was employed. Overall, six trap-lines were employed; three were laid out in the primary forest on the ridge of the limestone outcrop (approx. 200 m altitude), while another three were laid out in the secondary forest at the base of the outcrop (approx. 50 m altitude). All trap lines were at least 50 m apart and were laid parallel to the contour lines of the outcrop. A trap-line was 200 m long and consisted of 10 trap stations at 20-m intervals. At each station, a single wire mesh live-cage trap was placed at heights ranging between 0–2 m above the ground. Traps placed above ground level were opportunistically positioned on trees, large lianas or fallen trees. All traps were baited with a mixture of three bait types i.e., cut ripe bananas of the local variety known as '*pisang emas*', peanut butter suspended on cotton balls and pieces of roasted mature coconut kernel. All traps were run for three consecutive days and nights between 30/01/2001 and 02/02/2001. Traps were checked and re-baited with fresh bait each morning between 0800–1100 hrs. Captured animals were identified to species and uniquely toe-clipped before they were released at the capture stations.

The up-to-date mammal checklist of TWR was compiled from six independent studies, i.e., Payne (1986), Stuebing *et al.* (1989), Mitchell (1994), Bernard *et al.* (1999), Rajaratnam (2000) and the present study. Collectively, for sampling flying and non-flying small mammals, the sampling methods employed by the different authors included trapping using baited wire mesh live-cage traps, harp-traps and mist-nets. Large and medium-sized mammals were recorded based on direct sightings or indirect signs of animals' presence such as hoof prints, feeding marks, claw marks, faeces and active wallows. Most of the species were recorded from the western side near the Lipad mud volcano (natural mineral salt lick) and the Core Area, near the Tabin mud volcano, of TWR. Several species were recorded from other parts of Tabin.

RESULTS AND DISCUSSION

A total trapping effort of 180 trap-nights was conducted in Dagat. Only five captures were made giving a trapping success of only *ca.* 0.03 captures/trap-night. All captures were from the logged forest and none from the primary forest. The animals caught comprised four different individuals (one individual was caught twice) of four different species. The species captured and the standard body-measurements taken for each of the individuals are presented in Table 1. All species captured were murid rodents. All are commonly found elsewhere in Tabin.

It has been found that significantly fewer animals are caught in traps during rainy days compared to drier days (Bernard *et al.*, 1997). Therefore, the low trapping success in Dagat was expected as it rained very heavily in the morning and most nights during the sampling periods. It was interesting, however, to note that no small mammals were caught in the primary forest on the limestone outcrop. One would predict that the abundance of refuge sites in the limestone area would attract many small mammals. The seemingly poor small mammal fauna in the limestone area in Dagat may be explained in part as a result of the presence of many rat predators. Snakes, for example, were frequently encountered in the limestone area and avian predators were also seen on a number of occasions.

Table 1. Small mammal species caught in Dagat, Tabin Wildlife Reserve, with records of standard body-measurements.

Species	HB (mm)	HF (mm)	Tail (mm)	Ear (mm)	Weight (g)	Sex
<i>Maxomys surifer</i>	190.0	37.6	204.0	20.8	190.0	Female
<i>Leopoldamys sabanus</i>	230.0	43.5	320.5	24.4	330.0	Female
<i>Maxomys whiteheadi</i>	145.0	25.2	-	19.3	80.0	Male
<i>Sundamys muelleri</i>	190.0	37.8	230.0	18.6	130.0	Female

HB—head body length; HF—hind foot length.

Appendix 1 lists the mammalian fauna found in TWR to date. A total of 26 families comprising 62 genera and 78 species of small and large mammals have been identified to occur within the Tabin area. These included a number of exceptional species such as the largest land mammal in Borneo (*Elephas maximus*), the world's most endangered rhinoceros (*Dicerorhinus sumatrensis*), the world's largest tree squirrel (*Ratufa affinis*), the smallest squirrel (*Exilisciurus excilis*), the world's largest bat (*Pteropus vampyrus*) and the largest member of the Insectivora (*Echinosorex gymnurus*) (Md. Nor, 1996). Tabin has also recorded at least eight of the ten species of primates known to occur in the whole of Borneo including Orang-utan (*Pongo pygmaeus*) and the four primate species endemic to Borneo i.e., Grey leaf monkey (*Presbytis hosei*), Red leaf monkey (*Presbytis rubicunda*), Bornean gibbon (*Hylobates muelleri*) and Proboscis monkey (*Nasalis larvatus*).

The small mammal fauna is undoubtedly rich. At least 19 species are known to be present in Tabin. Some of the small mammals include very rare species such as the Ranee mouse (*Haeromys margarettee*) and the Pen-tailed tree shrew (*Ptilocercus*); the former is also endemic to Borneo. The bat records in Tabin are undoubtedly far from complete. Most records of bat species were made before 1986. The Pangolin (*Manis javanica*), Long-tailed porcupine (*Trichys fasciculata*), Common porcupine (*Hystrix brachyura*) and the Thick-spined porcupine (*Thecurus crassipinis*) have only been recorded in Tabin recently (Rajaratnam, 2000).

Although many of the mammals found in Tabin are also distributed elsewhere in the Southeast Asian region, at least 11 are endemic to Borneo. In general, the mammalian fauna of Tabin is not as rich as Danum Valley (124 species of mammals recorded so far) (Marsh, 1995) or Kinabalu Park (100 species of mammals recorded so far) (Lim & Muul, 1978), but compared to Danum Valley and Kinabalu Park, there have been far fewer mammal surveys conducted in Tabin. The number of species would increase with more frequent and extensive surveys. Tabin is an important stronghold for the mammalian fauna of eastern Sabah. The mud volcanoes and salt springs in Tabin are a valuable source of minerals that support the existence of many wildlife species, particularly large mammals (Payne, 1986). Due to the increasing cover of derived habitats in recent decades and natural forests correspondingly becoming reduced and fragmented in many parts in this region, TWR still has a valuable role in providing larger areas for mammal conservation in Sabah in particular and Borneo in general.

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66	Short-tailed mongoose	<i>Herpestes brachyurus</i> (Gray, 1837)	1,3,5	S India; Indonesia (Borneo, Sumatra); Malaysia; Philippines; Singapore; Sri Lanka; Vietnam.
Family Felidae				
67	Clouded leopard	<i>Neofelis nebulosa</i> (Griffith, 1837)	1,3,5	Burma; Cambodia; China; Taiwan; India; Indonesia; Malaysia; Himalayas; Nepal; Taiwan; Thailand; Vietnam.
68	Marbled cat	<i>Pardofelis marmorata</i> (Martin, 1837)	5	Himalayas; N India and Nepal to Vietnam; Thailand; Malaysia; Sumatra and Borneo; S. China.
69	Leopard cat	<i>Prionailurus</i> <i>bengalensis</i> Synonym <i>Felis bengalensis</i> (Kerr, 1792)	1,2,3,5	Afghanistan; Bangladesh; Burma; Cambodia; China; N. India; Indonesia; Japan (Tsushima and Iriomote Isles); Korea; Laos; Malaysia; Nepal; Pakistan; Philippine; Taiwan; Thailand; Republic of the former USSR and Vietnam.
Family Elephantidae				
70	Asian elephant	<i>Elephas maximus</i> (Linnaeus, 1758)	1,2,3,5,6	Sri Lanka; Bangladesh; Burma; China; Cambodia; India; Indonesia; Laos; Malaysia; Thailand; Vietnam.
Family Rhinocerotidae				
71	Sumatran rhinoceros	<i>Dicerorhinus</i> <i>sumatrensis</i> (G. Fisher, 1814)	1,2,3,5	Formerly Assam (India); Chittagong Hills (Bangladesh); Burma; Thailand and Vietnam; South through Peninsular Malaysia to Sumatra; probably also S. China; Laos and Cambodia; Borneo and Mergui Isl. Survives in Tenasserim Range (Thailand-Burma); Petchaban Range (Thailand) and other scattered localities in Burma, Peninsular Malaysia, Sumatra and Borneo.
Family Suidae				
72	Bearded pig	<i>Sus barbatus</i> (Muller, 1838)	1,2,3,5,6	Palawan; Balabac Isles and Calamian Isles (Philippines); Sumatra; Banka Isl.; Rhio Arch Malay Peninsula; Borneo.

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