

# Avifauna and Mammal Assessments at the Malaysian Palm Oil Board Research Station, Kluang, Johor

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## ABSTRACT

A rapid assessment of the avifauna and mammals at the Malaysian Palm Oil Board (MPOB) Research Station in Kluang, Johor, was carried out from 7-10 June 2013. Mist-netting and observations were the methods used to survey the species of avifauna and mammals in the oil palm estate. A total of 42 avifauna species from 24 families was recorded in this estate, which included the Black Hornbill, *Anthracoceros malayanus*. The most abundant bird in this estate was the Yellow-vented Bulbul, *Pycnonotus goiavier*, with 69 individuals recorded. For mammals, a total of 15 species from nine families were recorded, and these included the Globally Threatened Bearded Pig (*Sus barbatus*) and one Near Threatened species, the Dusky-leaf Monkey (*Trachypithecus obscurus*). The most common mammal was the Lesser Dog-faced Fruit Bat, *Cynopterus brachyotis*, with 253 individuals; this species was recorded at all the sampling sites. Sites located in the forest within and at the boundary of the estate and in the riparian area recorded high numbers of species, suggesting that these habitats should be conserved and maintained for better biodiversity enrichment in the oil palm plantation.

## ABSTRAK

Tinjauan terhadap burung dan mamalia di ladang penyelidikan Lembaga Minyak Sawit Malaysia (MPOB) di Kluang, Johor, telah dijalankan dari 7-10 Jun 2013. Kaedah jaring samar dan pemerhatian digunakan untuk mengenal pasti spesies avifauna dan mamalia yang ada di ladang sawit. Sebanyak 42 spesies avifauna daripada 24 famili telah direkodkan, termasuk Burung Enggang Birah, *Anthracoceros malayanus*. Burung yang paling kerap direkodkan ialah Merbah Kapur, *Pycnonotus goiavier*, dengan 69 individu. Dari segi mamalia, sebanyak 15 spesies mamalia dari sembilan famili telah dicatatkan termasuk satu spesies terancam di seluruh dunia,

iaitu Bearded Pig (*Sus barbatus*) dan satu spesies yang terancam, iaitu Dusky-leaf Monkey (*Trachypithecus obscurus*). Spesies yang paling kerap ialah Kelawar Cecadu Pisang, *Cynopterus brachyotis*, dengan 253 individu; spesies ini telah direkodkan di semua tapak persampelan. Tapak-tapak yang terletak di kawasan hutan dalam dan di sempadan ladang sawit serta di kawasan riparian mencatatkan bilangan spesies yang tinggi, mencadangkan bahawa habitat ini perlu dipulihara dan dkekalkan untuk lebih memperkayakan biodiversiti di ladang sawit.

**Keywords:** avifauna, mammals, oil palm plantation, forest, riparian areas.

## INTRODUCTION

Biodiversity has become an important area for consideration by the oil palm industry over the past few years. According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystems Services, (2019) biodiversity is the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This includes difference in genetic, phenotypic, phylogenetic and functional attributes as well as changes in abundance and distribution over time and space within and among species, biological communities and ecosystems. It is essential for sustenance of life on Earth and supplies goods and services to both humans and wildlife. Biodiversity is affected by changes in land-use, forest fragmentation and isolation, habitat destruction, invasive species, human exploitation, pollution and climate change. The collection of baseline data on what biodiversity is present in the plantation and in the adjacent landscape is a very important task to build effective biodiversity management plans. The collection of baseline data on what biodiversity occurs in the plantation and adjacent landscape is a very important task to build effective biodiversity management plans. Hence, the objectives of this paper are to do biodiversity assessment for avifauna and mammal species in Malaysian Palm Oil Board (MPOB) Kluang Research Station, Johor and determine their conservation status under

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International Union for conservation of Nature (IUCN) Red List, 2019 and Wildlife Conservation Act 2010. Data on amphibians and reptiles have been published in the May 2018 edition of *Oil Palm Bulletin* (Amit *et al.*, 2018).

## MATERIALS AND METHODS

### Study Site

Avifauna and mammal survey was conducted from 7-10 June 2013 at the MPOB Kluang Research Station in Johor. This survey was conducted at six sites having palms planted in different years: Sites 1 and 2 in 2000, Sites 3 and 4 in 2002, Site 5 in 2003 and Site 6 from 1996 to 1997. *Figure 1* shows the location of these sampling sites within the estate. Site 1 was a preserved swampy area dominated by grasses, Site 2 was a forest patch next to Jalan Lingkar, while Site 3 was located in a forested patch at the boundary between MPOB and MARDI Kluang. Sites 4 and 5 were located on a relatively flat oil palm planted area, while Site 6 was in oil palm planted on a hilly area.

150 m long) at each site, and recording all bird and mammalian species that were heard and seen. Naming of the bird species followed Robson (2005) while that of mammals followed Francis (2008).

## RESULTS

### Avifauna

A total of 492 birds representing 42 species from 24 families (*Table 1*) were recorded in MPOB Kluang estate, with 40 species observed and 18 species mist-netted. Over the period of three days, mist-netting method captured a total of 149 birds representing 12 families and 18 species. These included three totally protected and one protected species as specified under the Wildlife Conservation Act, 2010. The data show that Site 1 recorded a higher number of species than the other sites. The family Columbidae was the most diverse with three species, followed by Pycnonotidae (bulbuls), Alcedinidae (kingfishers), Nectarinidae (sunbirds) and Estrildidae (munias) with two species each. The rarest family was Dicaeidae

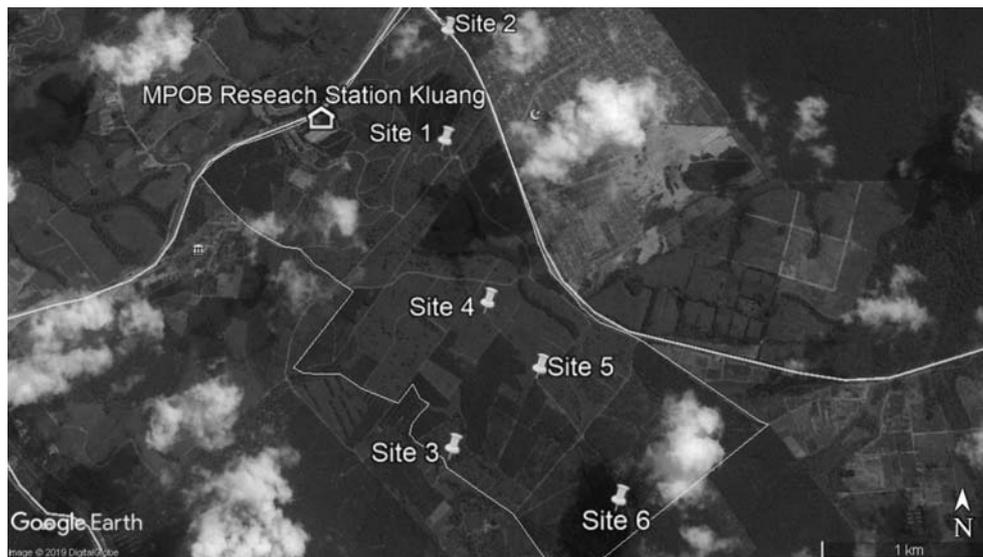


Figure 1. Location of the six sampling sites within MPOB Kluang Research Station, Johor.

### Field Methodology

Two methods were used in this survey: mist-netting and observations. For mist-netting, 10 mist nets were set up at each site to capture understorey birds. The mist-nets were activated in the morning from 0600 hr until 1800 hr over three days, and were checked every two hours. The same nets continued to operate at night from 1800 hr until 0600 hr to capture bats and nocturnal birds. All captured birds and bats were weighed, measured, tagged and released. The observation method was done by walking along the sampling trail (approximately

(flowerpeckers) with only one species represented by one individual (0.68%). The most abundant bird in the plantation was the Yellow-vented Bulbul, *Pycnonotus goiavier* (*Figure 2a*), with a total of 33 individuals netted. This species is commonly seen in gardens, secondary forests and plantations. The second most often netted species was the Baya Weaver, *Ploceus philippinus* (*Figure 3*), with 26 individuals. The male of the species builds beautiful nests to attract the female, while the female usually chooses her mate based on the quality of nest the males build. The difference between the male and female birds is that the male has a yellow crown.

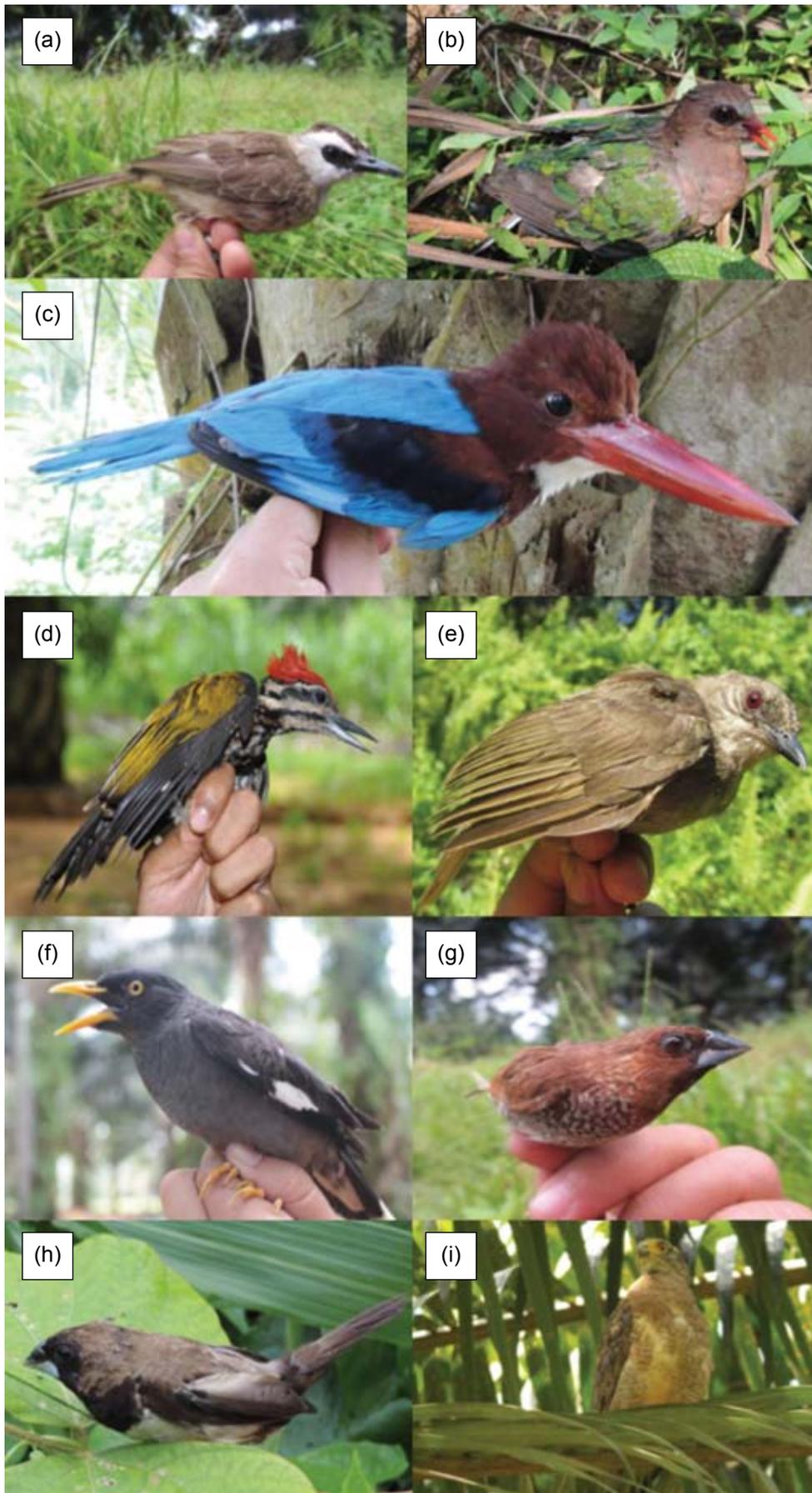


Figure 2. Avifauna species recorded in the Malaysian Palm Oil Board Kluang Research Station, Johor: (a) Yellow-vented Bulbul (b) Emerald Dove (c) White-throated Kingfisher, (d) Golden-backed Woodpecker (e) Red-eyed Bulbul (f) Common Myna (g) Scally-breasted Munia (h) White-headed Munia, and (i) Crested Serpent Eagle.

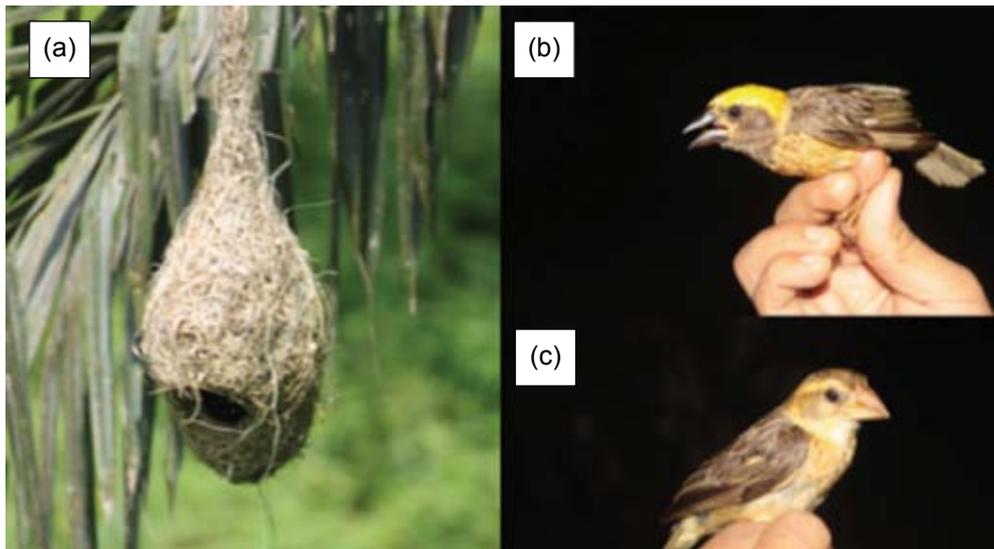


Figure 3. (a) Nests of the Baya Weaver are built from grass and fibre from the oil palm, and hang from the palm fronds. (b) Male (c) Female.

The nests are built from grass and fibre from the oil palm, and they hang from the palm fronds. Other species that were recorded in the plantation are shown in Figure 2. The Emerald Dove forages on the ground looking for seeds and worms. The White-collared Kingfisher is a large kingfisher that feeds on small mammals, amphibians, fish, reptiles and insects. The Golden-backed Woodpecker nests in tree holes and feeds on insects. The Common Myna is a common species of bird in urban areas, and is seldom seen deep inside large oil palm plantations. Other than that, Munias are seed-eating birds that flock together in open areas with other birds of the same family.

Through observations, a total of 40 species of birds representing 343 individuals from 22 families was recorded in MPOB Kluang estate. A total of 20 species of totally protected and nine species of protected birds as listed under the Wild Life Conservation Act 2010 were noted. Forty individuals of the Baya Weaver were observed, making it the dominant species in this plantation. One of the other species observed was the Crested Serpent-eagle (Figure 2i) which is an important bird of prey in the plantation. As the top predator, these birds control the population of rats and squirrels, lizards and snakes, as well as other birds, by feeding on them.

### Mammals

A total of 341 individuals representing 15 species from nine families of mammals were recorded at the MPOB Kluang estate. Eight species of mammals were observed and seven were mist-netted. These included one totally protected and three protected species as listed under the Wild Life Conservation Act 2010.

Through mist-netting, a total of 303 bats representing three families and seven species (Table 2) were captured. Sites 5 and 6 recorded four species which was more than at the other sites. The family Pteropodidae (fruit bats) was the most diverse, with five species captured. The rarest family was Hipposideridae with the capture of a single individual (0.32%) of only one species. The most abundant species was the Short-nosed Fruit Bat (*Cynopterus brachyotis*) represented by 253 individuals (Figure 4). They probably roost under



Figure 4. Lesser Dog-faced Fruit Bat, *Cynopterus brachyotis*, is the dominant mammalian species at the MPOB Research Station, Kluang in Johor.

the dense oil palm fronds. This species feeds on small fruits, mostly of *Ficus*. Indeed, some *Ficus* with ripe fruit were seen in the estate. The Lesser Asiatic Yellow House Bat (*Scotophilus kuhlii*) was the second most abundant mammalian species in this plantation. The rarest species of bat was the Fawn Roundleaf Bat (*Hipposideros cervinus*) with only a single individual caught by using mist nets set up in the plantation.

Through observations, a total of 38 individuals of mammals representing eight species from six families were recorded in this plantation. Figure 5 shows some of the mammals that were present. The Bearded Pig (*Sus barbatus*) was quite common in the estate. These wild pigs are considered a pest in oil palm plantations because they tend to dig up the palm seedlings to eat the shoots and roots. They also feed on ripe palm fruit on the ground. We encountered a number of adults as well as a sow and her piglets. Figure 5 (a) shows a piglet,

while its mother and siblings are already in the bush. The Plantain Squirrel (*Callosciurus notatus*) is the most common squirrel in oil palm plantations. They feed on wild fruits such as those of *Ficus*, and also on oil palm fruit. The Common Palm Civet (*Haemaphysalis paradixus*) is a nocturnal animal, feeding mainly on fruits and sometimes small animals. It lives in a variety of habitats, ranging from plantations to secondary and primary forests.

### CONCLUSION

The existence of preserved forested and riparian areas in the estate and the neighbouring forest adjacent to the estate gives a positive effect in sustaining a diverse community of avifauna and mammals. The assessment results highlight the importance of forest patches and riparian areas in the plantation for supporting higher diversity of birds and mammalian species. Therefore, preserving those habitats in the plantation is crucial

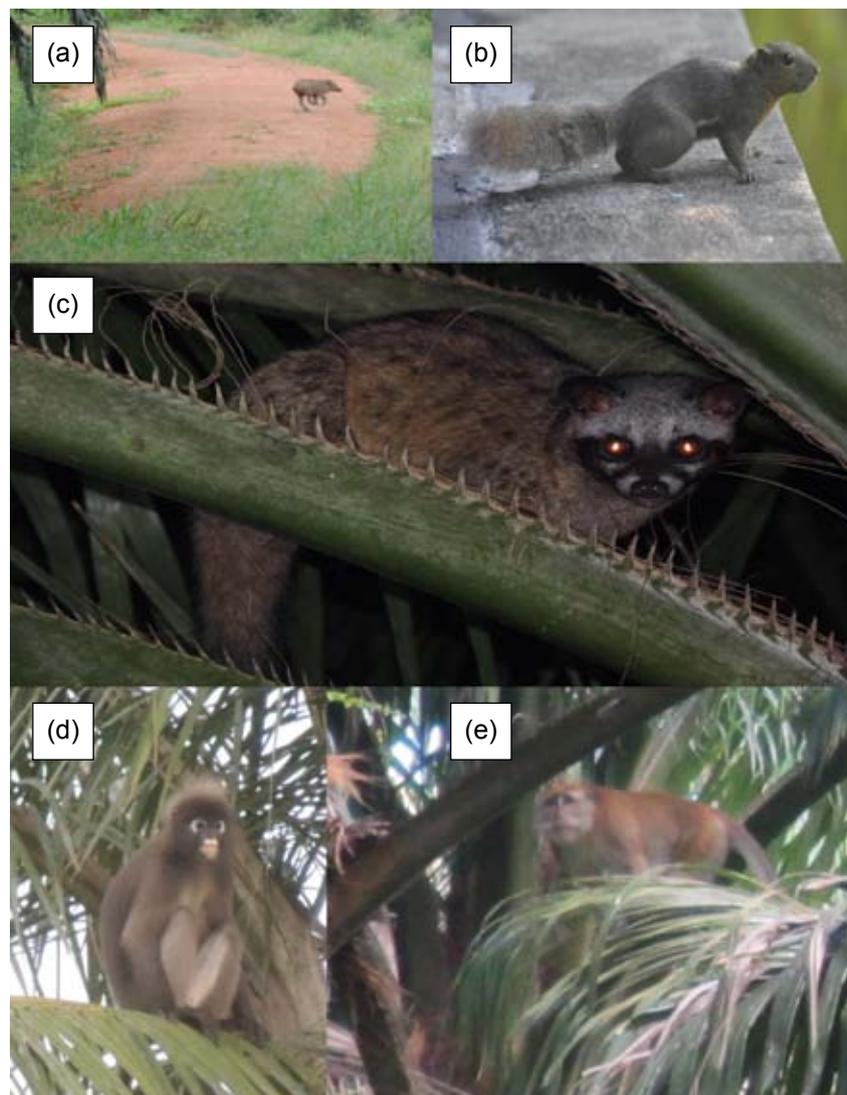


Figure 5. Mammalian species observed in the Malaysian Palm Oil Board Research Station in Kluang, Johor: (a) Bearded Pig (b) Plantain Squirrel (c) Common Palm Civet (d) Dusky-leaf Monkey and (e) Long-tailed Macaque.

**TABLE 1. TOTAL SPECIES AND INDIVIDUALS OF BIRDS AT SIX DIFFERENT SITES IN MPOB KLUANG, JOHOR. LIST OF TOTALLY PROTECTED WILDLIFE (TP) AND PROTECTED WILDLIFE (P) UNDER WILD LIFE CONSERVATION ACT (WCA) 716, 2010 AND THE INTERNATIONAL UNION FOR CONSERVATION (IUCN) RED LIST OF THREATENED SPECIES RECORDED IN MPOB KLUANG RESEARCH STATION, JOHOR**

Family	Species	Common name	IUCN status	WCA 2010	Sites					
					1	2	3	4	5	6
Ardeidae	<i>Ardea purpurea</i>	Purple Heron		P			/			
Accipitridae	<i>Spilornis Cheela</i>	Crested Serpent-eagle	LC			/	/	/		
Rallidae	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen				/	/	/	/	/
Charadriidae	<i>Vanellus indicus</i>	Red-wattled Lapwing	LC	TP		/				
Phasianidae	<i>Gallus gallus</i>	Red Junglefowl	LC	P	/	/	/	/	/	
	<i>Turnix sylvatica</i>	Small Buttonquail			/					
Columbidae	<i>Treron curvirostra</i>	Thick-billed Green Pigeon	LC	TP			/			
	<i>Treron vernans</i>	Pink-necked Green Pigeon	LC	TP			/	/		
	<i>Geopelia striata</i>	Zebra Dove	LC		/	/	/	/	/	/
	<i>Streptopelia chinensis</i>	Spotted Dove	LC		/	/	/	/	/	/
	<i>Chalcophaps indica</i>	Emerald Dove	LC	P	/					/
Cuculidae	<i>Eudynamis scolopacea</i>	Asian Koel	LC	TP		/				
	<i>Centropus sinensis</i>	Greater Coucal	LC	TP	/			/	/	/
Apodidae	<i>Apus affinis</i>	House Swift/Little Swift	LC	TP					/	
Alcedinidae	<i>Halcyon chloris</i>	Collared Kingfisher	LC							/
	<i>Halcyon coromanda</i>	Ruddy Kingfisher	LC	TP				/		
	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	LC	TP	/				/	
	<i>Alcedo meninting</i>	Blue-eared Kingfisher	LC	TP			/			
Bucerotidae	<i>Anthracoceros malayanus</i>	Black Hornbill	NT	TP			/			
Hirundinidae	<i>Hirundo tahitica</i>	Pacific Swallow	LC	TP	/	/	/	/	/	/
Motacillidae	<i>Anthus richardi</i>	Richard's Pipit				/				
Pycnonotidae	<i>Pycnonotus goiavier</i>	Yellow-vented Bulbul	LC		/	/	/	/	/	/
	<i>Pycnonotus plumosus</i>	Olive-winged Bulbul	LC	TP		/				
Turdidae	<i>Copsychus saularis</i>	Oriental Magpie-Robin	LC	P	/	/	/	/	/	/
Slyviidae	<i>Prinia flaviventris</i>	Yellow-bellied Prinia	LC	TP		/	/		/	
	<i>Orthotomus sericeus</i>	Rufous-tailed Tailorbird	LC	TP		/		/		
Rhipiduridae	<i>Rhipidura javanica</i>	Pied Fantail	LC	TP	/	/	/	/	/	/
Nectariniidae	<i>Anthreptes malacensis</i>	Brown-throated Sunbird	LC	TP		/	/			
	<i>Anthreptes singalensis</i>	Ruby-cheeked Sunbird	LC	TP	/	/			/	
	<i>Nectarinia jugularis</i>	Olive-backed Sunbird	LC	TP						/
	<i>Arachnothera longirostra</i>	Little Spiderhunter	LC	TP	/		/			
Sturnidae	<i>Acridotheres tristis</i>	Common Myna	LC		/				/	/
	<i>Acridotheres javanicus</i>	Javan Myna								/
	<i>Gracula religiosa</i>	Hill Myna	LC	P		/				
Ploceidae	<i>Ploceus philippinus</i>	Baya Weaver	LC	P	/	/	/	/	/	/
Estrildidae	<i>Lonchura leucogastra</i>	White-bellied Munia	LC	P					/	/
	<i>Lonchura punctulata</i>	Scaly-breasted Munia	LC	P			/			
	<i>Lonchura maja</i>	White-headed Munia	LC	P				/	/	
Oriolidae	<i>Oriolus xanthornus</i>	Black-hooded Oriole	LC	TP		/				
Corvidae	<i>Corvus splendens</i>	House Crow	LC			/				
Dicaeidae	<i>Prionochilus maculatus</i>	Yellow-breasted Flowerpecker	LC		/					
Picidae	<i>Dinopium benghalense</i>	Golden Backed Woodpecker	LC	TP	/					
<b>Total number of species</b>					<b>17</b>	<b>21</b>	<b>19</b>	<b>15</b>	<b>17</b>	<b>15</b>

Note: LC = Least concern.  
NT = Near threatened.

**TABLE 2. TOTAL SPECIES AND INDIVIDUALS OF MAMMALS AT SIX DIFFERENT SITES IN MPOB KLUANG, JOHOR. LIST OF TOTALLY PROTECTED WILDLIFE (TP) AND PROTECTED WILDLIFE (P) UNDER WILD LIFE CONSERVATION ACT, WCA 716, 2010 AND THE INTERNATIONAL UNION FOR CONSERVATION (IUCN) RED LIST OF THREATENED SPECIES RECORDED IN MPOB KLUANG, JOHOR**

Family	Species	Common name	IUCN status	WCA 2010	Sites					
					1	2	3	4	5	6
Pteropodidae	<i>Cynopterus brachyotis</i>	Lesser Dog-faced Fruit Bat	LC		/	/	/	/	/	/
	<i>Cynopterus horsfieldi</i>	Horsfield's Fruit Bat	LC				/	/	/	
	<i>Cynopterus sphinx</i>	Greater Short-nosed Fruit Bat			/				/	
	<i>Eonycteris spelaea</i>	Dawn Bat	LC							/
	<i>Penthetor lucasi</i>	Dusky Fruit Bat								/
Vespertilionidae	<i>Scotophilus kuhlii</i>	Lesser Asian House Bat	LC		/	/			/	/
Hipposideridae	<i>Hipposideros cervinus</i>	Fawn Roundleaf Bat				/				
Cercopithecidae	<i>Trachypithecus obscurus</i>	Dusky-leaf Monkey	NT	P			/			
	<i>Macaca fascicularis</i>	Crab-eating Macaque	LC	P						/
Sciuridae	<i>Callosciurus notatus</i>	Plantain Squirrel	LC				/			/
Muridae	<i>Rattus rattus</i>	House Rat	LC		/					
	<i>Sundamys muelleri</i>	Müller's Sundamys	LC			/				
Viverridae	<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	LC		/	/				
Felidae	<i>Felis bengalensis</i>	Leopard Cat	LC	P	/					
Suidae	<i>Sus barbatus</i>	Bearded Pig	VU	TP		/	/			
<b>Total number of species</b>					<b>6</b>	<b>6</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>6</b>

Note: LC = Least concern.

NT = Near threatened.

to maintaining or increasing the current wildlife species and populations in the oil palm landscape, thus helping to mitigate the negative impact of land conversion into oil palm plantations.

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