

**FAUNA SURVEY FOR GOLD MINING EXPLORATION AREA OF  
PT INDO MULTI NIAGA AT TUJUH BUKIT (TUMPANG PITU-  
SALAKAN), PESANGGARAN, BANYUWANGI DISTRICT,  
EAST JAVA PROVINCE**



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**2008**

# **FAUNA SURVEY FOR GOLD MINING EXPLORATION AREA OF PT INDO MULTI NIAGA AT TUJUH BUKIT (TUMPANG PITU- SALAKAN), PESANGGARAN, BANYUWANGI DISTRICT, EAST JAVA PROVINCE**

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## **INTRODUCTION**

### **Background**

PT. INDO MULTI NIAGA (IMN) is one of company which held at gold mining project at East Java. PT IMN have licensed area statement of exploration around 11 621,5 ha at Tujuh Bukit (Tumpang Pitu – Salakan) area, Pesanggaran, Banyuwangi District. PT IMN has concerned to minimize negative impact on environmental issue for developing of the property. The IMN started with fauna survey at the project area to collect information and data in relation to fauna present at the property since beginning of the exploration project.

To develop positive impact on exploration of gold mining at the property is not only make technical and economic orientated, but also ecological reasons. From beginning state of exploration planning, PT IMN will comply with all regulations are used in Indonesia such as the biodiversity convention regarding to high biodiversity value of the exploration area through fauna survey.

### **Objective of the Study**

The fauna survey at the exploration area of PT IMN at Tujuh Bukit (Tumpang Pitu – Salakan) area Banyuwangi district is to gain

1. Basic information and data are related with species diversity of wildlife at the site area
2. Local distribution and abundances of wildlife
3. The status of wildlife at site study

## STUDY AREA

The gold mining exploration concession area of PT. Indo Multi Niaga (IMN) is located at Sout Eastern part of the Java island at (  $8^{\circ}26'45''$  -  $8^{\circ}47'00''$  latitude south and  $112^{\circ}20'245''$  -  $114^{\circ}36'00''$  longitude east). The topography of the project area is mostly hilly and mountainous. Very few at the property have flat area. The valley was very steep. The slope was mostly more than 45 %.

The project area is dissected by numerous small streams. Some rivers flow from the project area such as Udang, Pancer and Gede river. The drainage pattern of the rivers was dendritic. All of the river at IMN concession flow to the South direction and joint with Indian Sea.

According to Smith and Ferguson, Banyuwangi District is classified to B rainfall type. The climate conditions is wet for about 8 months ( $>200$  mm rainfall) and dry ( $<100$  mm rainfall) for about 4 months of the year. The average annual precipitation was around 1458 mm and the average rainfall days each year was around 95 days. The dry season fall from June to September. Annual average temperature was  $28.2^{\circ}$  C and average humidity was around 85 %.

The soil at the project area have texture sandy loamy with grey brown color. Soil physically was crumb and soil deep is sallow. The soil at terrain area was alluvial, brown color and the solum was deep. The soil chemists at project area were classified a fertile soil.

The exploration area was developed on current vegetation mostly low land forest. Forest type of the project area can divided such as beach forest, low land forest at hilly area. Vegetation occurs at beach forest such as *Hibiscus tilliaceus*, *Syzigium sp*, *Pandanus tectorius*, and *Terminalia catappa*. The dominant vegetation at low land forest are, *Dracontomelon dao*, *Baccaurea javanica* *Pterospermum javanicum*, and *Gironniera cuspida*, at Tumpang Pitu forest but for Salakan forest is *Spondias pinnata*, *Pterospermum javanicum*, *Ficus variegata*, and *Artocarpus elastica*.

Besides, low land forest, was present several wildlife habitat type at the property such as and teak plantation, rubber plantation, cacao plantation, paddy field, and home garden.

## METHODS

### Location and Time

The study was conducted at PT IMN exploration area in Banyuwangi. At least five teen days for get data and information related to wildlife diversity, from 08 – 23 February 2008. The observations were focused at forested area of Tumpang Pitu (Tumpang Pitu – Salakan) Pesanggaran, Banyuwangi District. The location of sample plot is mostly covered by tropical low land forest at hill area.

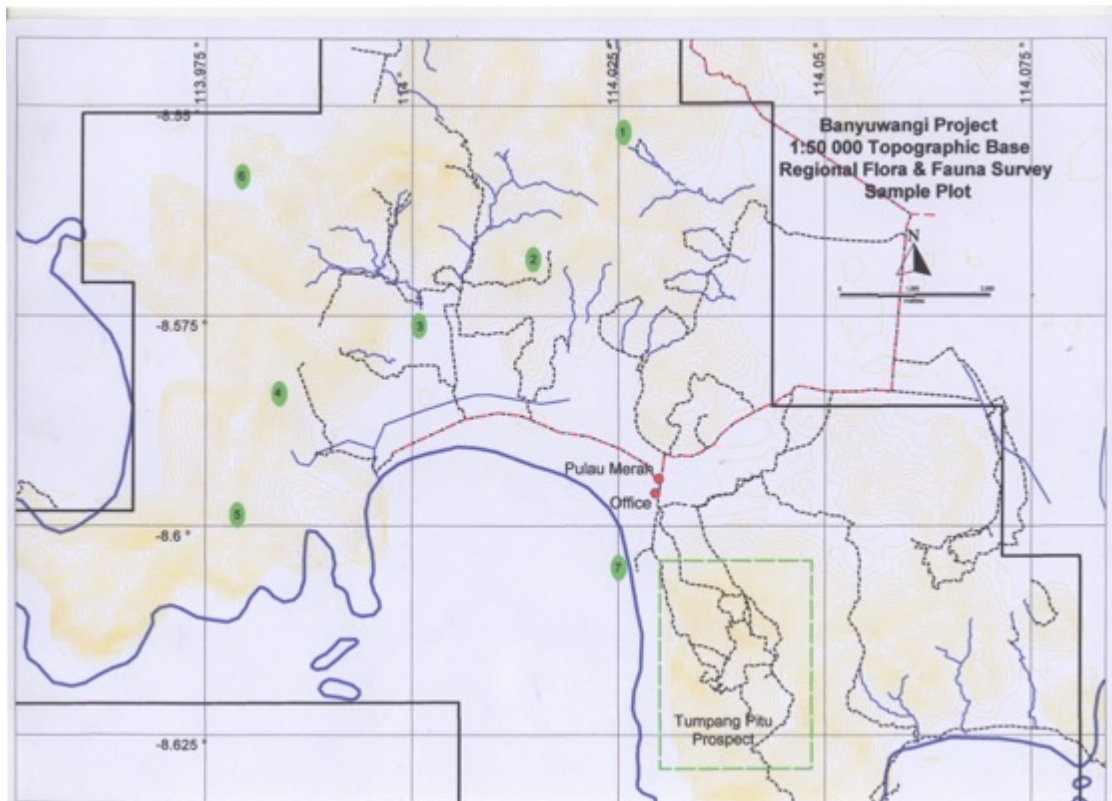


Figure 1. Salakan sampling site

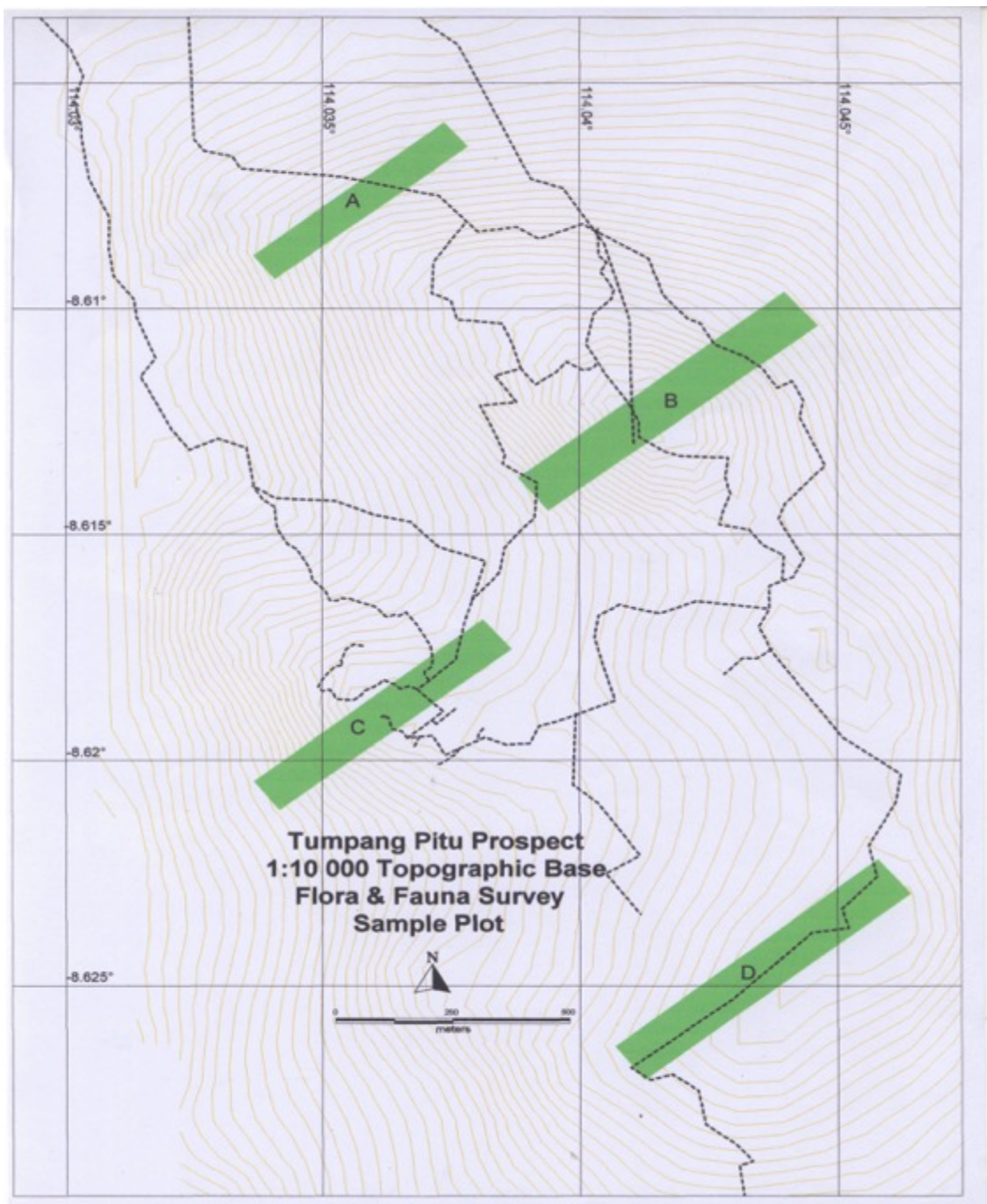


Figure 2. Tumpang Pitu sampling site

Sample plot was selected at two block area Tumpang Pitu and Salakan. The position of sample plot was recorded at table..

Table 1. Position of sample plot at PT IMN concession area

No	Transect	Coordinate Position	
		Latitude South	Longitude East
1	Salakan 1	08° 32' 45.7"	114° 01' 26.5"
2	Salakan 2	08° 34' 13.2"	114° 00' 52.2"
3	Salakan 3	08° 34' 00.2"	114° 00' 26.3"
4	Salakan 4	08° 34' 43.3"	113° 59' 22.0"
5	Wedi Ireng	08° 35' 51.9"	113° 59' 00.8"
6	Salakan 5	08° 34' 01.4"	113° 59' 00.8"
7	Tumpang Pitu 1/A	08° 36' 32.1"	114° 02' 03.0"
8	Tumpang Pitu 2/B	08° 36' 39.2"	114° 02' 35.1"
9	Tumpang Pitu 3/C	08° 37' 06.7"	114° 02' 13.2"
10	Tumpang Pitu 4/D	08° 37' 21.2"	114° 02' 46.7"
11	Pulau Merah		

## Equipment and Materials

Tools were used in this survey: Map of IMN concession area, GPS, compass, chronometer, binocular, tele-lens camera, handy camera and field guide to the birds of Java and Bali (Mackinnon,1990), field guide to the Mammals of Borneo (Payne at all, 1994), and cage trap for rat.

## Methods

The wildlife inventory was carried out by transect method combination with IPA count for birds. Six transect were made at Salakan area and Four transect at Tumpang Pitu area. The each Salakan transect is 400 m and 500 m for each Tumpang Pitu transect . The counting of individual numbers was based on direct visual contact or the animal track. Besides direct observation to wild animal, interview with local people was done to know about fauna occur at project area.

Besides direct and indirect observation, cage trap for rat (20 piece) also was used to help on identification which the animal are difficult to get direct contact.

## *Bird Census*

Six transects of 400 meter length in each, has been laid out the low land forest hill area of Salakan and 500 m length in each transect of Tumpang Pitu. At 100 m intervals along each transect, all bird calls or sightings within 100 m from the observer were recorded over 20

minute periods. This provided a quantitative measure of the relative abundance of species. Daily species lists have been prepared as an indication of the comprehensiveness of the inventory: fewer species will be added as the total list becomes more complete.

### ***Interviews***

Semi-structured interviews with local guides/inhabitants provided information to make more completely the data.

### ***Data analysis***

Data from the bird censuses were used to calculate the following ecological measures:

#### ***Species Diversity Index***

The Shannon index (Magurran 1988) describes bird species diversity along the different transects:

$$H = -\sum p_i \ln p_i$$

in which  $p_i$  is the number of individuals of species divided by the total number of individuals. Species diversity is influenced by its components Species Richness (number of species in the sample) and Evenness (also called Equitability). The following formula was used:

$$E = H/H_{\max}$$

in which  $H_{\max} = -\log 1/n$  ( $n$  = number of species in the sample).

#### ***Similarity indices***

The Jaccard similarity index ( $S$ ) (in Mueller-Dombois & Ellenberg 1974) shows the change in species composition among different samples (i.e., along the different transects):

$$S = c / a+b+c$$

in which  $a$  and  $b$  are numbers of species unique to samples 1 and 2 respectively, and  $c$  is species common to both.

Dendrogram was used for analysis clustering birds community in each habitat at sampling site. Minitab SPSS 14 was used on help process clustering analysis.

# RESULTS AND DISCUSSION

## RESULTS

### Habitat

The wildlife/fauna type habitat developed at PT IMN concession area, such as beach forest, mangrove low land forest hill area, teak plantation forest, albizia plantation, paddy field and home garden area. Most of fauna, which are found the project area, it have correlated with occurred of the forest at the project area.

Beach forest was dominated by vegetation such as *Sizygium sp*, *Hibiscus tilliaceus*, *Terminalia cattapa*, and *Pandanus tectorius*. These forests occurred at long cost at southern part, which it was direct bordered with Indian ocean and it width is between 25 – 100 m. The forest has simple storey 1 – 2 layers. Wildlife species can be found at that habitat type such White bellied see eagle, lizard monitor and reef egret. Mangrove limited distributed at Pancer

Low land forest hill area is largest habitat type at the property. Vegetation dominant at concession area *Dracontomelon rao*, *Ficus variegata*, and *Pterospermum diversifolium*. The wildlife were found at the habitat type at least 60 species of bird 22 mammals species and 5 of reptile. Most of wildlife species were found low land forest hill.

Teak plantation forest occurred in the project area at Salakan and Tumpang Pitu. Those forest have simple structure only one layer canopy. The dominant fauna species were found at the plantation area are bird's species. In this habitat type were found 25 bird species.

*Albizia* plantation occur at bordered with Salakan transect1. The habitat has simple strata only have one storey. Some species of wildlife present at the forest, but the dominant is bird species.

### Species Abundance

Base on direct observation and as well as interviews, species richness of wildlife/fauna in the project area is categories as medium level, but significant on number of bird species. Total species of wildlife were found 25 species of mammals, 101 birds species and 16 species of herpetofauna.

Table 2. Wildlife/Fauna species recorded at concession area of PT IMN



Wildlife (Fauna)	Found at Low Land Forest Hill Area of Tumpang Pitu (Species)	Found at Low Land Forest Hill Area of Salakan (Species)	Found at Beach Forest and Mangrove (Species)	Found at Teak Plantation Forest (species)	Found at Albizia Plantation Forest (Species)	Found at Home Garden (Species)
Mammals	24	25	1	4	4	3
Birds	60	67	10	20	14	13
Herpetofauna	11	13	1	6	1	5

## Mammals

Mammals species can be found PT IMN concession area at least is 25 species as recorded at table 3. The protected species of mammals that were found at the project area seven species are: Fly Lemur (*Cynocephalus variegatus*), Slow Loris (*Nycticebus coucang*) Three striped Ground Squirrel (*Lariscus insignis*), Giant Squirrel (*Ratufa bicolor*) Pangolin (*Manis javanica*), javan Porcupine (*Hystrix javanica*), Leopard Cat (*Felis bengalensis*), Leopard (*Panthera pardus*), Barking Deer (*Muntiacus muntjak*), and Lesser Mouse Deer (*Tragulus javanicus*).

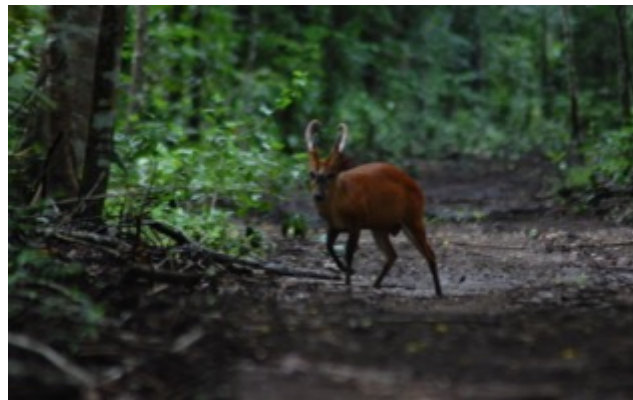


Figure 3. Barking deer one of protected mammals in Indonesia



Figure 4. Silvered langur (*Trachypitecus auratus*) at Salakan forest

Table 3. Mammals species were recorded at PT IMN concession area

Family Species	Local Name	Common Name	Found and Frequency	Status	Document
<b>Cynocephalidae</b> 1. <i>Cynocephalus variegatus</i> *	Tando	Flying Lemur	?1Vr, +2Vr,	P	Iw, F
<b>Pteropidae</b> 1. <i>Cynopterus brachyotis</i> 2. <i>Pteropus vampyrus</i>	Codot krawar Kalong	Short nosed Fruit Bat Large Flying Fox	+1Rr,+2Rr,+5Rr +1Rr,+2Fr,	NP NP	DO, F DO, F
<b>Loricidae</b> 1. <i>Nycticebus coucang</i> *	Kukang	Slow Loris	+1Vr,+2Vr	P	Iw, I
<b>Cercopithecidae</b> 1. <i>Macaca fascicularis</i> 2. <i>Trachypithecus auratus</i>	Monyet Lutung	Long Tailed Macaque Silvered Langur	+1Rr,+2Rr,+4Vr +1Rr,+2Rr,+4Vr	NP NP	DO, F & Fl DO, Fl
<b>Manidae</b> 1. <i>Manis javanica</i> *	Trenggiling	Pangolin	+1Rr,+2Fr,	P	Iw, I
<b>Scuiridae</b> 1. <i>Lariscus insignis</i> * 2. <i>Calosciurus notatus</i> 3. <i>Calosciurus nigrovitatus</i> 4. <i>Ptaurista ptaurista</i> 5. <i>Rattufa bicolor</i> *	Bajing tanah Bajing kelapa Bajing polos Bajing terbang merah Jelarang	Three striped ground Squirrel Plantain Squirrel Brown Squirrel Red giant flying Squirrel Giant Squirrel	+1Rr, ? 2Rr, +1Vr,+2Vr,+ 4Vr,+5Fr +1Rr,+2Rr, +1Vr,+2Vr, +1Rr,+2Rr,	NP NP NP NP P	DO, DO, F DO, F Iw, F Iw,F,
<b>Muridae</b> 1. <i>Rattus argentiventer</i> 2. <i>Rattus exulans</i>	Tikus Sawah Tikus Ladang	Ricefield Rat Polynesia Rat	+1Fr,+2Fr,+5Rr,+6Rr +1Fr,+2Fr,+6Rr	NP NP	DO, F, Sf DO, F, Sf
<b>Hystricidae</b> 1. <i>Hystrix javanica</i> *	Landak	Javan Porcupine	+1Rr,+2Rr,	P	Iw, H
<b>Mustelidae</b> 1. <i>Mustela nudipes</i> 2. <i>Lutra sp</i>	Cerpelai Berang-berang	Malay Weasel Oter	+1Rr,? 2Rr, +2Rr,+7Rr,	NP NP	DO, C, I Iw, Fs
<b>Felidae</b> 1. <i>Felis bengalensis</i> * 2. <i>Panthera pardus</i> *	Kucing hutan Macan tutul	Leopard Cat Leopard	+1Rr,+2Rr,+3Vr +1Vr,+2Vr,	P P	DO, C Iw, C
<b>Viveriidae</b> 1. <i>Paradoxurus hermaphroditus</i> 2. <i>Viverricula indica</i> 3. <i>Herpestes javanicus</i>	Musang Rase Garangan	Common palm civet Civet Javan mongoose	+1Rr,+2Rr,+3Rr +1Vr,+2Vr, +1Rr,+2Rr,+6Rr	NP NP NP	DO, C, F Iw, C DO, C, I
<b>Tragulidae</b> 1. <i>Tragulus javanicus</i> *	Kancil	Lesser Mouse Deer	+1Rr,+2Rr,	P	DO, H
<b>Cervidae</b> 1. <i>Muntiacus muntjak</i> *	Kijang	Barking Deer	+1Fr,+2Fr,+3Vr	P	DO, H
<b>Suidae</b> 1. <i>Sus scrofa</i>	Babi hutan	Common Wild boar	+1Rr,+2Rr,+3Rr,+4Rr	NP	DO

**Legend :**

1. Low land Forest at hill area of Tumpang Pitu	+ = found at sampling area	NP = Non Protected species	Fr = frequently found
2. Low land Forest at hill area of Salakan	++ = found at sampling site with abundance	P = Protected species	Rr = rarely found
3. Teak Plantation Forest	- = not found at sampling site	Sol = Solitary	Vr = Very rare
4. Albizia Plantation Forest	? = not found at sampling site but most probably found		E = Endemic
5. Home garden	DO = direct observation	Fl = Foliage feeder	H = Herbivorous
6. Paddy field and Ladang	Iw = interview	Sf = Seed feeder	Fs = Fish eater
7. Beach and Mangrove	F = Fruit feeder	I = insectivorous	

Besides those species, it was found only one species of mammals that the species is limited distribution (endemic Java and Nusa Tenggara) is a javan porcupine (*Hystrix javanica*). But among others of mammals species, which are spread out over at the project area is common wild board (*Sus scrofa*).



Figure 5. Long tailed macaque at Tumpang Pitu Forest

### Dominancy

Family of mammals, which are dominant on number of species at sample plot is Scuridae (squirrel family). Base on direct observation and interview, at the project area can be found 5 species on Scuridae family.

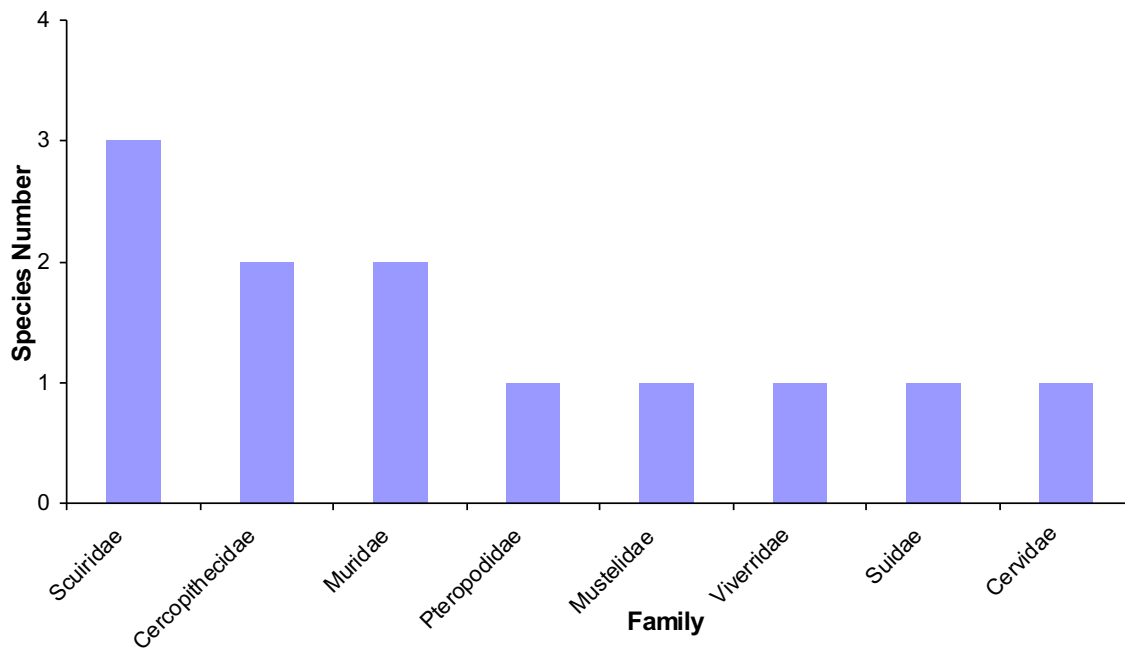


Figure 6. Relation between mammal individual numbers and family at the project area



Figure 7. Brown squirrel (*Callosciurus nigrovittatus*) at Salakan Forest

Species of mammals species which are dominant on individual number at sample plot is Flying fox (*Pteropus vampyrus*). This species can be found at many transect of the sample area mainly at Salakan forest .

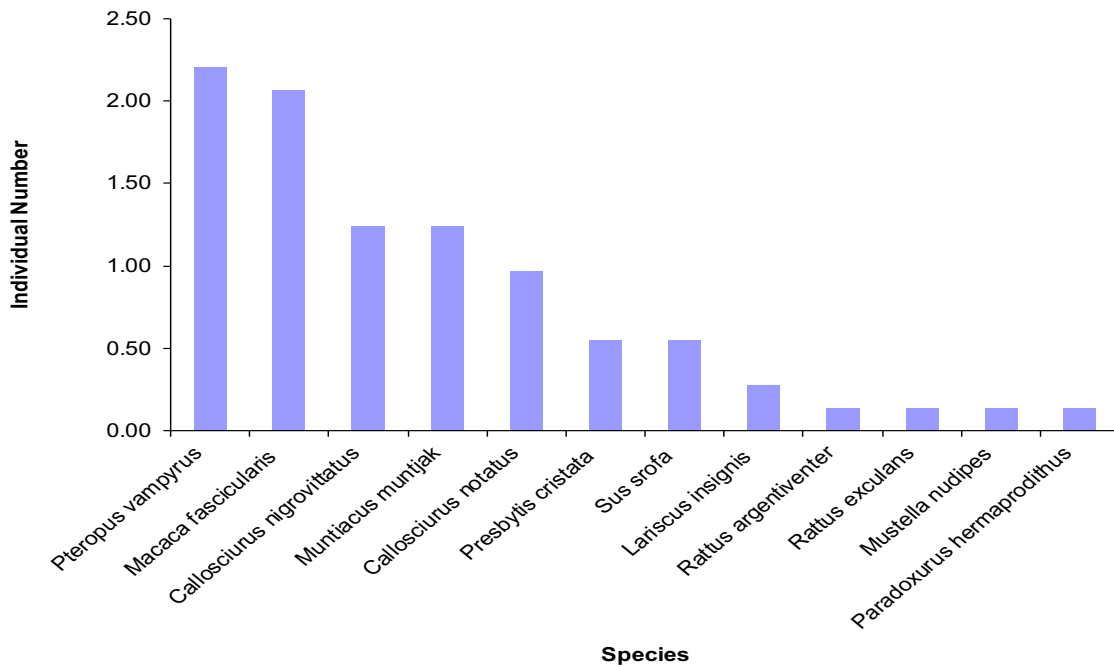


Figure 8. Relation between individual numbers of mammals and the species at the project area



Figure 9. Flying fox (*Pteropus vampyrus*) at Salakan forest

## Birds

Among the wildlife species can be found at the concession area, birds species is abundant at the number. The total species of birds found at the property is listed at table 4. The number birds protected species were found at the project area is 25 species such as reef egret (*Egretta sacra*), woolly necked stork (*Ciconia episcopus*) white bellied sea eagle (*Haliaeetus leucogaster*), crested serpent eagle (*Spilornis cheela*), Besra (*Accipiter virgatus*), changeable hawk eagle (*Spizaetus cirrhatus*), black eagle (*Ictinaetus malayensis*), black thicket falconet (*Microhierax fringillarius*), green peafowl (*Pavo muticus*), small blue kingfisher (*Alcedo caeruleascens*), black backed kingfisher (*Ceyx rufidorsus*) collared kingfisher (*Halcyon chloris*), javan kingfisher (*Halcyon cyanoventris*), oriental pied hornbill (*Anthracoceros albirostris*), wreathed hornbill (*Aceros undulatus*), rhinoceros hornbill (*Buceros rhinoceros*), black banded barbet (*Megalaima javensis*), banded pitta (*Pitta guajana*), crescent chested babbler (*Stachyris melanothorax*), pied fantail (*Rhipidura javanica*), brown throated Sunbird (*Anthreptes malacensis*), ruby cheeked Sunbird (*Anthreptes singalensis*), olive backed Sunbird (*Nectarinia jugularis*), little spider hunter (*Arachnothera longirostra*), and grey breasted spiderhunter (*Arachnothera affinis*)

Table 4. Bids species were found at PT IMN concession area

Family Species	Local Name	Common Name	Found and Frequency	Status	D
<b>Ardeidae</b> 1. <i>Ardea purpurea</i> 2. <i>Ardeola speciosa</i> 3. <i>Butorides striatus</i> 4. <i>Egretta sacra</i> *	Cangak merah Blekok Kokokan laut Kuntul Karang	Purple Heron Javan pond Heron Straited Heron Reef Egret	+6Vr +7Vr +7Vr +7Vr	NP NP NP P	Fs Fs, I Fs, I Fs, M
<b>Ciconidae</b> 1. <i>Ciconia episcopus</i> *	Sendang Lawe	Wooly necked Stork	+7Vr	P	Fs
<b>Accipitridae</b> 1. <i>Haliaeetus leucogaster</i> * 2. <i>Spilornis cheela</i> * 3. <i>Accipiter virgatus</i> * 4. <i>Spizaetus cirrhatus</i> * 5. <i>Ictinaetus malayensis</i> * 6. <i>Microhierax fringilarius</i> *	Elang Laut Elang Ular Alap alap Elang Brontok Elang hitam Alap Capung	White Bellied Sea Eagle Crested serpent Eagle Besra Changeable Haw Eagle Black Eagle Black thighet Falconet	+7Rr, +1Rr,+2Rr,?3Vr +1Vr, +1Rr,+ 2Rr +1Rr,+2Rr, +2Vr,	P P P P P P	Fs, C C C C C I
<b>Turnicidae</b> 1. <i>Turnix susciator</i>	Gemak loreng	Barred Buttonquail	+ 6Rr	NP	Sf
<b>Phasianidae</b> 1. <i>Gallus gallus</i> 2. <i>Gallus varius</i> 3. <i>Pavo muticus</i> *	Ayam hutan merah Ayam hutan hijau Merak hijau jawa	Red Jungle fowl Green jungle fowl Green peafowl	+2Vr +1Rr,+2Rr,+3Rr,+ 4Rr +2Vr,+3Rr	NP NP P	H, I H, I H, I
<b>Rallidae</b> 1. <i>Amaurornis phoenicurus</i>	Kareo padi	White breasted Waterhen	+6Rr	NP	I
<b>Charadriidae</b> 1. <i>Charadrius javanicus</i>	Cerek jawa	Javan Plover	+7Vr	NP	Mo
<b>Scolopacidae</b> 1. <i>Tringa hypoleucos</i>	Trinil pantai	Common Sandpiper	+7Fr	NP, M	Mo
<b>Columbidae</b> 1. <i>Treron griseicauda</i> 2. <i>Ptilinopus melanospila</i> 3. <i>Macopygia emilliana</i> 4. <i>Streptopelia chinensis</i> 5. <i>Geopelia striata</i> 6. <i>Chalcophaps indica</i>	Punai Penganten Walik Kembang Uncal Bau Tekukur Perkutut Delimukan	Grey-cheeked Green-Pigeon Black napped Friut-Dove Ruddy Cuckoo-Dove Spotted Dove Peaceful Dove Emerald Dove	+1Rr +1Fr,+2Fr, +1Fr,+2Fr, +3Rr,+4Rr,+5Rr,+ 6Rr +3Rr,+5Rr, +1Rr, +2Rr,	NP NP NP NP NP NP	F F F Sf Sf Sf
<b>Psittacidae</b> 1. <i>Loriculus pusillus</i>	Serindit Jawa	Yellow Throated Hanging Parrot	+1Rr,+2Rr,	NP	F, E
<b>Cuculidae</b> 1. <i>Cacomantis sonneratii</i> 2. <i>Cacomantis merulinus</i> 3. <i>Cacomantis sepulcralis</i> 4. <i>Surniculus lugubris</i> 5. <i>Phaenicophaeus curvirostris</i> 6. <i>Centropus sinensis</i>	Wik-wik Lurik Wik-wik Wikwik uncuang Kedasi Hitam Kadalan Birah Bubut besar	Banded Bay Cuckoo Plaintaive Cuckoo Rusty breasted Cuckoo Drongo-Cuckoo Chestnut breasted Malkoha Greater Coucal	+1Rr, +2Rr +1Rr,+2Rr,+3Rr,+4Rr,+5Rr +5Rr +1Rr,+2Rr, +1Rr,+2Rr, +1Rr,+2Rr,	NP NP NP NP NP NP	I I I I I I
<b>Strigidae</b> 1. <i>Otus lempiji</i>	Celepuk	Collared Scopsowl	+5Rr	NP	I
<b>Apodidae</b> 1. <i>Collocalia fuciphaga</i> 2. <i>Collocalia linchi</i> 3. <i>Apus pacificus</i>	Walet Sarang putih Sriti Kapinis laut	Edible nest Swiftlet Cave-Swiftlet Fork tailed Swft	+1Rr,+2Rr,+5Rr,+6Rr+7Rr +1Rr,+2Rr,+5Rr,+6Rr+7Rr +1Rr,+2Rr,	NP NP NP	I I I
<b>Hemiprocnidae</b> 1. <i>Hemiproctne longipennis</i>	Tapengkong jambul	Grey rumped treeswift	+1Rr,+2Rr,	NP	I
<b>Alcediniidae</b> 1. <i>Alcedo caeruleascens</i> * 2. <i>Ceyx rufidorsa</i> * 3. <i>Halcyon cyanoventris</i> * 4. <i>Halcyon chloris</i> *	Raja udang Biru Raja udang Api Cekakak Jawa Cekakak Sungai	Small Blue Kingfisher Black Backed Kingfisher Javan Kingfisher Collared Kingfisher	+7Rr, +1Rr,+2Rr,+3Rr +6Vr, +6Rr,+3Rr	P P P P	Fs Fs E, Fs Fs, I
<b>Meropidae</b> 1. <i>Merops leschenaulti</i>	Kirik-kirik senja	Chesnut headed Bee-Eater	+1Rr,	NP	I
<b>Bucerotidae</b> 1. <i>Aceros undulates</i> * 2. <i>Anthracoceros albirostris</i> *	Julang emas Kangkareng	Whreated Hornbill Oriental Pied Hornbill	+1Rr,+2Fr, +1Rr,+2Fr,	P P	F F

3. <i>Buceros rhinoceros</i> *	Rangkong	Rhinoceros Hornbill	+1Rr,+2Fr,	P	F
<b>Capitonidae</b> 1. <i>Megalaima javensis</i> * 2. <i>Megalaima australis</i> 3. <i>Megalaima haemacephala</i>	Tulung tumpuk Takur tenggeret Ungkut-ungkut	Black banded Barbet Blue eared Barbet Coppersmith Barbet	+1Rr,+2Fr, +1Rr,+2Fr, +1Rr,+2Fr,	NP NP NP	E, F F, F
<b>Picidae</b> 1. <i>Picus puniceus</i> 2. <i>Dinopium javanense</i> 3. <i>Picoides moluccensis</i> 4. <i>Hemicircus concretus</i> 5. <i>Reinwardtipicus validus</i>	Pelatuk sayap merah Pelatuk Bawang Celadi tilik Celadi tikotok Pelatuk kundang	Crimson winged Woodpecker Common golden back Sunda Woodpecker Grey and buff Woodpecker Orange backed Woodpecker	+1Rr,+2Rr, +2Rr +2Rr, ?3Vr +1Rr,+2Rr, +2Rr	NP NP NP NP NP	I I I I I
<b>Eurylaimidae</b> 1. <i>Eurylaimus javanicus</i>	Sempur angin	Banded Broadbill	+1Rr,+2Rr,	NP	I
<b>Pittidae</b> 1. <i>Pitta guajana</i> *	Paok Pancawarna	Banded Pitta	+1Rr,+2Rr,	P	I
<b>Hirundinidae</b> 1. <i>Hirundo tahitica</i> 2. <i>Hirundo rustica</i>	Layang Batu Layang	Pacific Swallow Barn Swallow	+6Rr, +6Rr,	NP NP, M	I I
<b>Campephagidae</b> 1. <i>Hemipus hirundinaceus</i> 2. <i>Teprodormis gularis</i> 3. <i>Coracina fimbriata</i> 4. <i>Lalage nigra</i> 5. <i>Pericrocotus flammeus</i>	Jinjing Batu Jinjing pentulak Kepudang Sungu Kapas an Kemiri Seupah Hutan	Black winged Flycatcher Shrike Large wood Shrike Large Cuckoo Shrike Pied Triller Scarlet minivet	+1Rr,+2Rr,+3Rr +2Vr, +1Rr,+2Rr, +6Rr, +3Vr +1Rr,+2Rr,	NP NP NP NP NP	I I I I I
<b>Chloropsidae</b> 1. <i>Aegithina tiphia</i> 2. <i>Chloropsis cochichinensis</i>	Cipo Cica daun sayap biru	Common Iora Blue winged Leaf bird	+1Fr,+2Fr,+3Rr, +4Rr+5Rr +1Rr,+2Rr,	NP NP	I I
<b>Pycnonotidae</b> 1. <i>Pycnonotus atriceps</i> 2. <i>Pycnonotus melanicterus</i> 3. <i>Pycnonotus aurigaster</i> 4. <i>Pycnonotus goiavier</i> 5. <i>Pycnonotus plumosus</i> 6. <i>Criniger bress</i>	Cucak kuricang Cucak emas Kutilang Cerucuk Cucak Lumut Cucak Janggut	Black headed Bulbul Black created bulbul Sooty headed Bulbul Yellow vented Bulbul Olive winged Bulbul Grey cheeked Bulbul	+1Rr,+2Rr, +1Rr,+2Rr, +2Rr,+4Rr,+3 Rr,+5Rr +1Vr,+2Vr,+3Rr+4Rr+5Rr +1Rr,+2Rr, +1Rr,+2Rr,	NP NP NP NP NP NP	F, I F, I F, I F, I F, I F, I
<b>Dicruridae</b> 1. <i>Dicrurus leucophaeus</i> 2. <i>Dicrurus paradiseus</i>	Srigunting kelabu Srigunting Batu	Ashy Drongo Greater racket Tailed Drongo	+1Rr,+2Rr, +1Rr,+2Rr,	NP NP	I I
<b>Corvidae</b> 1. <i>Crypsirina temia</i> 2. <i>Corvus enca</i>	Tangkar Centrong Gagak hutan	Racket tailed Treepie Slender bill Crow	+3Rr,+7Rr, +1Rr,+2Rr,	NP NP	I, O
<b>Paridae</b> 1. <i>Parus major</i>	Gelatik Batu	Great Tit	+5Rr, 4Rr	NP	I
<b>Sittidae</b> 1. <i>Sitta frontalis</i>	Munguk Beledu	Velvet vented Nuthatch	+1Rr,+2 Rr,	NP	I
<b>Timaliidae</b> 1. <i>Pelorneum capistratum</i> 2. <i>Malacocincla sepiarium</i> 3. <i>Stachyris melanothorax</i> * 4. <i>Macronous gularis</i> 5. <i>Macronous flavicollis</i>	Pelanduk topi hitam Pelanduk semak Tepus pipi Perak Ciung air Ciung air Jawa	Black capped Babbler Horsfield's Babbler Crescent chested Babbler Striped Tit Babbler Grey-cheeked Tit-babbler	+1Rr,+2Rr, +1Fr,+2Fr, +1Rr,+2Fr, +1Fr,+2Fr,+3Rr,+4Rr +2Rr	NP NP P NP NP	I I E, I I E, I
<b>Turdidae</b> 1. <i>Enicurus leschenaulti</i> 2. <i>Copsychus saularis</i>	Meninting Kacer	White crowned Forktail Magpie Robin	+2Rr +7Rr,	NP NP	I I
<b>Sylviidae</b> 1. <i>Orthotomus sepium</i> 2. <i>Orthotomus sutorius</i> 3. <i>Prinia familiaris</i>	Prenjak jawa Cinenen pisang Ciblek	Olive backed Tailorbird Common Tailorbird Bar winged Prinia	+1Fr,+2Fr,+3Fr,+4Fr,+5Fr,+7Fr +1Rr,+2Rr,+3Rr,+5Rr +5Rr,+6Rr,	NP NP NP	I I I
<b>Muscicapidae</b> 1. <i>Rhipidura javanica</i> * 2. <i>Hypotimias azurea</i>	Kipasan Belang Kehicap Ranting	Pied Fantail Black napped Monarch	+1Rr,+2Rr, +1Rr,+2Rr,	P NP	I I
<b>Artamidae</b> 1. <i>Artamus leucorhynchus</i>	Kekep	White-breasted Wood-Swallow	+1Rr,+2Rr,	NP	I
<b>Lanidae</b> 1. <i>Lanius schach</i>	Bentet	Long-tailed Shrike	+3Rr,+4Rr,+6Rr	NP	I
<b>Nectariniidae</b> 1. <i>Antheptes malacensis</i> *	Br Madu Kelapa	Brown throated Sunbird	+1Rr,+2Rr,+3Rr	P	Hs, I

2. <i>Anthreptes singalensis</i> *	Br Madu Hutan	Ruby checked Sunbird	+1Rr,+2Rr,	P	Hs
3. <i>Nectarinia jugularis</i> *	Br Madu Kuning	Olive backed Sunbird	+5Rr,+3Rr,	P	Hs
4. <i>Arachnothera longirostra</i> *	Pijantung	Little Spider Hunter	+1Fr,+2Fr,	P	Hs, I
5. <i>Arachnothera affinis</i> *	Pijantung lorek	Grey breasted Spiderhunter	+1Rr,+2Rr,	P	Hs, I
<b>Dicaeidae</b>					
1. <i>Dicaeum trigonostigma</i>	Cabe bunga api	Orange bellied Flowerpecker	+1Rr,+2Rr,	NP	F, I
2. <i>Dicaeum concolor</i>	Cabe polos	Plain Flowerpecker	+1Rr,+2Rr,	NP	F, I
3. <i>Dicaeum trochileum</i>	Cabe Jawa	Scarlet headed Flowerpecker	+5Rr	NP	F, I
<b>Zosteropidae</b>					
1. <i>Zosterops plapebrosus</i>	Br Kacamata	Oriental white Eyes	+1Rr,+2Rr,	NP	I
<b>Ploceidae</b>					
1. <i>Passer montanus</i>	Br Gereja	Eurasian tree Sparrow	+5Rr	NP	Sf
2. <i>Padda orizyvora</i>	Gelatik	Java Sparrow	+6Rr	NP	E, Sf
3. <i>Lonchura punctulata</i>	Peking	Scaly breasted Munia	+3 Rr,+5Rr,+6Rr,	NP	Sf
4. <i>Lonchura leucogastroides</i>	Bondol Jawa	Java Munia	+5Rr,+6Rr,	NP	Sf

**Legend :**

- |   |  |                            |                       |
|---|--|----------------------------|-----------------------|
| 1. Low land Forest at hill area of Tumpang Pitu | + = found at sampling area                             | NP = Non Protected species | Fr = frequently found |
| 2. Low land Forest at hill area of Salakan      | ++ = found at sampling site with abundance             | P = Protected species      | Rr = rarely found     |
| 3. Teak Plantation Forest                       | - = not found at sampling site                         | Sol = Solitary             | Vr = Very rare        |
| 4. Albizia Plantation Forest                    | ? = not found at sampling site but most probably found |                            | E = Endemic           |
| 5. Home garden                                  | Hs = Honey sucker                                      | O = omnivores              | H = Herbivorous       |
| 6. Paddy field and Ladang                       | Mo = Molusca eater                                     | Sf = Seed feeder           | Fs = Fish eater       |
| 7. Beach and Mangrove                           | F = Fruit feeder                                       | I = insectivorous          | C = carnivore         |



(a)



(b)

Figure 10. Crested serpent eagle (a) and black eagle (b) Fly at Salakan and Tumpang Pitu forest



Figure11. Whreated hornbill (*Aceros undulatus*) perch on ficus tree at Salakan



Six endemic birds species occur at the project area such as yellow-throated hanging-parrot (*Loriculus pusilus*), javan kingfisher (*Halcyon cyanoventris*), banded barbet (*Megalaima javensis*), crescent chested babbler (*Stachyris melanothorax*) grey-cheeked tit-babbler (*Macronous flavicolis*) and javan sparrow (*Padda orizyvora*). Crescent chested babbler and banded barbet are bird's forest dependent.

### Bird Structure

The bird's structure communities at project area can be derived from trophic level or bird guild structure. The bird guild at sample area of Tumpang Pitu and Salakan was recorded at table 5. Insectivores bird is dominant species at both sample area.

Table 5. Birds guild at sample area of Salakan and Tumpang pitu

No	Guild	Tumpang Pitu	Salakan
1	Insectivores	85.0 %	67.0 %
2	Frugivores	27.0 %	24.0 %
3	Mollusk & Arthropod feeder	1.7 %	4.4 %
4	Seed feeder	1.7 %	1.4 %
5	Fischivores	1.7 %	1.4 %
6	Carnivores	6.7 %	4.4 %
7	Honey sucker	6.7 %	5.9 %

### Dominancy

The dominant of bird species occur at the project area are blue eared barbet (*Megalaima australis*), whreated hornbill (*Aceros undulatus*), ashy tailor (*Orthotomus sepium*), horsfield's babbler (*Malacocincla sepiarium*), cave swiftlet (*Collocalia linchi*), banded barbet (*Megalaima javensis*), yellow-throated hanging-parrot (*Loriculus pusilus*), olive-winged bulbul (*Pycnonotus plumosus*), black-napped fruit-dove (*Ptilinopus melanospilla*) and rhinoceros hornbill (*Buceros rhinoceros*).

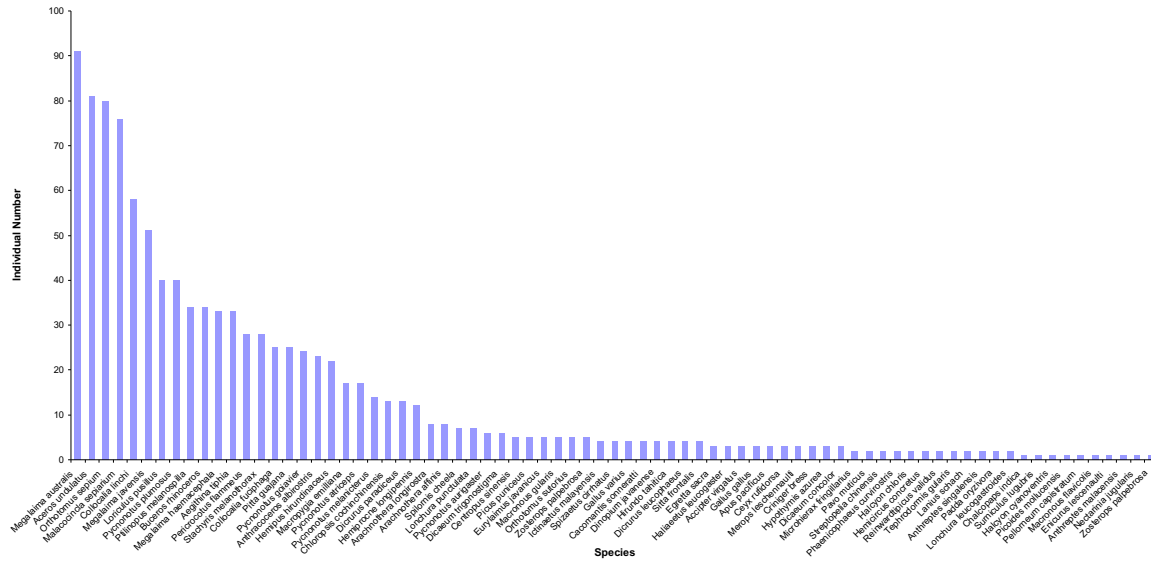


Figure 12. Relation between individual numbers of bird with species at the project area



Figure 13. Rhinoceros hornbill (*Buceros rhinoceros*) at Salakan forest

### Bird Species Diversity

The bird species diversity at the sample area shown that index varied, but at Pulau Merah resulted the lowest index and the highest index was Salakan transect 1 (table 2). The important factor influenced to the bird diversity is habitat. The diversity of habitat is main factor to support availability of food resources, cover, shelter and nesting area.

Table 6. Birds diversity index of sample transect at PT. IMN concession area

No.	Transect	Species Number	H'	E
1	Salakan 1	44	3,3905	0,8960
2	Salakan 2	22	2,9346	0,9494
3	Salakan 3	23	2,9158	0,9299
4	Salakan 4	32	2,2846	0,6592
5	Wedi Ireng	38	3,2968	0,9063
6	Salakan 5	30	3,0073	0,8842
7	Tumpang Pitu 1	21	2,7211	0,8938
8	Tumpang Pitu 2	17	2,3199	0,8188
9	Tumpang Pitu 3	25	2,9664	0,9216
10	Tumpang Pitu 4	19	2,7869	0,9465
11	Pulau Merah	10	2,2411	0,9733

legend:  $H'$  = diversity index  $E$  = equitabilty index

### Similarity of Bird Community

The similarity of birds community at sample area of PT IMN concession area shown at figure.. Birds community clustering at sample area divided into 4 cluster, there are **cluster 1** is Salakan1 – Salakan5 – Tumpang Pitu 4 – Salakan4 and Wedi Ireng (similarity around 62.5 %), **cluster 2** is Salakan2-Salakan3 (similarity around 74.48 %), **cluster 3** is tumpang pitu2 - tumpang pitu3 (similarity around 64.80 %)and **cluster 4** is tumpang pitu1- pulau merah (similarity around 54.30 %). Linkage between clusters is cluster1- cluster2 (similarity around 53.77%) than cluster1-2 linkage to cluster 3 (similarity around 50 %) and linkage cluster1-2-3, and than linkage to cluster4 (similarity around 30.66 %).

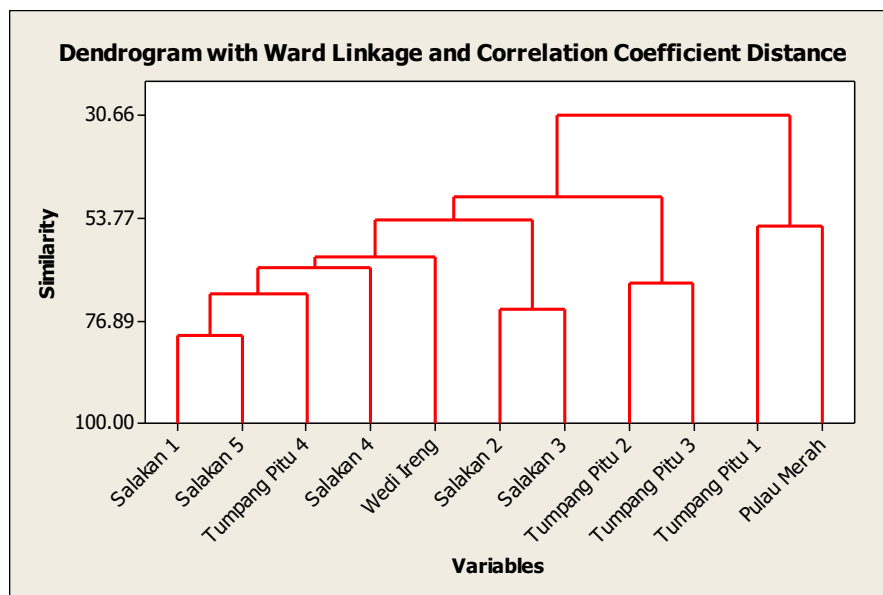


Figure 14. Dendrogram bird community at PT IMN concession area **Herpetofauna (Reptiles and Amphibian)**

Herpetofauna species can be found at the concession area of IMN is not many. The commonest of herpetofauna species were found at the property is common skink (*Mabuya multifasciata*).

Table 7. Herpetofauna species were found at PT IMN concession area

Family Species	Local Name	Common Name	Found and Frequency	Status	I
<b>Boidae</b> 1. <i>Phyton reticulatus</i>	Ular Sanca	Reticulate python	+1Vr,+2Vr,	NP	C,
<b>Viperidae</b> 1. <i>Trimeressurus albolabris</i>	Ular Gadung	White-lipped Pit-viper	+1Rr,+2Rr,?3Rr,?4Rr,?5Rr	NP	C,
<b>Elaphidae</b> 1. <i>Naja sapatatrix</i> 2. <i>Bungarus candidus</i>	Ular Sendok Ular Weling	Sapatatrix cobra Malayan Krait	?1Rr,+2Vr,+3Rr,+ 5Rr ?1Rr,+2Vr,+3Rr,+5Rr	NP NP	C, C,
<b>Colubridae</b> 1. <i>Achetulla prasina</i> 2. <i>Dendrelaphis caudolineatus</i>	Ular Hijau Ular gembala	Oiental Whip Snake Striped Bronzeback	+1Rr,+2Rr+5Rr +1Rr,+2Rr,+3Rr,+5Rr	NP NP	C, C,
<b>Geckonidae</b> 1. <i>Gekko gekko</i> 2. <i>Hemidactylus freynatus</i>	Tokek hutan Cicak hutan	Gekko Spiny talied house gekko	+1Vr,+2Rr +1Vr,+2Vr	NP NP	I I
<b>Agamidae</b> 1. <i>Bronchocela cristatella</i> 2. <i>Draco volans</i>	Bunglon Cicak terbang	Green crested lizard Common gliding lizard	+1Rr,+2Rr,+3Rr,+5Rr +1Rr,+2Rr,+5Rr	NP NP	I I
<b>Varanidae</b> 1. <i>Varanus salvator</i>	Biawak	Common monitor	+1Vr,+2Rr	NP	C
<b>Scincidae</b> 1. <i>Mabuya multifasciata</i> 2. <i>Lipina vittigera</i>	Kadal Kadal lorek	Common skink Striped tree skink	+1Fr,+2Fr,+3Fr,+4Fr,+5Fr,+6Fr,+7Rr ?1Rr,+2Rr	NP NP	I I
<b>Rhacoporidae</b> 1. <i>Polypedates leucomystac</i>	Katak pohon	Striped Tree Frog	?1Rr,+2Rr	NP	I
<b>Ranidae</b> 1. <i>Rana cancrivora</i>	Katak sawah	Rice field frog	+1Rr,+2Rr,+6Rr	NP	I
<b>Megophriidae</b> 1. <i>Bufo melanostictus</i>	Kodok buduk	Asian Toad	+3Fr,+4Fr,+5Fr,+6Fr	NP	I

**Legend :**

1. Low land Forest at hill area of Tumpang Pitu
2. Low land Forest at hill area of Salakan
3. Teak Plantation Forest
4. Albizia Plantation Forest
5. Home garden
6. Paddy field and Ladang
7. Beach and Mangrove

- + = found at sampling area
- ++ = found at sampling site with abundance
- = not found at sampling site
- ? = not found at sampling site but most probably found
- Hs = Honey sucker
- Mo = Molusca eater
- F = Fruit feeder

- NP = Non Protected species
- P = Protected species
- Sol = Solitary
- O = omnivores
- SF = Seed feeder
- I = insectivorous

- Fr = frequently found
- Rr = rarely found
- Vr = Very rare
- E = Endemic
- H = Herbivorous
- Fs = Fish eater
- C = carnivore



Figure 15. common skink (*Mabuya multifasciata*) at Salakan forest

### Dominancy

Family of herpetofauna species which are dominant on individual number at sample plot is scincidae. Species dominant at Scincidae family is common skink. Besides the reptiles species is abundance, also wide spread out for many habitat type at Salakan and Tumpang Pitu area.

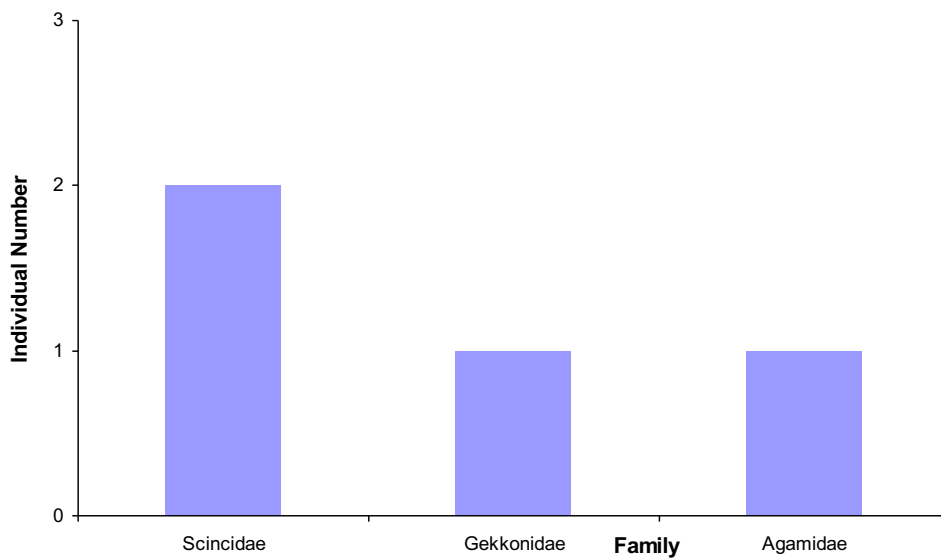


Figure 16. Relation between individual numbers of reptile and the species at the property



Figure 17. Common gliding lizard (*Draco volans*) at Tumpang Pitu forest



Figure 18. *Rana cancrivora* at Salakan forest floor

## **DISCUSSION**

### **Mammal**

Wildlife species diversity at PT IMN concession area is categories medium, but 36 % species of mammals is having status as protected animals Indonesia. Those number of protected mammal's species are quite high at the project area, PT IMN should be consider to having plan for conserve the protected species of mammals, if the concession owner will exploitation the area.

Total number species of mammals can be found at the concession area around 20 % of total mammal's species at Java. Those numbers are having relation to covered forest at the concession area. Most of protected mammal's species are forest dependent animals.

### **Bird**

The diversity of birds species is quite high compare to mammals and reptiles. Factors which have influenced to bird species diversity is variety of habitat type, variation species vegetation and number of forest layer. The highest diversity of the bird was at low land forest compared with the other. It seems the forest has supported to availability of food resources, cover and shelter also nesting area.

The protected birds species are quite high at PT IMN concession area (around 25 %) and total number species of bird can be found at the concession area around 28 % of total bird species at Java. Most of the bird's species are having relation to forest habitat. Base on birds diversity and protected bird species at the project area are high, the concession owner should be consider to having plan for conserve those birds.

### **Herpetofauna**

Number of Herpetofauna species can be found at PT IMN concession is small. Only one species of reptile have local distribution spread out over of the concession area. This species is common skink (*M. multifasciata*). These species is one of commonest reptiles at Java Islands. The animal can live at several types of habitat.

Many species (45%) of reptiles at the project area are carnivores animal, but the individual abundances is relatively low. These phenomenon is consequences, because their tropic level.

## **CONCLUSIONS & RECOMMENDATIONS**

1. The wildlife/fauna has been found at the project area 25 species of mammals, 101 birds species and 14 species of herpetofauna. The diversity of wildlife was categorized medium, but significant high at bird species.
2. Among the wildlife has been identified, 9 species of mammals, and 25 birds species as protected species in Indonesia and 6 endemic birds species occur at the project area.
3. If the mining project will be developing at the project area should be considered to the protected species and endemic species.



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## **APPENDIX**

## Appendix ... Selected Species List

In the following account species are listed that have a globally threatened status: vulnerable and near-threatened (BirdLife International 2001) also endemic species.

Reef Egret *Egretta sacra*

Global status Vulnerable (BirdLife International 2001). Field notes – Single bird observed at reef shore of Pulau Merah, and pair of the birds at Pancer beach, 20 February 2008

Wooly necked Stork *Ciconia episcopus*

Global status – Vulnerable (BirdLife International 2001). Field notes – single bird fly above the Salakan forest and Albizia plantation forest.

White bellied - See Eagle *Haliaeetus leucogaster*

Global status – Vulnerable (BirdLife International 2001). Field notes – young and adult birds fly in and above the beach forest of Pulau Merah

Crested serpent Eagle *Spilornis cheela*

Global status – Vulnerable (BirdLife International 2001). Field notes – A single bird saw fly uphill Salakan and Tumpang Pitu forest during field observation

Besra *Accipiter virgatus*

Global status – Vulnerable (BirdLife International 2001). Field notes – A single bird flying from Pulau Merah forest. On 19 February 2008 .

Black Eagle *Ictinaetus malayensis*

Global status – Vulnerable (BirdLife International 2001). Field notes – A single bird flying at Salakan forest on 11, 16, 17 February 2008 and the bird flying at hill of Tumpang Pitu forest on 15 February 2008 .

Changeable Haw Eagle *Spizaetus cirrhatus*

Global status – Vulnerable (BirdLife International 2001). Field notes – On 11, 16, 17 February 2008 a single bird crossing the Salakan Forest and pairs bird gliding at Tumpang Pitu forest on 14 February 2008

Black Thiget Falconet *Microhierax fringillarius*

Global status – Vulnerable (BirdLife International 2001). Field notes – Single bird perch on dead tree eating insect at Salakan forest on 19 February 2008

Green Peafowl *Pavo muticus*

Global status – Vulnerable (BirdLife International 2001). Field notes – no recorded before, on 22 February 2008 a single male bird perch on branch preening at Salakan Forest.

Grey Cheeked Green- Pigeon *Treron gresseicauda*

Global status – Insufficient data. Field notes – uncommon, the birds flock at fruiting ficus tree, clump their local distribution. On 22 of February 2008 recorded around 120 bird, searching fruiting ficus at Salakan forest.

Black Napped Fruiting Dove *Ptilinopus melanospilla*

Global status – Insufficient data. Field notes – Locally common, widespread over Salakan and Tumpang Pitu forest.

Yellow Throated Hanging Parrot *Loriculus pussilus*

Global status - Endemic to Java and Bali. Field notes – common, flying over the low land forest at hill area of Salakan and Tumpang Pitu

Javan Kingfisher *Halcyon cyanoventris*

Global status – Endemic to Java and Bali. Field notes –uncommon, a single bird perch at tree bordered between ladang and low land forest on 18 February 2008 at Salakan Forest

Whreated Hornbill *Aceros undulatus*

Global status – Vulnerable (BirdLife International 2001). Field notes –common bird at Salakan and Tumpang Pitu low land forest at hill area

Rhinoceros Hornbill *Buceros rhinoceros*

Global status – Vulnerable (BirdLife International 2001). Field notes – not uncommon bird at Salakan and Tumpang Pitu low land forest at hill area.

Oriental Pied Hornbill *Anthracoceros albirostris*

Global status – Vulnerable (BirdLife International 2001). Field notes –not uncommon bird at Salakan and Tumpang Pitu low land forest at hill area.

Black Banded Barbet *Megalaima javensis*

Global status – Endemic to Java and Bali and Near-threatened (BirdLife International 2001). Field notes – common bird at Salakan and Tumpang Pitu low land forest at hill area

Copper Smith Barbet *Megalaima haemacephala*

Global status – Near-threatened (BirdLife International 2001). Field notes –common a solitary bird at Salakan forest.

Common Goldenback *Dinopium javanense*

Global status – Vulnerable (BirdLife International 2001). Field note uncommon bird, single bird drumming on dead tree at Salakan forest on 18 February.

Banded Broadbill *Eurylaimus javanicus*

Global status – Near-threatened (BirdLife International 2001) Field notes– uncommon, a single birds calling at Salakan forest on 16 and 18 February 2008.

Banded Pitta *Pitta guajana*

Global status – Near-threatened (BirdLife International 2001) Field notes– uncommon, a single birds calling at Salakan and Tumpang Pitu Forest.

Large Woodshrike *Tephrodormis gularis*

Global status – Near-threatened (BirdLife International 2001) Field notes– uncommon, a single birds recorded at Salakan forest on 18 February 2008.

Blue Winged Leafbird *Chloropsis cochinchinensis*

Global status – Near-threatened (BirdLife International 2001) Field notes–not uncommon, birds wide spread at Salakan and Tumpang Pitu forest.

Black Headed Bulbul *Pycnonotus atriceps*

Global status – Near-threatened (BirdLife International 2001) Field notes–not uncommon, birds wide spread at Salakan and Tumpang Pitu forest.

Black Crested Bulbul *Pycnonotus melanicterus*

Global status – Near-threatened (BirdLife International 2001) Field notes–not uncommon, birds wide spread at Salakan and Tumpang Pitu forest

Olive Winged Bulbul *Pycnonotus plumosus*

Global status – Near-threatened (BirdLife International 2001) Field notes–not uncommon, birds wide spread at Salakan and Tumpang Pitu forest

Greater Racket-Tailed Drongo *Dicrurus paradiseus*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, pair birds singing at ficus tree at Salakan on 11 February 2008 and Tumpang Pitu forest on 14 February 2008

Racket Tailed Tree Pie *Crypsirina temmia*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, single birds calling at teak plantation Tumpang Pitu on 15 February 2008 and it setting at Albizia plantation at Salakan on 17 February 2008.

Slender Bill Crow *Corvus enca*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, single birds flying at Salakan and Tumpang Pitu forest

Velvet Fronted Nuthatch *Sitta frontalis*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, flocking birds at Salakan and Tumpang Pitu forest

Black Capped Babbler *Pellorneum capistratum*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, birds singing at under storey forest at Salakan and Tumpang Pitu

Crescent Chested Babbler *Stachyris melanothorax*

Global status – Endemic Java and Bali and Near-threatened (BirdLife International 2001) Field notes–not uncommon, birds live under storey forest at Salakan and Tumpang Pitu

Grey Cheeked Tit Babbler *Macronous flavicollis*

Global status – Endemic to Java and Bali and Near-threatened (BirdLife International 2001). Field notes – uncommon bird at Salakan and Tumpang Pitu low land forest at hill area

White Crowned Forktail *Enicurus lescenaulti*

Global status – Near-threatened (BirdLife International 2001) Field notes–uncommon, birds singing at small stream forest at Salakan

Black Napped Monarch *Hypothymis azurea*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, birds singing at middle storey forest at Salakan and Tumpang Pitu

Brown Throated Sunbird *Anthreptes malacensis*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, birds sitting branch of tree at Salakan and Tumpang Pitu forest

Ruby Cheeked Sunbird *Anthreptes singalensis*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, birds singing at tree at Salakan and Tumpang Pitu forest

Long Billed Spider hunter *Arachnothera affinis*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, birds fly at middle storey forest at Salakan and Tumpang Pitu

Plain Flower Pecker *Dicaeum concolor*

Global status – Near-threatened (BirdLife International 2001) Field notes–not common, birds calling at Salakan and Tumpang Pitu forest

Javan Sparrow *Padda orizyvor*

Global status - Endemic to Java and Bali. Field notes – uncommon to rare, flocking at Mice field at Pancer on 11 February 2008

**Appendix ...** Selected photo of wildlife species



Polynesia Rat (*Rattus exculans*)



Ricefield Rat (*Rattus argentiventer*)



Pied Hornbill (*Anthracoceros albirostris*)



Coppersmith Barbet (*Megalaima haemacephala*)





Grey-cheeked Green-Pigeon (*Treron gresseicauda*)



Reef Egret (*Egretta sacra*)



Green crested lizard (*Bronchocelea cristatella*)



Gecko (*Gekko gekko*)