

Birds and Mammals

**of the Tinbarap Oil Palm Plantation,
Miri, Sarawak**



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PREFACE

Undoubtedly oil palm is one of the most efficient and productive oil crop in the world. The industry's contribution to society and the economy of Malaysia is substantial. However, the industry is facing many challenges, especially issues related to biodiversity and climate change. Hence, the Malaysian government is doing its best to promote sustainable practices and supporting research on these issues. Principle 5 of the Malaysian Sustainable Palm Oil (MSPO) initiative encourages oil palm companies to adopt environmental friendly approaches in their businesses by setting aside patches of forest as wildlife habitats to mitigate species losses and hence improve the sustainability image of the oil palm industry.

The challenging task of conserving species and habitats of high conservation value is quite new within the oil palm industry. However, there are strong arguments for efforts to conserve biodiversity and ecosystem services incorporated within the core operations of every agricultural plantation. High Biodiversity Value (HBV) marks areas that possess one or more conservation values and which comprise forested and non-forested areas.

This book is written in a way that is easy to understand. It identifies 55 species of birds and four species of mammals present in the Tinbarap Oil Palm Plantation, Miri, Sarawak, through photographs and text accounts. This book may serve as a general guide for researchers and the public to appreciate and understand more, especially about the birds of Malaysia.

Datuk Dr Ahmad Kushairi Din

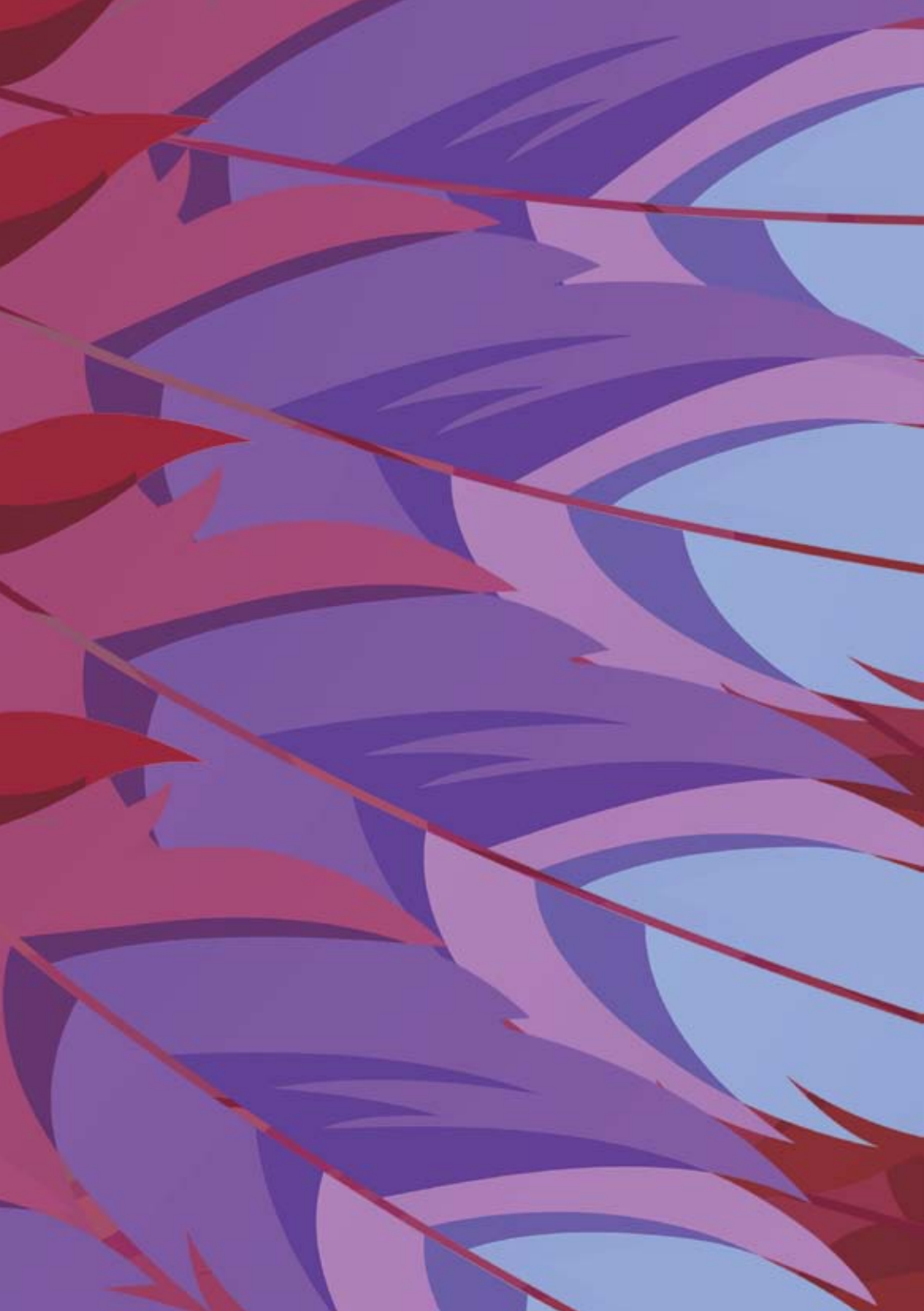
Director-General
Malaysian Palm Oil Board

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The background of the slide is an abstract composition. It features large, flowing, wavy shapes in shades of light blue and purple, which resemble stylized water or smoke. Overlaid on these are several dark red, pointed shapes that look like autumn leaves or petals, scattered across the frame. Thin, dark red lines, possibly representing stems or veins, crisscross the image. The overall effect is a vibrant, layered, and organic-looking pattern.

Introduction





INTRODUCTION

Criteria 4.5.6 in MSPO Certification mentions that oil palm companies are encouraged to create High Biodiversity Value (HBV) areas, forest patches or wildlife corridors within their oil palm plantations. The existence of these areas within a plantation is an important asset to planters who want to improve their biodiversity conservation image. Biodiversity assessment (flora and fauna identification and their conservation status) should be carried out and this represents the first step in biodiversity conservation efforts. The presence of flora and fauna in the forest patches will increase species richness in the oil palm dominated landscape. The capability of the forest patches to increase species richness will depend on effective management efforts to minimise degradation of the forest ecosystem.

Biodiversity assessment should be carried out to identify protected and threatened species present within and around an oil palm area and to determine the minimum population size for each species, particularly for the rare and elusive species that are seldom encountered. Plantation owners then have to decide whether to recognise their conservation area as a HBV area, based on the biodiversity values of the conservation area. After that, plantation owners have to ensure that these HBV areas are maintained and their management is enhanced to support a viable population of wildlife.

In order to meet this challenge, Sarawak Oil Palms Berhad (SOPB) has set aside an area within the Tinbarap oil palm landscape as a natural habitat to support a protected and threatened population of wildlife (conservation area). The management desires a biodiversity assessment of this conservation area be conducted to determine whether it can be recognised as having HBV.

Bird and mammal samplings were carried out at the Tinbarap oil palm plantation of SOPB which is located at Miri, Sarawak in January, May and November of 2016. The size of the plantation is approximately 14 103 ha and is divided into seven estates (Tinbarap 1 = 2114 ha, Tinbarap 2 = 1886 ha, Tinbarap 3 = 1975 ha, Tinbarap 4 = 1991 ha, Tinbarap

5 = 2198 ha, Tinbarap 6 = 2008 ha and Tinbarap 7 = 1931 ha). The Tinbarap Plantation is surrounded by oil palm plantations belonging to other companies. This oil palm plantation is mainly located on peatland, while one estate is on mineral soils (Tinbarap 5). Planting of the palms began in 2008, and the palms were aged between 5 and 8 years at the time of assesment. A total of 210 ha of this plantation are preserved as a conservation area and named Tinbarap Conservation Area (TCA); the area is located at (Tinbarap 4). SOPB's conservation initiative in the Tinbarap oil palm plantation is to ensure that the plantation operations have minimum impact on biodiversity. The objectives of this assessment were:

- To determine the birds and mammalian species present in the Tinbarap oil palm plantation, particularly in the conservation area.
- To identify the conservation status of these bird and mammalian species (rare, threatened or endangered).



STUDY SITES

The birds and mammal surveys were conducted in the Conservation Area (TCA), the Oil Palm Plantation (TOPP) and a previously cleared but unplanted area (TUPA) in the Tinbarap Oil Palm Plantation. (Figure 1) shows the location of the sampling sites.



Figure 1. Location of conservation area and other sampling sites within the Tinbarap Oil Palm Plantation

FIELD METHODOLOGY

BIRDS

Two methods were used for the bird survey in this assessment; namely, mist-netting and by observation.

For the mist-netting method (*Figure 2*), 15 mist nets (9 m x 2.5 m, 36 mm mesh-size with three shelves) were set up at eight sampling points in TCA, one sampling point in TOPP and two sampling points in TUPA to capture birds. These nets were set up at 0.5-3 m above the ground to catch ground and understory birds (Rahman and Tuen, 2006). The nets were in place from 6.00 am to 6.00 pm and were checked regularly at two hour intervals over three days. Captured birds were gently disentangled from the nets and were placed in separate cloth bags. These captured birds were identified at species level at the camp site, and were then immediately released to reduce stress. Species identification was based on the field guide books of Myers (2009) and Phillipps and Phillipps (2014).



Figure 2. Mist net installed to capture understory birds.

An observation survey was carried out using the point-count technique, with points located at least 500 m from each other in a straight-line transect of variable length (Anderson *et al.*; 1979). The sampling transects were chosen randomly with the constraint that they were at least 500 m apart. A pair of NIKON binoculars (8x30) was used to observe the birds in 16, 7 and 4 transects set up in TCA, TOPP and TUPA, respectively. During each survey, all the birds that we seen or heard over a 10-min period at each point were recorded. The survey was conducted early in the morning from 6.30 am to 10.30 am and in the late evening from 4.00 pm to 4.30 pm. Species were identified based on the guide books of Myers (2009) and Phillipps and Phillipps (2014).

MAMMALS

Four methods were used for mammal sampling in this assessment; (i) mist-netting, (ii) observation, (iii) camera trapping and (iv) interviews. The same mist nets used for the bird survey (see above) were used to capture bats, and these were in place from 6.00 pm to 6.00 am continuously over three nights. All the bats were identified, weighed, measured, tagged and released. The observation survey was used to identify other mammals; the method involved walking along the sampling trails at TCA, TOPP and TUPA. Three units of the Bushnell HD camera trap were set up at random in TCA only. All cameras were operated over 24 hours a day for nine days. Five plantation workers who had been working with the Tinbarap oil palm plantation since its establishment were interviewed. Identification of captured and observed mammals was made by referring to Payne and Francis (1998).



Assessment of Birds

ASSESSMENT OF BIRDS

Bird are warm-blooded animals characterised by having feathers, toothless beaked jaws and a four-chambered heart and laying of hard-shelled eggs.

Complex structural and floristic diversity in the forest contributed to bird diversity. According to Myers (2009), 60% of the birds in Borneo are confined to lowland dipterocarp forests. Gaither (1994) report ed that bird diversity is lower in peat swamp forests compared to lowland dipterocarp forests.

In this assessment, a total of 103 species of birds belonging to 41 families (*Table 1*) were recorded in the Tinbarap area, using the two methods of bird survey described earlier. This represents 15.5% of the total number of birds known to occur in Borneo (Phillipps and Phillipps, 2014). The mist-netting method captured 182 birds from 42 species while the observation method recorded 847 birds from 83 species. Two globally threatened species and 20 near threatened species in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (2016) were recorded, while in terms of local law, five totally protected and 19 protected species were recorded.

The photographs of birds in this book were captured during the biodiversity assessment in TCA, TOPP and TUPA, and are accompanied by additional information on their scientific name, habitat, diet and conservation status under local law (Sarawak Wild Life Protection Ordinance, 1998) and according to the Red List of Threatened Species (2016).

FAMILY ACCIPITRIDAE: Hawks, eagles and allies



Local Name : **Lesser Fish Eagle**
Scientific Name : *Ichthyophaga humilis*
Malay Name : **Burung helang**
Diet : Commonly feeds on fish and snakes
Habitat : Rivers, lakes, lowland wetlands, coastlines and offshores
Conservation Status : Totally protected species (Sarawak Wild Life Protection Ordinance, 1998) Near threatened species (IUCN, 2016)



Local Name : **Crested Serpent Eagle**
Scientific Name : *Spilornis cheela*
Malay Name : **Burung helang berjambul**
Diet : Commonly feeds on snakes and small vertebrates
Habitat : Lowland dipterocarp and swamp forests and mangroves
Conservation Status : Least concern (IUCN, 2016)



Local Name : **Black Shoulder Kite**
Scientific Name : *Elanus caeruleus*
Malay Name : **Burung lang**
Diet : Commonly feeds on rodents, orthoperans, skinks and small birds
Habitat : Open country, paddy fields, plantations and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY ACROCEPHALIDAE: Acrocephalus warblers and allies



Local Name : **Oriental Reed-warbler**
Scientific Name : *Acrocephalus orientalis*
Diet : Commonly feeds on insects and aquatic invertebrates
Habitat : Paddy fields, grassland, and wetlands
Conservation Status : Least concern (IUCN, 2016)

FAMILY ALCEDINIDAE: Kingfishers

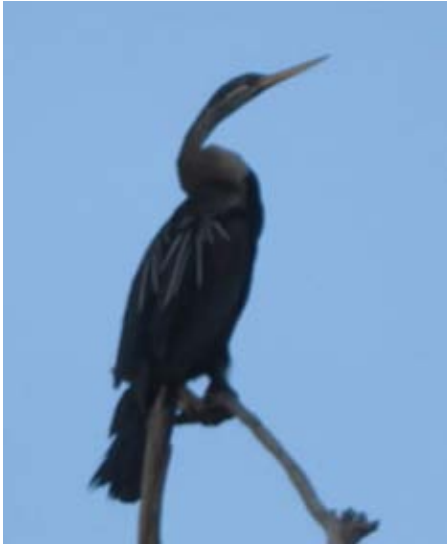


Local Name	: Stork-billed Kingfisher
Scientific Name	: <i>Pelargopsis capensis</i>
Diet	: Commonly feeds on fish, invertebrates and small vertebrates
Habitat	: Riverine areas, streams, lakes and mangroves
Conservation Status	: Protected species (Sarawak Wild Life Protection Ordinance, 1998) Least concern (IUCN, 2016)



Local Name	: Blue-eared Kingfisher
Scientific Name	: <i>Alcedo meninting</i>
Diet	: Commonly feeds on invertebrates
Habitat	: Riverine areas, streams, lakes and mangroves
Conservation Status	: Protected species (Sarawak Wild Life Protection Ordinance, 1998) Least concern (IUCN, 2016)

FAMILY ANHINGIDAE: Darters



Local Name : **Oriental Darter**
Scientific Name : *Anhinga melanogaster*
Malay Name : **Burung kosa**
Diet : Commonly feeds on fish
Habitat : Lakes and large rivers in forested areas
Conservation Status : Totally protected species (Sarawak Wild Life Protection Ordinance, 1998) Near threatened (IUCN, 2016)

FAMILY ARTAMIDAE: Woodswallows



Local Name : **White-breasted Woodswallow**
Scientific Name : *Artamus leucorhynchus*
Diet : Commonly feeds on flying insects
Habitat : Commonest swallow in Borneo. Found in open countryside, perched high up on bare branches in lowland dipterocarp and peat swamp forests.
Conservation Status : Least concern (IUCN, 2016)

FAMILY ARDEIDAE: Egrets, bitterns and herons



Local Name : **Little Egret**
Scientific Name : *Egretta garzetta*
Diet : Commonly feeds on invertebrates, small fish and tadpoles, sometimes frogs
Habitat : Mangroves, lakes, rivers, swamps, paddy fields and grassland
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)



Local Name : **Greater Egret**
Scientific Name : *Ardea alba*
Diet : Feeds mainly on invertebrates, small fish and frogs
Habitat : Estuaries, mudflats, mangroves, freshwater, lakes, and drains
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)



- Local Name : **Intermediate Egret**
Scientific Name : *Egretta intermedia*
Diet : Feeds on small fish and invertebrates
Habitat : Estuaries, mudflats, mangroves, freshwater bodies, lakes, drains and grassland.
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)



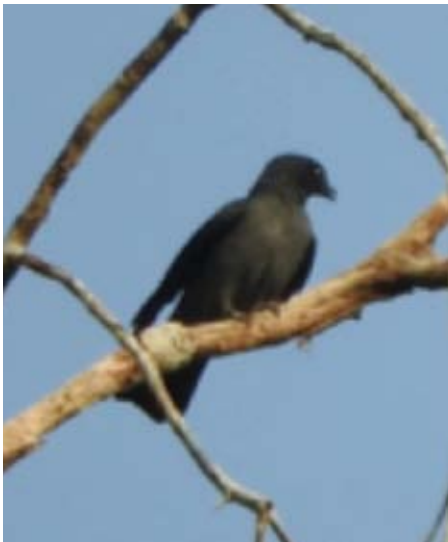
- Local Name : **Purple Heron**
Scientific Name : *Ardea purpurea*
Diet : Feeds on invertebrates and fish
Habitat : Ponds and lakes, swamps, rivers, paddy fields and oil palm plantations on peat
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)

FAMILY BUCEROTIDAE: Hornbills



- Local Name : **Black Hornbill**
Scientific : *Anthracoceros malayanus*
Name
Malay Name : ***Burung enggang***
Diet : Commonly feeds on fruits, insects and small vertebrates
Habitat : Primary and secondary lowland dipterocarp forests, mangroves forests and peat swamp forests
Conservation : Totally protected species
Status (Sarawak Wild Life Protection Ordinance, 1998)
Near threatened (IUCN, 2016)

FAMILY CAMPEPHAGIDAE: Cuckooshrikes, trillers and minivets



- Local Name : **Lesser Cuckooshrike**
Scientific : *Coracina fimbriata*
Name
Diet : Commonly feeds on small invertebrates and fruits
Habitat : Primary and secondary lowland dipterocarp forests, peat swamp forests and hill forests
Conservation : Least concern
Status (IUCN, 2016)



Local Name : **Scarlet Minivet**
Scientific Name : *Pericrocotus speciosus*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)



Local Name : **Fiery Minivet**
Scientific Name : *Pericrocotus igneus*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp, kerangas and peat swamp forests
Conservation Status : Near threatened species (IUCN, 2016)

FAMILY CAPRIMULGIDAE: Nightjars



Local Name	: Large-tailed Nightjar
Scientific Name	: <i>Caprimulgus macrurus</i>
Diet	: Commonly feeds on arboreal insects at night, sitting on the road
Habitat	: Plantations, secondary forests, kerangas and mangroves
Conservation Status	: Least concern (IUCN, 2016)

FAMILY CHLOROPSEIDAE: Leafbirds



Local Name	: Lesser Green Leafbird
Scientific Name	: <i>Chloropsis cyanopogon</i>
Diet	: Commonly feeds on insects, fruits and nectar
Habitat	: Primary and secondary lowland dipterocarp and peat swamp forests
Conservation Status	: Near threatened species (IUCN, 2016)

FAMILY COLUMBIDAE: Pigeons and doves



Local Name : **Green Imperial Pigeon**
Scientific : *Ducula aenea*
Name
Malay Name : ***Burung pergam hijau***
Diet : Commonly feed on fruits
Habitat : Primary and secondary
lowland dipterocarp
forest, peat swamp forest,
kerangas, mangroves
Conservation : Totally protected species
Status (Sarawak Wild Life
Protection Ordinance,
1998)
Least concern
(IUCN, 2016)



Local Name : **Pink-necked Green Pigeon**
Scientific : *Treron vernans*
Name
Malay Name : ***Burung punai kericao***
Diet : Commonly feeds on fruits
Habitat : Primary and secondary
lowland dipterocarp
forests, peat swamp
forests, kerangas
and mangroves
Conservation : Protected species
Status (Sarawak Wild Life
Protection Ordinance,
1998)
Least concern
(IUCN, 2016)



Local Name : **Thick-billed Green Pigeon**
 Scientific Name : *Treron Curvirostra*
 Malay Name : **Burung punai daun**
 Diet : Commonly feeds on fruits
 Habitat : Primary and secondary lowland dipterocarp forests, peat swamp forests, coastal and riverine forests, kerangas and mangroves
 Conservation Status : Least concern (IUCN, 2016)



Local Name : **Zebra Dove**
 Scientific Name : *Geopelia striata*
 Malay Name : **Burung merbok**
 Diet : Commonly feeds on seeds on the ground
 Habitat : Open woodlands, plantations, gardens and parks
 Conservation Status : Least concern (IUCN, 2016)



- Local Name : **Spotted Dove**
Scientific Name : *Streptopelia chinensis*
Malay Name : **Burung terkukur**
Diet : Commonly feeds on seeds on the ground and on fruits
Habitat : Secondary forests, open woodlands, plantations and gardens
Conservation Status : Least concern (IUCN, 2016)

FAMILY CORVIDAE: Crows, jays, magpies and treepies



- Local Name : **Slender-billed Crow**
Scientific Name : *Corvus enca*
Malay Name : **Burung gagak**
Diet : Commonly feeds on insects and small vertebrates
Habitat : Primary and secondary lowland dipterocarp, riparian and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY CORACIDAE: Rollers



Local Name : **Oriental Dollarbird**
Scientific Name : *Eurystomus orientalis*
Malay Name : ***Burung tiong batu***
Diet : Commonly feeds on large insects
Habitat : Forested riverbanks, primary and secondary lowland dipterocarp forests, mangroves and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY CUCULIDAE: Cuckoos, malkohas and coucals



Local Name : **Plaintive Cuckoo**
Scientific Name : *Cacomantis merulinus*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp, kerangas and peat swamp forests and plantations
Conservation Status : Least concern (IUCN, 2016)



- Local Name : **Chestnut-bellied Malkoha**
Scientific Name : *Phaenicophaeus sumatranus*
Malay Name : **Burung cenuk kecil**
Diet : Feeds on large insects and small vertebrates such as lizards and frogs
Habitat : Forest edges, secondary lowland dipterocarp and peat swamp forests, kerangas, riverine areas, mangroves and plantations
Conservation Status : Least concern (IUCN, 2016)



- Local Name : **Chestnut-breasted Malkoha**
Scientific Name : *Zanclostomus curvirostris*
Malay Name : **Burung cenuk birah**
Diet : Commonly feeds on insects, nestlings and small vertebrates such as lizards and frogs
Habitat : Primary and secondary lowland dipterocarp and peat swamp forests and plantations
Conservation Status : Least concern (IUCN, 2016)

FAMILY DICRURIDAE: Drongost



Local Name : **Greater Racquet-tailed Drongo**

Scientific Name : *Dicrurus paradiseus*

Malay Name : **Burung ca hamba kera**

Diet : Commonly feeds on insects

Habitat : Primary and secondary lowland dipterocarp forests, kerangas, mangroves and peat swamp forests

Conservation Status : Least concern (IUCN, 2016)

FAMILY ESTRILDIDAE: Munias



Local Name : **Chestnut Munia**

Scientific Name : *Lonchura atricapilla*

Diet : Commonly feeds on grass seeds

Habitat : Grassland, paddy fields and plantations

Conservation Status : Least concern (IUCN, 2016)

FAMILY EURYLAIMIDAE: Broadbills



- Local Name : **Black and Red Broadbill**
Scientific Name : *Cymbirhynchus macrorhynchos*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp forests, riverine areas, peat swamp forests and mangroves
Conservation Status : Least concern (IUCN, 2016)

FAMILY FALCONIDAE: Falcons



- Local Name : **Black-thighed Falconet**
Scientific Name : *Microhierax fringillarius*
Diet : Commonly feeds on large insects, small birds and lizards
Habitat : Primary and secondary lowland dipterocarp forests and peat swamp forests
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)

FAMILY IRENIDAE: Fairy-bluebirds



Local Name : **Asian Fairy-bluebird**
Scientific Name : *Irena puella*
Diet : Commonly feeds on fruits and insects
Habitat : Primary and secondary lowland dipterocarp, kerangas and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY LANIIDAE: Shrikes



Local Name : **Brown shrike**
Scientific Name : *Lanius cristatus*
Diet : Commonly feeds on large insects and lizards
Habitat : Primary and secondary lowland dipterocarp forests and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY MEROPIDAE: Bee-eaters



- Local Name : **Blue-throated Bee-eater**
Scientific : *Merops viridis*
Name : Commonest bee-eater in Borneo
Diet : Commonly feeds on flying insects
Habitat : Primary and secondary lowland dipterocarp and peat swamp forests
Conservation : Least concern
Status (IUCN, 2016)

FAMILY MUSCICAPIDAE: Chats, forktails and allies



- Local Name : **Oriental Magpie Robin**
Scientific : *Copsychus saularis*
Name :
Malay Name : **Semalau/Murai kampung**
Diet : Commonly feeds on invertebrates and small vertebrates
Habitat : Coastal woodlands, mangroves, plantations and gardens
Conservation : Least concern
Status (IUCN, 2016)

FAMILY NECTARIIDAE: Sunbirds and spiderhunters



- Local Name : **Little Spiderhunter**
Scientific Name : *Arachnothera longirostra*
Malay Name : ***Burung kelicap jantung***
Diet : Commonly feeds on nectar and insects
Habitat : Primary and secondary lowland dipterocarp forests, kerangas and plantations
Conservation Status : Least concern (IUCN, 2016)



- Local Name : **Brown-throated Sunbird**
Scientific Name : *Anthreptes malacensis*
Malay Name : ***Burung kelicap mayang kelapa***



- Diet : Commonly feeds on nectar and insects
Habitat : Secondary lowland dipterocarp, peat swamp forests, kerangas, mangroves and plantations
Conservation Status : Least concern (IUCN, 2016)



- Local Name : **Ruby-cheeked Sunbird**
Scientific Name : *Chalcoparia singalensis*
Malay Name : ***Burung kelicap***
Diet : Commonly feeds on nectar and insects
Habitat : Primary and secondary lowland dipterocarp to hill forests, peat swamp forests and mangroves and plantations
Conservation Status : Least concern (IUCN, 2016)

FAMILY PHYLLOSCOPIDAE: Warblers



- Local Name : **Artic Warbler**
Scientific Name : *Phylloscopus borealis*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp and peat swamp forests. Non-breeding visitor to Borneo.
Conservation Status : Least concern (IUCN, 2016)



Local Name : **Rusty-rumped Warbler**
 Scientific Name : *Locustella certhiola*
 Diet : Commonly feeds on insects
 Habitat : Grassland, wetlands and paddy fields
 Conservation Status : Least concern (IUCN, 2016)

FAMILY PICIDAE: Woodpeckers



Local Name : **Grey-and-Buff Woodpecker**
 Scientific Name : *Hemicircus concretus*
 Malay Name : **Burung pelatuk**
 Diet : Commonly feeds on insects
 Habitat : Primary and secondary lowland dipterocarp, peat swamp and hill forests and kerangas
 Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
 Least concern (IUCN, 2016)



Local Name : **Rufous Piculet**
Scientific Name : *Sasia abnormis*
Malay Name : **Burung pelatuk kecil**
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp, peat swamp and hill forests and plantations
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)



Local Name : **Buff-necked Woodpecker**
Scientific Name : *Meiglyptes tukki*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp and peat swamp forests and plantations
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Near threatened species (IUCN, 2016)

FAMILY PSITTACIDAE: Parrots and parakeets



Local Name	: Long-tailed Parakeet
Scientific Name	: <i>Psittacula longicauda</i>
Malay Name	: Burung bayan nuri
Diet	: Commonly feeds on fruits, seeds and flowers
Habitat	: Lowland forests, mangroves forests and peat swamp forests
Conservation Status	: Protected species (Sarawak Wild Life Protection Ordinance, 1998) Near threatened (IUCN, 2016)

FAMILY PYCNONOTIDAE: Bulbuls



- Local Name : **Red-eyed Bulbul**
Scientific Name : *Pycnonotus brunneus*
Malay Name : ***Burung merbah mata merah***
Diet : Commonly feeds on fruits and small invertebrates
Habitat : Primary and secondary lowland dipterocarp forests, kerangas and peat swamp forest
Conservation Status : Least concern (IUCN, 2016)



- Local Name : **Yellow-vented Bulbul**
Scientific Name : *Pycnonotus goiavier*
Malay Name : ***Burung merbah kapur***
Diet : Commonly feeds on insects and fruits
Habitat : Primary and secondary lowland dipterocarp, kerangas and peat swamp forest, and plantations
Conservation Status : Least concern (IUCN, 2016)

FAMILY PYCNONOTIDAE: Bulbuls



Local Name : **Olive-winged Bulbul**
Scientific Name : *Pycnonotus plumosus*
Malay Name : **Burung merbah**
Diet : Commonly feeds on fruits and small invertebrates
Habitat : Primary and secondary lowland dipterocarp, kerangas and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY RALLIDAE: Rails, gallinules and allies



Local Name : **White-breasted Waterhen**
Scientific Name : *Amauornis phoenicurus*
Malay Name : **Burung wak wak**
Diet : Commonly feeds on small invertebrates and insects
Habitat : Rivers, ponds, lakes, drains, paddy fields, swampy areas and mangroves
Conservation Status : Least concern (IUCN, 2016)

FAMILY RAMPHASTIDAE: Barbets



Local Name : **Bornean Brown Barbet**
Scientific Name : *Calorhamphus fuliginosus*
Diet : Commonly feeds on fruits and insects
Habitat : Primary and secondary lowland dipterocarp forests, peat swamp forests and kerangas forests
Conservation Status : Least concern (IUCN, 2016)

FAMILY RHIPIDURIDAE: Fantails



Local Name : **Pied Fantail**
Scientific Name : *Rhipidura javanica*
Diet : Commonly feeds on insects
Habitat : Peat swamp forests, secondary growth and plantations
Conservation Status : Least concern (IUCN, 2016)

FAMILY SCOLOPIDAE: Snipe, sandpipers and allies



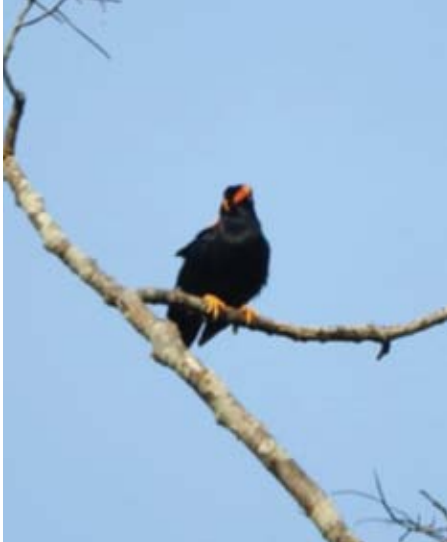
Local Name : **Common Sandpiper**
Scientific Name : *Actitis hypoleucos*
Diet : Feeds on small invertebrates, fish, tadpoles and plant materials
Habitat : Beaches, mangroves, waterways, plantations and paddy fields
Conservation Status : Least concern (IUCN, 2016)

FAMILY STRIGIDAE: Typical owls



Local Name : **Reddish Scops Owl**
Scientific Name : *Otus rufescens*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp to lower montane forests
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Near threatened species (IUCN, 2016)

FAMILY STURNIDAE: Myna



Local Name : **Common Hill Myna**
Scientific Name : *Gracula religiosa*
Malay Name : **Burung tiong**
Diet : Commonly feeds on fruits and insects
Habitat : Primary and secondary lowland dipterocarp forests, peat swamp forests and mangroves
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)

FAMILY TIMALIIDAE: Babblers



Local Name : **Chestnut-winged Babbler**
Scientific Name : *Stachyris erythroptera*
Diet : Commonly feeds on insects
Habitat : Primary and secondary lowland dipterocarp, kerangas and peat swamp forests and plantations
Conservation Status : Least concern (IUCN, 2016)



Local Name : **Fluffy-backed Tit Babbler**
 Scientific Name : *Macronous ptilosus*
 Diet : Commonly feeds on insects
 Habitat : Primary and secondary lowland dipterocarp, hill and peat swamp forests and mangroves
 Conservation Status : Near threatened species (IUCN, 2016)



Local Name : **White-chested Babbler**
 Scientific Name : *Trichastoma rostratum*
 Diet : Commonly feeds on insects
 Habitat : Primary and secondary lowland dipterocarp forests, riverine areas, peat swamps and mangroves
 Conservation Status : Near threatened species (IUCN, 2016)



- Local Name : **Grey-breasted Babbler**
Scientific Name : *Malacopteron albogulare*
Diet : Commonly feeds on insects
Habitat : Primary peat swamp forests and kerangas
Conservation Status : Near threatened species (IUCN, 2016)



- Local Name : **Bold-striped Tit Babbler**
Scientific Name : *Macronous bornensis*
Diet : Commonly feeds on insects
Habitat : Disturbed primary and secondary lowland dipterocarp forests, peat swamp forests, plantations and mangroves
Conservation Status : Least concern (IUCN, 2016)



Local Name : **Black-throated Babbler**
 Scientific Name : *Stachyris nigricollis*
 Diet : Commonly feeds on insects
 Habitat : Primary, secondary and disturbed lowland dipterocarp forests, peat swamp forests and kerangas
 Conservation Status : Near threatened species (IUCN, 2016)



Local Name : **Diard's Trogon**
 Scientific Name : *Harpactes diardii*
 Diet : Commonly feeds on insects
 Habitat : Primary and secondary lowland dipterocarp forests, peat swamp forests and kerangas
 Conservation Status : Near threatened species (IUCN, 2016)



Assessment of Mammal

ASSESSMENT OF MAMMAL

Mammals are warm-blooded animals which have fur on hair, four-chambered hearts, relatively large brains and they suckle their young. There are 19 orders of mammals in the world.

In the tropical rainforest, most mammal species occur in the lowland dipterocarp forest, with fewer species in the peat swamp forest and the kerangas forest. Some species are limited to higher elevations in the hill or montane forest. Many mammalian species appear to survive in altered habitats, logged and secondary forests or even in plantations, where the vegetation is less dense and with better visibility.

In this assessment, 10 species of mammals (*Table 2*), which include primates, bats, rodents, wild boars, rats, deer, wild cats, bears and squirrels were recorded (*Appendix 2*). These mammals are distributed in nine families and five genera: the families being (number of species per family in parenthesis): Ceropithecidae (2), Muridae (2), Pteropodidae (1), Vespertilionidae (1), Sciuridae (1), Suidae (1), Cervidae (1), Ursidae (1) and Felidae (1). Five species (*Macaca nemestrina*, *Maxomys whiteheadi*, *Rusa* sp., *Sus barbatus* and *Prionailurus bengalensis*) are listed as globally threatened 'vulnerable species' in the IUCN Red List 2016 and one is listed as a 'near threatened species' in the IUCN Red List of threatened species 2016. Six species are listed as protected species under the Sarawak Wild Life Protection Ordinance, 1998.

The photographs of the mammals in this book were taken during the biodiversity assessment in TCA, TOPP and UPA, and are accompanied by additional information on their scientific names, habitat, diet and conservation status under local law (Sarawak Wild Life Protection Ordinance, 1998) and under the Red List of Threatened Species, 2016.

FAMILY CERCOPITHECIDAE: Monkey and macaques



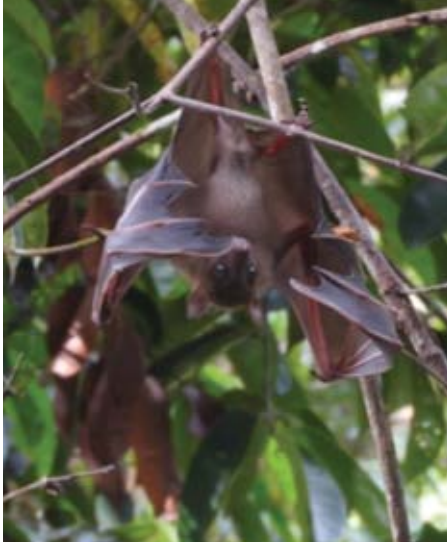
- Local Name : **Pig-tailed Macaque**
Scientific Name : *Macaca nemestrina*
Malay Name : **Beruk**
Diet : Commonly feeds on fruits, small invertebrates and vertebrates
Habitat : Hill forests, plantations, gardens and lowland dipterocarp forests
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Vulnerable species (IUCN, 2016)

FAMILY MURIDAE: Rats



- Local Name : **Whitehead's Rat**
Scientific Name : *Maxomys whiteheadi*
Diet : Commonly feeds on insects
Habitat : Secondary forests and paddy fields
Conservation Status : Vulnerable species (IUCN, 2016)

FAMILY PTEROPODIDAE: Fruit and nectar bats



- Local Name : **Short-nosed Fruit Bat**
Scientific Name : *Cynopterus brachyotis*
Malay Name : ***Kelawar cecadu pisang***
Diet : Commonly feeds on fruit, pollen and nectar
Habitat : Lower montane forests, dipterocarp forests, gardens, plantations, peat swamp forests and mangroves
Conservation Status : Protected species (Sarawak Wild Life Protection Ordinance, 1998)
Least concern (IUCN, 2016)

FAMILY SCIURIDAE: Squirrels



- Local Name : **Plantain Squirrel**
Scientific Name : *Callosciurus notatus*
Malay Name : ***Tupai***
Diet : Commonly feeds on fruits and insects
Habitat : Gardens, plantations, secondary forests and peat swamp forests
Conservation Status : Least concern (IUCN, 2016)

TABLE 1. LIST OF BIRDS RECORDED IN TCA, TOPP AND TUPA AND THEIR CONSERVATION STATUS UNDER THE SARAWAK WILD LIFE PROTECTION ORDINANCE, 1998 AND THE INTERNATIONAL UNION FOR CONSERVATION, 2016

Family	Common name	Scientific name	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Sturnidae	Hill Myna	<i>Gracula religiosa</i>	34	LC	P	✓		
Pycnonotidae	Hook-billed Bulbul	<i>Setornis criniger</i>	-	V		✓		
	Yellow-vented Bulbul	<i>Pycnonotus goiavier</i>	30	LC		✓	✓	✓
	Olive-winged Bulbul	<i>Pycnonotus plumosus</i>	31	LC		✓		✓
	Buff-vented Bulbul	<i>Iole olivacea</i>	-	NT				✓
	Red-eyed Bulbul	<i>Pycnonotus brunneus</i>	30	LC		✓		
Rhipiduridae	Black-and-white Bulbul	<i>Pycnonotus melanoleucos</i>	-	NT				✓
	Pied Fantail	<i>Rhipidura javanica</i>	32	LC		✓	✓	✓
	Dark-necked Tailorbird	<i>Orthotomus atrogularis</i>	-	LC		✓	✓	✓
Cisticolidae	Rufous-tailed Tailorbird	<i>Orthotomus sericeus</i>	-	LC		✓	✓	✓
	Red-headed Tailorbird	<i>Orthotomus ruficeps</i>	-	-		✓	✓	✓
	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	-	-			✓	✓
Estrildidae	Dusky Munia	<i>Lonchura fuscans</i>	-	LC		✓	✓	✓
	Chestnut Munia	<i>Lonchura atricapilla</i>	21	LC		✓	✓	✓
Cuculidae	Greater Coucal	<i>Centropus sinensis</i>	-	LC		✓	✓	✓

Family	Common Name	Scientific name	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Accipitridae	Lesser Coucal	<i>Centropus bengalensis</i>	-	LC		✓		✓
	Square-tailed Drongo-cuckoo	<i>Sumiculus lugubris</i>	-	LC		✓		
	Indian Cuckoo	<i>Cuculus micropterus</i>	-	LC		✓		
	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	19	LC		✓	✓	✓
	Chestnut-breasted Malkoha	<i>Phaenicophaeus curvirostris</i>	20	LC		✓		
	Chestnut-bellied Malkoha	<i>Phaenicophaeus sumatranus</i>	20	NT		✓		
	Black Shoulder Kite	<i>Elanus caeruleus</i>	8	LC		✓		✓
	Crested Goshawk	<i>Accipiter trivirgatus</i>	-	LC		✓		
	Grey-headed Fish Eagle	<i>Ichthyophaga ichthyaetus</i>	-	NT	TP	✓		
	Lesser Fish Eagle	<i>Ichthyophaga humilis</i>	7	NT	TP	✓		
Hirundinidae	Crested Serpent Eagle	<i>Spilornis cheela</i>	7	LC		✓		
	Pacific Swallow	<i>Hirundo tahitica</i>	-	LC		✓	✓	✓
	White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	10	LC		✓	✓	
	White-breasted Waterhen	<i>Anaurnis phoenicurus</i>	31	LC		✓	✓	✓
	Black-throated Babbler	<i>Stachyris nigricollis</i>	37	NT		✓		
	Bold-striped Tit Babbler	<i>Macronous bornensis</i>	36	LC		✓		✓
	Fluffy-backed Tit Babbler	<i>Macronous pilosus</i>	35	NT		✓		
	Chestnut-winged Babbler	<i>Stachyris erythroptera</i>	34	LC		✓		
	White-chested Babbler	<i>Trichastoma rostratum</i>	35	NT		✓		
	Grey-breasted Babbler	<i>Malacopteron albobulare</i>	36	NT		✓		
Timaliidae	Sooty-capped Babbler	<i>Malacopteron affine</i>	-	NT		✓		

TABLE 1. LIST OF BIRDS RECORDED IN TCA, TOPP AND TUPA AND THEIR CONSERVATION STATUS UNDER THE SARAWAK WILD LIFE PROTECTION ORDINANCE, 1998 AND THE INTERNATIONAL UNION FOR CONSERVATION, 2016

Family	Common name	Scientific name	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Columbidae	Short-tailed Babbler	<i>Malacocincla malaccensis</i>	-	NT		✓		
	Black-capped Babbler	<i>Pellorneum capistratum</i>	-	LC		✓		
	Green Imperial Pigeon	<i>Ducula aenea</i>	16	LC	TP	✓		
	Thick-billed Green Pigeon	<i>Treron curvirostra</i>	17	LC		✓		
	Pink-necked Green Pigeon	<i>Treron vernans</i>	16	LC		✓		
	Spotted Dove	<i>Streptopelia chinensis</i>	18	LC		✓	✓	✓
	Zebra Dove	<i>Geopelia striata</i>	17	LC			✓	
	Common Iora	<i>Aegithina tiphia</i>	-	LC		✓		✓
	Plain Sunbird	<i>Anthreptes simplex</i>	-	LC		✓		
	Purple-naped Sunbird	<i>Hypogramma hypogrammicum</i>	-	LC		✓		
Aegithinidae	Scarlet Sunbird	<i>Aethopyga temminckii</i>	-	LC		✓		
	Olive-backed Sunbird	<i>Nectarinia jugularis</i>	-	LC		✓		
	Ruby-cheeked Sunbird	<i>Chalcoparia singalensis</i>	26	LC		✓		✓
	Little Spiderhunter	<i>Arachnothera longirostra</i>	25	LC		✓		
	Brown-throated Sunbird	<i>Anthreptes malaccensis</i>	25	LC		✓	✓	✓
Corvidae	Slender-billed Crow	<i>Corvus enca</i>	18	LC		✓		
	Large-billed Crow	<i>Corvus macrorhynchos</i>	-	LC		✓		

Family	Common name	Scientific name	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Falconidae	Black-thighed Falconet	<i>Microhierax fringillarius</i>	22	LC	P	✓		
Coraciidae	Oriental Dollarbird	<i>Eurystomus orientalis</i>	19	LC		✓		
Muscicapidae	Oriental Magpie Robin	<i>Copsychus saularis</i>	24	LC			✓	
	Grey-chested Jungle Flycatcher	<i>Rhinomyias umbratilis</i>	-	NT		✓		
	Blue Rock-thrush	<i>Monticola solitarius</i>	-	LC		✓		
Apodidae	Edible nest Swiftlet	<i>Aerodramus fuciphagus</i>	-	LC	P	✓		
	Silver-rumped Spinetail	<i>Rhipidura leucopygialis</i>	-	LC	P	✓		
Ardeidae	Little Egret	<i>Egretta garzetta</i>	11	LC	P		✓	
	Intermediate Egret	<i>Egretta intermedia</i>	12	LC	P	✓	✓	✓
	Greater Egret	<i>Ardea alba</i>	11	LC	P	✓		
	Cattle Egret	<i>Bubulcus ibis</i>	-	LC	TP		✓	
	Yellow Bittern	<i>Ixobrychus sinensis</i>	-	LC	P	✓	✓	✓
	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	-	LC	P		✓	
	Purple Heron	<i>Ardea purpurea</i>	12	LC	P		✓	✓
Scolopacidae	Common Sandpiper	<i>Actitis hypoleucos</i>	33	LC			✓	
Caprimulgidae	Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	15	LC			✓	✓
Psittacidae	Long-tailed Parakeet	<i>Psittacula longicauda</i>	29	NT	P	✓		

TABLE 1. LIST OF BIRDS RECORDED IN TCA, TOPP AND TUPA AND THEIR CONSERVATION STATUS UNDER THE SARAWAK WILD LIFE PROTECTION ORDINANCE, 1998 AND THE INTERNATIONAL UNION FOR CONSERVATION, 2016

Family	Common name	Scientific name	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Dicruidae	Greater Racquet-tailed Drongo	<i>Dicrurus paradiseus</i>	21	LC		✓		
	Bronzed Drongo	<i>Dicrurus aeneus</i>	-	LC		✓		
Bucerotidae	Asian Black Hornbill	<i>Anthracoceros Malayanus</i>	13	NT	TP	✓		
Alcedinidae	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	9	LC	P	✓	✓	
	Blue-eared Kingfisher	<i>Alcedo meninting</i>	9	LC	P	✓		✓
	Grey and Buff Woodpecker	<i>Hemicircus concolor</i>	-	LC	P	✓		
Picidae	Buff-necked Woodpecker	<i>Meiglyptes tukki</i>	28	NT	P	✓		
	Rufous Woodpecker	<i>Micropternus brachyurus</i>	-	LC	P	✓		
	Rufous Piculet	<i>Sasia abnormis</i>	28	LC	P	✓		
	Great Slaty Woodpecker	<i>Mulleripicus pulverulentus</i>	-	V	P	✓		
Dicaeidae	Yellow-breasted Flowerpecker	<i>Prionochilus maculatus</i>	-	LC		✓		
	Orange-bellied Flowerpecker	<i>Dicaeum trigonostigma</i>	-	LC		✓		
Campephagidae	Scarlet Minivet	<i>Pericrocotus flammeus</i>	14	LC		✓		
	Fiery Minivet	<i>Pericrocotus igneus</i>	14	NT		✓		
	Lesser Cuckooshrike	<i>Coracina fimbriata</i>	13	LC		✓		
	Pied Thriller	<i>Lalage nigra</i>	-	LC		✓		
Irenidae	Lesser Green Leafbird	<i>Chloropsis cyanopogon</i>	15	NT		✓		

Family	Common name	Scientific name	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Ramphastidae	Asian Fairy-bluebird	<i>Irena puella</i>	23	LC		✓		
	Bornean Brown Barbet	<i>Calorhamphus fuliginosus</i>	32	LC		✓		
	Blue-eared Barbet	<i>Megalaima australis</i>	-	LC		✓		
Trogonidae	Diard's Trogon	<i>Harpactes diardii</i>	37	NT		✓		
Strigidae	Reddish Scops Owl	<i>Otus rufescens</i>	33	NT	P	✓		
Tytonidae	Oriental Bay Owl	<i>Phodilus badius</i>	-	LC	P		✓	
Eurylaimidae	Black-and-Red Broadbill	<i>Cymbirhynchus macrorhynchos</i>	22	LC		✓		
Phylloscopidae	Arctic Warbler	<i>Phylloscopus borealis</i>	26	LC		✓		
	Pale-legged Leaf Warbler	<i>Phylloscopus tenellipes</i>	-	LC		✓		
	Rusty-rumped Warbler	<i>Locustella certhiola</i>	27	LC			✓	✓
	Oriental Reed-warbler	<i>Acrocephalus orientalis</i>	8	LC				✓
Motacillidae	Richard's Pipit	<i>Anthus richardi</i>	-	LC				✓
Meropidae	Blue-throated Bee-eater	<i>Merops viridis</i>	24	LC		✓		
Anhingidae	Oriental Darter	<i>Anhinga melanogaster</i>	10	NT	TP	✓		
Laniidae	Brown Shrike	<i>Lanius cristatus</i>	23	LC		✓		
	Tiger Shrike	<i>Lanius tigrinus</i>	-	LC		✓		

Note: (SWLPO; TP-Totally Protected, P-Protected), 1998 and The International Union for Conservation of Nature (IUCN; V-Vulnerable, NT-Near Threatened, LC-Least Concern), 2016 recorded in Conservation Area of Tinbarap Oil Palm Plantation (TCA), Tinbarap Oil Palm Plantation (TOPP) and Unplanted Area (UPA).

TABLE 2. LIST OF MAMMALS RECORDED IN TCA, TOPP AND TUPA AND THEIR CONSERVATION STATUS UNDER THE SARAWAK WILD LIFE PROTECTION ORDINANCE, 1998 AND THE INTERNATIONAL UNION FOR CONSERVATION OF NATURE, 2016

Order	Family	Common Name	Scientific Name	Method	Page No.	IUCN, 2016	SWLPO, 1998	TCA	TOPP	TUPA
Chiroptera	Pteropodidae	Short-nosed Fruit Bat	<i>Cynopterus brachyotis</i>	Captured	41	P	LC	✓	✓	✓
	Vespertilionidae	Small-wooly Bat	<i>Kerivoula intermedia</i>	Captured	-	P	NT	✓		
Rodentia	Sciuridae	Plantain Squirrel	<i>Callosciurus notatus</i>	Observed	41		LC	✓		✓
	Muridae	Muller's Rat	<i>Sundamys muelleri</i>	Observed			LC	✓		
		Whitehead's Rat	<i>Maxomys whiteheadi</i>	Observed	40		VUL	✓		
Primate	Cercopithecidae	Pig-tailed Macaque	<i>Macaca nemestrina</i>	Observed	40	P	VUL	✓		
Artiodactyla	Suidae	Bearded Pig	<i>Sus barbatus</i>	Reported by workers	-		VUL	✓		✓
	Cervidae	Deer	<i>Rusa sp.</i>	Reported by workers	-		VUL	✓		
Carnivora	Ursidae	Sun Bear	<i>Helarctos malayanus</i>	Reported by workers	-	P	VUL	✓		
	Felidae	Leopard Cat	<i>Prionailurus bengalensis</i>	Found injured at forest edge	-	P	LC	✓		

Note: SWLPO-Sarawak Wild Life Protection Ordinance; IUCN-International Union on Conservation of Nature; TP-Totally Protected; P-Protected; V-Vulnerable; NT-Near Threatened; LC-Least Concern.

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