DIVERSITY OF BIRD SPECIES IN THE GREEN BELT (FIRE BREAK) ESTATE PELELAWAN PT RIAU ANDALAN PULP AND PAPER RIAU PROVINCE

by

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FOREWORD

The author would like to express his gratitude to ALLAH, SWT, who has given his grace and guidance, so that this article can be realized.. This article discusses bird ddiversity in green belt/fire break at Pelelawan estate PT RAPPRiau province, Even though the value of bird species diversity is classified as moderate, the green belt is an important area for bird protection

Local protected areas must maintain their existence and role in protecting birds, especially birds with rare threat and endemic status In this case the green belt/fire break has an important role in supporting bird life in the bird habitat in the Pelelawan estate area. The green belt should be maintained and even managed and repaired, so that as a bird habitat it will support the birds in the area

The author hopes that this article will be useful for readers

Regards,

Jarwadi Budi Hernowo

List of Content

ABSTRACT

The diversity of bird species can be used as a measure of environmental stability. Information and data regarding bird species and their diversity in the fire break/green belt (fire break) area does not yet exist. Therefore it is interesting to research. Bird inventory was carried out using a combination of the transect/lane method and the IPA method. A total of 19 natural peat forest green belts in Pelalawan PT RAPP estate were observed for bird species. The length of each observation route is approximately 200 m. The calculation of bird species and the number of individuals is based on direct observation. Based on observations of the richness of bird species in the 19 green/fire break routes in the Pelalawan estate, 76 species of birds were found. Among the bird species that have been identified as using the green route/corridor, it is important to pay attention to the hornbill group. Four types of hornbills were found that use the green/fire break route, namely the black hornbill (*Anthracoceros malayanus*), the Wreathed hornbill (*Anorrhinus galeritus*), the bushy crested hornbill (*Aceros corrugatus*) and the rhinoceros hornbill (*Buceros rhinoceros*). In general, the function of the green belt/fire break is useful as a bird habitat, even though the condition of the peat forest is not good. The green belt/fire break still needs to be maintained in the PT RAPP Pelelawan estate area

I. INTRODUCTION

Background

Bird species are wild animals that can be found in various types of habitat, including industrial forest plantations. PT RAPP (Riau Andalan Pulp and Paper) has quite a large area of industrial forest plantations in Riau province. One of them is an estate in an industrial plantation forest area. PT RAPP is the Pelelawan estate. Most of the Pelelawan Estate is a peat forest area

In the arrangement of industrial forest plantation blocks for the Pelelawan estate, there is an area that functions as a fire break. The fire break takes the form of residual natural forest, namely peat swamp forest. Some of the firebreaks are still forests in fairly good condition, but many of the firebreaks are bush and grassy areas. The plant area block is planted with *Acacia crassicarpa* species.

The fire breaks in the form of remaining natural peat forests are still used by birds to function as habitat. The width of the fire break is quite narrow, on average less than 100 m, but the length can be more than 500 m. So it can be said that in general the fire break is rectangular in shape. Overall, the firebreaks, which are remnants of natural peat forest, are interesting to study as bird habitat

Birds are one of the environmental components, which play an important role in maintaining environmental stability. The diversity of bird species can be used as a measure of environmental stability. Information and data regarding bird species and their diversity in the fire break/green belt (fire break) area does not yet exist. Therefore, it is interesting to research the diversity of green belt bird species in the Pelelawan estate

Objective

The aim of writing this manuscript is to find out the richness and diversity of bird species in the Pelelawan estate firebreak area

II. METHODS

Location and Time of Observation

A study of the function of the green belt (fire breaks) for bird habitat in the Pelalawan estate of PT Riau Andalan Pulp and Paper (PT RAPP) was carried out on 19 green belt in the area. The nineteen green belts are as remnant natural peat forests. It Is a representative of the existing green belt

To obtain data and information relating to birds, observations were made from April to May 2013.

Tools Used

In the study of the function of the green belt (fire break) in the bird aspect, the Pelalawan PT RAPP estate map, GPS, compass, chronometer, tele camera, binoculars, field guide to the birds of Sumatra, Kalimantan, Java and Bali were used (Mackinnon, 1990).

Determination of Observation Points

The birds observation points are closely related to the type of habitat found at the study location, which is approximated by the type of vegetation. Therefore, the birds observation point simultaneously with the vegetation observation route. The observation coordinates are listed in table II-

Table II-1 Bird observation locations on 19 green belt (fire breaks)

No	**Green Belt (fire break)**	Observation Point Position Coordinates
1	Green Belt (fire break) 1	0°32'59.5" LU, 102°02'03.2" BT
2	Green Belt (fire break) 2	0°33'02.2" LU, 102°04'30.6" BT
3	Green Belt (fire break) 3	0°34'04.6" LU, 102°07'50.6" BT
4	Green Belt (fire break) 4	0°32'02.8" LU, 102°14'02.8" BT
5	Green Belt (fire break) 5	0°27'42.0" LU, 102°13'33.5" BT
6	Green Belt (fire break) 6	0°27'42.6" LU, 102°13'30.2" BT
7	Green Belt (fire break) 7	0°25'29.5" LU, 102°14'50.4" BT
8	Green Belt (fire break) 8	0°23'40.5" LU, 102°18'15.2" BT
9	Green Belt (fire break) 9	0°21'33.8" LU, 102°19'47.4" BT
10	Green Belt (fire break) 10	0°32'47.5" LU, 102°0.0'12.2" BT
11	Green Belt (fire break) 11	0°34'09.5" LU, 102°01'39.5" BT
12	Green Belt (fire break) 12	0°34'04.5" LU, 102°04'12.7" BT
13	Green Belt (fire break) 13	0°35'12.2" LU, 102°07'06.2" BT
14	Green Belt (fire break) 14	0°35'07.4" LU, 102°08'47.4" BT
15	Green Belt (fire break) 15	0°33'34.2" LU, 102°12'54.1" BT
16	Green Belt (fire break) 16	0°33'30.8" LU, 102°15'23.3" BT

17	Green Belt (fire break) 17	0°19'07.0" LU, 102°21'12.5" BT
18	Green Belt (fire break) 18	0°17'39.9" LU, 102°23'40.8" BT
19	Green Belt (fire break) 19	0°14'42.0" LU, 102°23'09.8" BT

Data Collection

Bird inventory was carried out using a combination of the transect/lane method and the IPA method. Of the 19 natural peat forest green belts in PT RAPP's Pelalawan estate. The length of each observation route is approximately 200 m. Counting of wild animal species and the number of individuals is based on direct observation. Apart from direct observations, interviews were also conducted with people who know birds in 19 green lanes at PT RAPP's Pelalawan estate.

On nineteen IPA transects/lanes with a radius of 200 meters per green lane, every bird seen or heard was recorded within 20 minutes. Daily records of birds have been prepared to add new species to make this observation complete

Data Analysis

Bird data obtained from observations is calculated using the following ecological approach formula***:***

Species Diversity Index

Indeks Keanekaragaman jenis

The Shanon Index was formulated by (Magurran, 1988) to determine the value of bird species diversity in each transect/lane.

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$$H = -\Sigma\, p_i \ln p_i$$

H = species diversity index, where pi is the number of individuals of type i divided by the total number of individuals of various type

Species diversity is influenced by the components of species richness and species uniformity using the following formula

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

E = Uniformity index

where Hmax = - log 1/n (n = number of species in the example plot

To analyze the function of the green line/fire break for birds, it is linked to the criteria; Status (rarity), ecological characteristics, and function of green belts on bird life

III. GENERAL CONDITION OF THE SITE AREA

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Physical condition

The general condition of the land slope in the research site area is flat. Almost all of the soil on the research site is peat

Flora

The general condition of the vegetation in the study area at the Pelelawan estate is plantation forest with the main species planted being Acacia crassicarpa. On the green belt (Fire break) in the form of: residual peat forest, peat bushes

Bird

Based on information from field (site study) with bird species from the Pelalawan eatate, among others

Several types of birds that are recorded as protected species are found in the Pelalawan estate area, namely Crested serpent eagle(Spilornis cheela), Changeable Haw-eagles (*Spizaetus cirrhatus*), Wreankled hornbills (*Aceros corrugatus)*, Black Hornbill (*Anthrococeros malayanus*), Bushy Crested Horbill (*Anorrhinus galeritus*). Other types of birds that were also found were Purple Heron (Ardea purpurea), Slender bill crow (*Corvus enca*), merbah Yellow vented bulbul (*Pycnonotus goiavier*), and leaf bird (*Chloropsis cochinchinensis*).

IV. RESULTS AND DISCUSSION

Richness and Diversity of Bird Species

Based on observations of the richness of bird species in the 19 green belt/fire break transect in the Pelalawan estate, 76 species of birds were found. The results of the analysis of the diversity values of bird species found in the green belt ranged from 2.3 – 3.0, most of them below 3.0. This shows that the diversity of bird species in the green belt is moderate. A bird species diversity value above 3.0 is green line/fire break 17 (H'= 3.12).

Table 1V-1. Bird species diversity index, number of species and firebreaks at the site observation

No	Green Belt/Fire Break	Number of Bird Species	Species Diversity Index	Equitability index
1	Green Belt 1	13	2.321	0.905
2	Green Belt 2	18	2.645	0.915
3	Green Belt. 3	14	2.432	0.922
4	Green Belt. 4	18	2.697	0.933
5	Green Belt. 5	18	2.684	0.929
6	Green Belt 6	23	3.069	0.979
7	Green Belt. 7	23	3.084	0.983
8	Green Belt. 8	23	3.099	0.988
9	Green Belt. 9	23	3.045	0.971
10	Green Belt 10	19	2.786	0.946
11	Green Belt 11	22	3.056	0.989
12	Green Belt 12	22	3.005	0.972
13	Green Belt 13	23	3.082	0.997
14	Green Belt 14	13	2.354	0.918
15	Green Belt 15	18	2.685	0.929
16	Green Belt 16	18	2.706	0.936
17	Green Belt 17	25	3.123	0.970
18	Green Belt 18	22	3.020	0.977
19	Green Belt 19	23	3.099	0.988

Overall, values of bird species diversity index is not high (low to moderate). This is mainly related to the condition of bird habitat in the fire break/green belt route. Almost all of the green belt as bird habitat is natural secondary peat forest. It can be said that the condition of the forest (habitat) is less supportive for bird life

The equitability index for most green belts/fire breaks is quite high, > 09. This indicates that the number of individuals of each bird species in each green belt is almost uniform. This also indicates that the condition of natural peat forests in each green belt is nearly the simila

Table IV 2. Species of birds found in the fire break area on green belt 6,7,8,9,17,18,19 Pelalawan estate of PT RAPP

No.	Bird Species	Local Name	Indonesi Name	Common Name	Family	Lokasi Fire Break Jalur							Status Satwaliar		
						6	7	8	9	17	18	19	PP No. 7 Tahun 1999	CITES	IUCN
1	*Spizaetus cirrhatus*	Elang	Elang Brontok	Cangeable Haw Eagle	Accipitridae					1	1	1	D	AP II	LC Ver 3.1 IUCN 2012
2	*Microhierax fringilarius*	Elang kecl	Elang Belalang	Black Thiged Falconet	Falconidae		1						D	TT	LC Ver 3.1 IUCN 2012
3	*Loriculus galgulus*	Serindit	Serindit Melayu	Blue Crowned Hanging Parrot	Psittacidae		1	1	1	1	1		TD	AP II	LC Ver 3.1 IUCN 2012
4	*Centopus sinensis*	Bubut	Bubut Besar	Greater Coucal	Cuculidae		1	1		1		1	TD	TT	LC Ver 3.1 IUCN 2012
5	*Cacomantis merulinus*		Wiwik	Plantive Cuckoo	Cuculidae	1	1	1			1	1	TD	TT	LC Ver 3.1 IUCN 2012
6	*Phaenicophaeus chlorophaeus*		Kadalan Salaya	Raffles Malkoha	Cuculidae	1	1		1		1	1	TD	TT	LC Ver 3.1 IUCN 2012
7	*Phaenicophaeus sumatranus*	Br totrok	Kadalan Saweh	Chestnut Bellied Malkoha	Cuculidae		1				1	1	TD	TT	LC Ver 3.1 IUCN 2012
8	*Collocalia maxima*		Walet Hitam	Black Nest Swiftlet	Apodidae	1	1		1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
9	*Alcedo meninting*	Bintik	Raja Udang biru	Blue Eared Kingfisher	Alcedinidae	1		1	1				D	TT	LC Ver 3.1 IUCN 2012
10	*Halcyon smyrnesis*	Cucuk Urang	Cekakak Belukar	White-throated Kingfisher	Alcedinidae			1		1	1		D	TT	LC Ver 3.1 IUCN 2012
11	*Anorrhinus galeritus*	Muik	Enggang Klingkingan	Bushy Crested Hornbill	Bucerotidae			1		1			D	AP II	NT Ver 3.1 IUCN 2012
12	*Anthracoceros malayanus*		Kangkareng Hitam	Black Hornbill	Bucerotidae							1	D	AP II	NT Ver 3.1 IUCN 2012
13	*Aceros corrugatus*		Julang Jambul Hitam	Wreankled Hornbill	Bucerotidae	1		1	1				D	AP II	NT Ver 3.1 IUCN 2012
14	*Megalaima australis*		Takur Tenggeret	Blue eraed Barbet	Capitonidae	1	1	1	1	1		1	TD	TT	LC Ver 3.1 IUCN 2012
15	*Celeus brachyurus*		Pelatuk Kijang	Rufous Woodpecker	Picidae	1	1				1		TD	TT	LC Ver 3.1 IUCN 2012
16	*Dryocopos javensis*		Pelatuk Ayam	White Bellied Woodpecker	Picidae			1					TD	TT	LC Ver 3.1 IUCN 2012
17	*Eurylaimus ochromalus*		Sempur hujan	Black and Yellow Broadbill	Eurylaimidae	1			1				TD	TT	LC Ver 3.1 IUCN 2012
18	*Hemipus hirundinaceus*		Jeunjing Batuk	Black winged Flycatcher Shrike	Campephagidae	1	1				1	1	TD	TT	LC Ver 3.1 IUCN 2012
19	*Pericrocotus igneus*		Seupah Tulin	Fiery Minivet	Campephagidae	1	1			1		1	TD	TT	LC Ver 3.1 IUCN 2012
20	*Aegithina viridissima*		Cipoh hutan	Green Iora	Aegithinidae	1			1				TD	TT	LC Ver 3.1 IUCN 2012
21	*Chloropsis cochinchinensis*	Burung Daun	Cucak Hijau	Blue Winged Leafbird	Chloropseidae	1	1	1	1	1	1		TD	TT	LC Ver 3.1 IUCN 2012
22	*Pycnonotus goivier*	Merbah	Merbah	Yellow Vented Bulbul	Pycnonotidae	1		1	1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
23	*Pycnonotus brruneus*		Merbah Mata Merah	Red Eyes Bulbul	Pycnonotidae	1	1	1	1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
24	*Pycnonotus simplex*		Merbah Corok	Crieam Vented Bulbul	Pycnonotidae	1	1	1	1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
25	*Pycnonotus atriceps*		Kuricang	Black Headed Bulbul	Pycnonotidae							1	TD	TT	LC Ver 3.1 IUCN 2012
26	*Oriolus chinensis*	Kepodang	Kepodang	Black Naped Oriole	Oriolidae					1			TD	TT	LC Ver 3.1 IUCN 2012
27	*Irena puela*		Kecembang Gadung	Asian Fairy Bluebird	Irinidae				1		1		TD	TT	LC Ver 3.1 IUCN 2012
28	*Copsychus malabaricus*	Murai	Murai batu	White rumped Shama	Turdidae							1	TD	TT	LC Ver 3.1 IUCN 2012
29	*Malacopteron magnum*		Asi Besar	Rofous Crowned Babbler	Timaliidae			1				1	TD	TT	LC Ver 3.1 IUCN 2012
30	*Stachyris erythroptera*		Tepus Merbah	Chestnut Winged Babbler	Timaliidae		1	1	1	1	1		TD	TT	LC Ver 3.1 IUCN 2012
31	*Stachyris maculata*		Tepus Tunggir Merah	Chestnut Rumped Babbler	Timaliidae		1	1		1			TD	TT	NT Ver 3.1 IUCN 2012
32	*Macronous gularis*		Ciung Air	Strioe Tit Babbler	Timaliidae	1	1	1	1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
33	*Maconous ptilosus*		Ciung Pong-pong	Flufi Backed Tit Babbler	Timaliidae			1		1			TD	TT	LC Ver 3.1 IUCN 2012
34	*Orthotomus ruficep*		Cinenen	Ashy tailorbird	Sylviidae	1	1	1	1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
35	*Orthotomus atrogularis*		Ciinenen Belukar	Dark Necked Tailorbird	Sylviidae	1		1	1		1		TD	TT	LC Ver 3.1 IUCN 2012
36	*Orthotomus sericeus*		Cinenen Merah	Rofous Headed Tailorbird	Sylviidae		1	1		1			TD	TT	LC Ver 3.1 IUCN 2012
37	*Prinia familairis*		Prenjak Ciblek	Bar winged Prinia	Sylviidae	1							TD	TT	LC Ver 3.1 IUCN 2012
38	*Prinia flaviventris*		Prenjak Semak	Yellow Bellied Prinia	Sylviidae				1				TD	TT	LC Ver 3.1 IUCN 2012

No.	Bird Species	Local Name	Indonesi Name	Common Name	Family	Lokasi Fire Break Jalur							Status Satwaliar		
						6	7	8	9	17	18	19	PP No. 7 Tahun 1999	CITES	IUCN
39	*Hypothymis azure*		Kehicap Ranting	Black Naped Monarh	Muscicapidae					1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
40	*Tersiphone paradisi*		Sriwang Asia	Asian Paradise Flycatcher	Muscicapidae	1	1					1	TD	TT	LC Ver 3.1 IUCN 2012
41	*Rhipidura javanica*		Kipasan Belang	Pied Fantail	Muscicapidae					1			D	TT	LC Ver 3.1 IUCN 2012
42	*Anthreptes malacensis*		Br Madu Kelapa	Brown Throated Sunbird	Nectariniidae	1	1	1	1	1	1	1	D	TT	LC Ver 3.1 IUCN 2012
43	*Aetopyga siparaja*		Burung Madu Merah	Crimson Sunbird	Nectariniidae		1	1			1		D	TT	LC Ver 3.1 IUCN 2012
44	*Arachnothera longirostra*		Burung Jantung	Little Spider Hunter	Nectariniidae				1	1		1	D	TT	LC Ver 3.1 IUCN 2012
45	*Dicaeum trigonostigma*		Br Cabe Bunga Api	Orang bellied Flowerpecker	Dicaeidae	1	1	1	1	1	1	1	TD	TT	LC Ver 3.1 IUCN 2012
46	*Prionochilus maculatus*		Pentis Raja	Yellow Breasted Flowerpecker	Dicaeidae	1			1	1		1	TD	TT	LC Ver 3.1 IUCN 2012

Legend of location :
6 = Fire break 8 = Fire break 17 = Fire break 19 = Fire break
7 = Fire break 9 = Fire break 18 = Fire break

Legend of status:
J = Individual number
D = Protected
TD = Not protected
App. = Appendix
NE = Not Evaluated (Tidak dievaluasi)
NR = Near Rare (Mendekati Langka)
NT = Near Threatened (Mendekati Terancam)
LC = least Concern (Kurang Diperhatikan
VU = Vulnerable (Rentan)
EN = Endangered (Terancam/kriti

Among the bird species that have been identified as using the green belt/fire break, it is important to pay attention to the hornbill group. Four species of hornbills were found that use the green/fire break, namely the black hornbill (*Anthracoceros malayanus*), the Bushy crested hornbill (*Anorrhinus galeritus*), wreated hornbill (*Aceros corrugatus*) and the rhinoceros hornbill (*Buceros rhinoceros*). The wreathed hornbill is a type of hornbill whose typical habitat is peat swamp forests. The hornbill bird group is a type of fruit-eating bird (frugivore), especially the fruit of the Ficus spp (Ficus vegetation) group.

Table IV 3. Species of birds found in the fire break area on green belt ,2,3,4,5,10,11,12,13, 14,15,16 Pelalawan Estate PT RAPP

No	Bird Species	Local Name	Indonesia Name	Common Name	Family	Lokasi Jalur firebreak												Status Satwaliar	
						1	2	3	4	5	10	11	12	13	14	15	16	PP No. 7 Tahun 1999	CITES
1	*Dendrocygna javanica*	Belibis	Belibis polos	Lesser Whistling Duck	Anatidae											1		TD	TT
2	*Spizaetus cirrhatus*	Elang	Elang brontok	Crested Hawk-Eagle	Accipitridae			1										D	AP II
3	*Spilornis cheela*	Elang	Elangular bido	Crested Serpent Eagle	Accipitridae							1		1	1			D	AP II
4	*Gallus gallus*	Ayam Hutan	Ayamhutan merah	Red Junglefowl	Phasianidae							1						TD	TT
5	*Loriculus galgulus*	Srindit	Serindit melayu	Blue-crowned Hanging Parrot	Psittacidae											1		TD	AP II
6	*Centropus bengalensis*	Bubut	Bubut alang-alang	Lesser Coucal	Cuculidae							1	1					TD	TT
7	*Centropus sinensis*	Bubut	Bubut besar	Greater Coucal	Cuculidae		1	1	1		1	1	1	1	1	1		TD	TT
8	*Cacomantis merulinus*		Wiwik kelabu	Plaintive Cuckoo	Cuculidae				1	1	1	1	1	1	1		1	TD	TT
9	*Rhamphococcyx curvirostris*		Kadalan birah	Chestnut-breasted Malkoha	Cuculidae						1				1			TD	TT
10	*Rhopodytes sumatranus*		Kadalan saweh	Chestnut-bellied Malkoha	Cuculidae	1	1		1	1				1			1	TD	TT

11	*Rhinortha chlorophaeus*		Kadalan selaya	Raffles's Malkoha	Cuculidae	1	1	1			1	1	1	1	1			TD	TT
12	*Treron curvirostra*	Punai	Punai lengguak	Thick-billed Green Pigeon	Columbidae											1		TD	TT
13	*Halcyon smyrnensis*	Raja Udang	Cekakak belukar	White-throated Kingfisher	Alcedinidae	1	1		1				1					D	TT
14	*Pelargopsis capensis*	Raja Udang	Pekaka emas	Stork-billed Kingfisher	Alcedinidae				1									D	TT
15	*Alcedo meninting*	Bintik	Rajaudang meninting	Blue-eared Kingfisher	Alcedinidae	1		1						1	1			D	TT
16	*Ceyx erithaca*	Bintik Merah	Udang api	Oriental Dwarf Kingfisher	Alcedinidae				1	1								D	TT
17	*Buceros rhinoceros*	Rangkong	Rangkong Badak	Rhinoceros Hornbill	Bucerotidae					1								D	AP II
18	*Anthracoceros malayanus*	Rangkong hitam	Kangkareng hitam	Black Hornbill	Bucerotidae			1		1					1			D	AP II
19	*Megalaima australis*		Takur tenggeret	Blue-eared Barbet	Capitonidae		1			1	1	1	1	1			1	TD	TT
20	*Dendrocopos moluccensis*	Pelatuk	Caladi tilik	Sunda Pygmy Woodpecker	Picidae		1					1	1					TD	TT
21	*Picus miniaceus*	Pelatuk	Pelatuk merah	Banded Woodpecker	Picidae	1												TD	TT
22	*Picus puniceus*	Pelatuk	Pelatuk sayap-merah	Crimson-winged Woodpecker	Picidae						1	1					1	TD	TT
23	*Sasia abnormis*	Pelatuk Kecil	Tukik tikus	Rufous Piculet	Picidae				1							1		TD	TT
24	*Eurylaimus ochromalus*		Sempurhujan darat	Black-and-yellow Broadbill	Eurylaimidae	1	1			1	1	1	1	1	1	1	1	TD	TT
25	*Hemipus hirundinaceus*		Jingjing batu	Black-winged Flycatcher-shrike	Campephagidae				1									TD	TT
26	*Pericrocotus flammeus*		Sepah hutan	Scarlet Minivet	Campephagidae								1					TD	TT
27	*Pericrocotus igneus*		Sepah tulin	Fiery Minivet	Campephagidae								1					TD	TT
28	*Aegithina tiphia*		Cipoh kacat	Common Iora	Aegithinidae			1				1						TD	TT
29	*Pycnonotus goiavier*	Merbah	Merbah cerukcuk	Yellow-vented Bulbul	Pycnonotidae		1	1	1		1	1	1		1	1	1	TD	TT
30	*Pycnonotus simplex*		Merbah corok-corok	Cream-vented Bulbul	Pycnonotidae	1	1	1	1	1	1	1	1	1		1	1	TD	TT
31	*Dicrurus paradiseus*		Srigunting batu	Greater Racquet-tailed Drongo	Dicruridae									1				TD	TT
32	*Corvus enca*	Gagak	Gagak hutan	Slender-billed Crow	Corvidae	1						1		1			1	TD	TT
33	*Malacopteron magnirostre*		Asi kumis	Moustached Babbler	Timaliidae		1											TD	TT
34	*Macronous gularis*	Pong -pong	Ciungair coreng	Striped Tit-Babbler	Timaliidae		1		1	1				1		1	1	TD	TT
35	*Malacocincla abboti*		Pelanduk Asia	Abbott's Babbler	Timaliidae					1								TD	TT
36	*Malacocincla malaccense*		Pelanduk ekor-pendek	Short-tailed Babbler	Timaliidae							1						TD	TT
37	*Trichastoma bicolor*		Pelanduk merah	Ferruginous Babbler	Timaliidae						1							TD	TT
38	*Malacocincla sepiarium*		Pelanduk semak	Horsfield's Babbler	Timaliidae					1				1				TD	TT
39	*Stachyris nigricollis*		Tepus kaban	Black-throated Babbler	Timaliidae					1	1		1	1				TD	TT
40	*Stachyris erythroptera*		Tepus merbah-sampah	Chestnut-winged Babbler	Timaliidae		1		1		1	1	1				1	TD	TT
41	*Copsychus malabaricus*	Murai Hutan	Kucica hutan	White-rumped Shama	Turdidae					1								TD	TT
42	*Copsychus saularis*	Kacer	Kucica kampung	Oriental Magpie-robin	Turdidae								1					TD	TT
43	*Phylloscopus borealis*		Cikrak kutub	Arctic Warbler	Sylviidae			1										TD	TT
44	*Orthotomus ruficeps*		Cinenen kelabu	Ashy Tailorbird	Sylviidae	1		1	1	1			1		1			TD	TT
45	*Orthotomus sericeus*		Cinenen merah	Rufous-tailed Tailorbird	Sylviidae			1	1	1	1	1		1	1	1	1	TD	TT
46	*Prinia familiaris*		Perenjak jawa	Bar-winged Prinia	Sylviidae					1		1	1			1		TD	TT
47	*Prinia flaviventris*		Perenjak rawa	Yellow-bellied Prinia	Sylviidae						1			1	1	1	1	TD	TT
48	*Hypothymis azurea*		Kehicap ranting	Black-naped Monarch	Monarchidae	1	1	1	1		1	1	1	1	1	1	1	TD	TT
49	*Terpsiphone paradisi*		Seriwang Asia	Asian Paradise-flycatcher	Monarchidae					1	1					1	1	TD	TT
50	*Muscicapa dauurica*		Sikatan bubik	Asian Brown Flycatcher	Muscicapidae				1							1		TD	TT
51	*Rhipidura javanica*		Kipasan belang	Pied Fantail	Rhipiduridae		1		1	1				1		1	1	D	TT

52	*Anthreptes singalensis*	Br Madu	Burungmadu belukar	Ruby-cheeked Sunbird	Nectariniidae					1				1			1	D	TT
53	*Anthreptes malacensis*	Br Madu	Burungmadu kelapa	Brown-throated Sunbird	Nectariniidae	1	1	1	1		1			1	1	1		D	TT
54	*Leptocoma sperata*	Br Madu hutan	Burungmadu pengantin	Purple-throated Sunbird	Nectariniidae								1	1		1		D	TT
55	*Aethopyga siparaja*	Br Madu Merah	Burungmadu sepah-raja	Crimson Sunbird	Nectariniidae							1					1	D	TT
56	*Cinnyris jugularis*		Burungmadu sriganti	Olive-backed Sunbird	Nectariniidae		1											D	TT
57	*Arachnothera longirostra*		Pijantung kecil	Little Spiderhunter	Nectariniidae	1	1		1			1	1	1			1	D	TT
58	*Arachnothera flavigaster*		Pijantung Tasmak	Spectacled Spiderhunter	Nectariniidae			1										D	TT
59	*Dicaeum trigonostigma*	Br Cabai	Cabai bunga-api	Orange-bellied Flowerpecker	Dicaeidae	1					1	1	1					TD	TT
60	*Prionochilus percussus*		Pentis pelangi	Crimson-breasted Flowerpecker	Dicaeidae		1	1					1					TD	TT

Legend of location :

1 = Fire break 3 = Fire break 5 = Fire break 11 = Fire break. 13 = Fire break. 15 = Fire break
2 = Fire break 4 = Fire break 10 = Fire break 12 = Fire break 14 = Fire break 16 = Fire break

Legend of status:

J = Individual number
D = Protected
TD = Not protected
App. = Appendix
NE = Not Evaluated (Tidak dievaluasi)
NR = Near Rare (Mendekati Langka)
NT = Near Threatened (Mendekati Terancam)
LC = least Concern (Kurang Diperhatikan
VU = Vulnerable (Rentan)
EN = Endangered (Terancam/kriti

As Bird Protection Area

Based on observations of the richness of birds species in 19 green lanes/fire breaks in the Pelalawan estate, 76 species of birds were found. Although the richness of these bird species is not high/medium, the green belt/fire break is a habitat that still needs to be maintained. The results of the analysis of the diversity value of bird species found in the green belt ranged from 2.3 – 3.0, with a balance/evenness index for most bird species > 0.90. This shows that the diversity of bird species in the green belt is moderate, but the balance/evenness index of bird species is quite good, so overall the green belt/fire break is important to maintain as a bird protection area.

It seems that the green belt/fire break area, although the forest conditions are not good enough , but still contains a moderate diversity of bird species. This indicates that the green belt/fire break is important as a bird habitat to be protected With the found of four species of hornbills in the green belt/fire break at the Pelelawan estate, this indicates that the green belt/fire break has significance to be maintained.

V. CONCLUSIONS & RECOMMENDATIONS

Conclusion

Based on the results of data analysis obtained from the field as well as analysis of the function of 19 green/fire break routes, the value of bird species diversity is classified as moderate (2.3 -3.1). The green belt/fire break needs to be maintained to support bird life in the Pelalawan PT RAPP estate area

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Recommendation

The condition of the vegetation that is maintained must be improved as the main component of fauna/wildlife habitat. By enriching plants in open areas with local species, especially vegetation, as a source of food and breeding places and can provide protection against birds.

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