

# Bird Species in the Wetlands of Barito Kuala District, Indonesia

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Article Info	ABSTRACT		
Article history: Received August 7, 2023 Revised September 22, 2023 Accepted December 7, 2023	There have been no publications on birds found in the wetlands of Barito Kuala District. If anything, the prevailing assumption is that many waterbirds are found in these wetlands. The research objective was to record bird species and analyze their presence in the wetlands. Diurnal		
Keywords:	birds were observed from 07.00-10.00 and 15.00-18.00 on three sites consisting of swamps, paddy fields, and rubber plantations in January 2023. Observers walked two kilometers back and forth for three times on each site. Thirty species (22 families) of hirds were found and only 3		
Bird Diversity Habitat Type	species were categorized as waterbirds. Most of these birds are of least concerned and are not protected. The degree of similarity between bird		
Similarity Wetlands	similarity is likely to increase if the observations are made with a greater number of repetitions.		

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### 1. INTRODUCTION

Birds are animals that are more often observed and easier to find than other large animals (macrofauna), such as mammals, reptiles and amphibians (Soendjoto et al., 2018). Animals which are also known as aves are easy to find at various points with various activities. They hover at a certain height, fly from one tree to another or perch with a variety of behaviors, such as jumping from one branch to another to look for food on the surface of the bark of the branches/trunks or in between the groves of leaves, making sounds (whistling, chirping, babbling) or flapping wings not only to attract the opposite sex or to show mastery over a territory, as well as pecking certain body parts, such as wings and tail to clean feathers. This behaviors are carried out in safe and comfortable conditions and cannot be separated from the elements of the surrounding environment.

One of the many groups of birds that were used as the object of observation this time were birds that were active in wetlands. In the Ramsar Convention which has been ratified by the Government of the Republic of Indonesia and ratified by Presidential Decree Number 48 of 1991 concerning Ratification of the Convention on Wetlands of International Importance especially as Waterfowl Habitat, wetlands are defined as areas of swamp, brackish, peatland and waters, natural or artificial, permanent or temporary, with stagnant or flowing water, fresh, brackish or salt, including areas of marine waters the depth of which at low tide does not exceed 6 meters. From this definition, the assumption that emerges is that the birds that are active in this wetland or most of the birds that live in these wetlands are waterbirds. This assumption is of course debatable.

This research was conducted in one of the wetland villages. The aim is to record bird species and then analyze their presence in the village. Apart from being used to answer the assumptions put forward above, research results can be used as learning material, especially those related to morphology, ecology, behavior and habits, as well as bird watching.

#### 2. RESEARCH METHOD

The research location is Barambai Kolam Kanan Village, Barambai District, Barito Kuala Regency (Figure 1). The regency, which has an area of approximately 2,996.96 km<sup>2</sup> (Diskominfo Batola, 2022), is synonymous with wetlands because its territory is located between waters consisting of the Barito River which is also the boundary of natural areas in the eastern and northern parts of the district, the Kapuas River which is the boundary of the area. in the west, and the Java Sea as the boundary in the south. In detail, the Barito Kuala Regency area actually consists of natural wetlands in the form of large rivers and small rivers, beaches (mangrove forests), galam swamps and artificial wetlands which include secondary channels (*anjir*), tertiary channels (*ray*), paddy fields, and rubber plantations or gardens (*Hevea brasliensis*).



Figure 1. Three research sites in Barambai Kolam Kanan Village, Barito Kuala Regency

Diurnal birds were observed from 07.00-10.00 and 15.00-18.00 at three sites in January 2023. Observations were made on foot two kilometers back and forth for three repetitions for each site. The presence of birds was determined visually from direct encounters or based on their sounds. The morphology was observed with the help of binoculars and/or a prosumer camera. Identification was carried out directly or with the help of field books of Eaton et al. (2022), Soendjoto et al. (2015a), or Soendjoto et al. (2019). The three sites observed were swamps, paddy fields and rubber plantations.

Swamps are a land resource that dominates Barambai Kolam Kanan Village (APSSI, 2022). Here grows galam (*Melaleuca* spp.), the dominating plant and generally grows spontaneously or is not planted intentionally. Apart from plants whose leaves smell like eucalyptus, the plants that also grow in the swamp are various species of herbaceous plants, such as the eceng gondok (*Pontederia crassipes*), genjer (*Limnocharis flava*), purun tikar (*Lepironia articulata*), purun tikus (*Eleocharis dulcis*) or teki-tekian in general (Cyperaceae), grasses (Poaceae), and various species of ferns.

Paddy fields are areas for cultivating rice or padi (in Indonesian), the staple food source for almost all Indonesians. The paddy fields in this village are developed on acid soil and are affected by tides, moreover the location of the village area is at an altitude of 0.2 - 3 meters above sea level (APSSI, 2022). Paddy fields are developed by farmers who consist of various ethnicities and have an average of 23 years of experience in rice farming (Husna et al., 2020). Farmers generally plant paddy fields once a year and the rice planted is a local variety that is 8-10 months old and yields only 2.0-2.5 tonnes ha<sup>-1</sup> (Koesrini et al., 2018). Apart from rice, the crops that are also cultivated by farmers are siamese oranges.

Rubber plantations are also developed in swamp areas. Different from paddy fields, where the position of the area is made lower than the surrounding area through a system of knocking or digging, the position of the surface of the rubber plantation is already high or made higher than the surrounding area through a system of piling (filling in with the surrounding soil). The high position allows the area to be planted with rubber. With this condition the roots of mature plants are not easily rotted or attacked by pests or diseases.

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Data on the species and number of individual birds found are stored in tables. The placement of the data corresponds to the location where the species was found. This data is then processed to obtain a diversity index, similarity index, conservation status or rarity of birds according to IUCN (2023), as well as their protection status according to Permen-LHK P.106 (2018). The diversity index used is the Shannon-Wiener which is calculated according to Formula 1, while the similarity index used is the Jaccard index (Formula 2) which is calculated according to Formula 2.

H' = - $\Sigma \frac{ni}{N} (\ln \frac{ni}{N})$  ..... (Formula 1)

In this case, H' = Shannon-Wiener diversity index; ni = number of individual species-i; N = number of individuals of all species.

$$IS = \frac{2C}{A+B+C} \dots (Formula 2)$$

In this case, IS = Jaccard index of similarity; A = number of species in community A; B = number of species in community B; C = the number of species in community A and also community B.

#### 3. RESULT AND DISCUSSION

### **Species Diversity**

Thirty species belonging to 22 bird families were found in three sites in Barambai Kolam Kanan Village. These birds are spread across the research location which consists of swamps, paddy fields and rubber plantations with varying numbers of species and individuals. (Table 1). In the case of this study, several bird species were found in only one site, such as Alcedinidae and Ardeidae. However, other species are found on two or even three different sites at once, such as the zebra dove (*Geopelia striata*), the lesser coucal (*Centropus bengalensis*), and the sparrow (*Passer montanus*).

Most of them are terrestrial/land birds or not waterbirds, Of the 22 bird families found in the research sites, only 3 were categorized as water birds, namely Ardeidae, Ciconiidae and Rallidae. Waterbird, water bird, or aquatic bird is a bird that swims and lives in or near water (Britannica Dictionary, 2023), a bird that lives near water, especially rivers or lakes, and often walks or swims in the water (Oxford Advanced Learner's Dictionary, 2023), a swimming or wading bird (Merriam-Webster.com Dictionary, 2023). They are an important and non-negligible component of the wetland environment (Wetlands International, 2012). This group of birds usually migrates in large numbers from one region to another (Mulyana et al., 2021) basically because of different seasons.

When compared with the number of waterbirds throughout the world, which according to BirdLife International (2017) dan Wetlands International (2012) reaches 32 families or 871 species, the ratio of water birds in the research sites is very small, namely 9.38% of the total number of families or even only 0.34% of the number of species. Each of these waterbird families happens to be represented by only one species each. Cinnamon bittern (*Ixobrychus cinnamomeus*) is known to exist when this bird flies and then perches at a point which is located at the bottom of the stem or the ground surface where aquatic plants (such as Cyperaceae) plant their roots. Perched or active in this position makes it hidden. The presence of this bird can also be known when it flies away from a hidden point when the observer approaches that point or a moving object surprises it. The presence of white-breasted waterhen (*Amaurornis phoenicurus*) or called burak-burak in the Banjar language is detected by its sound. In addition, the presence of this bird is also known when crossing footpaths or paved public roads when moving from one place to another. The presence of the lesser adjutant (*Leptoptilos javanicus*) is known when it flies a few meters in the harvested paddy fields.

That ratio is of course balanced with the relatively low frequency of data collection, only three repetitions. The ratio is calculated to increase if the frequency of data collection is greater. This is provided that the habitat conditions are at least the same as the conditions at the time of data collection. Habitats with variations in biological resources (such as plants, animals, the impact of their presence, and food), variations in physical resources (such as moisture, coolness, shade, landscape and land strata), and minimal disturbance from humans invite birds to attend more frequently or more species and individuals.

More than 96% of the	birds found have low	v risk status (least conce	rn) and most have unpre-	otected status.
Table 1.	Bird species found a	t three research sites in	Barambai Kolam Kanar	ı Village

No.     Spectra and many     Local Planotations     Rubber     Rubber     Paddy (2023) (2018)       Acumbrizidae     1     Gerygone sulphurea     Remeruk laut     Golden-bellied Gerygone     1     2     -     LC     UP       Accipiridae     2     Elans caerdeus     Elang tixus     Black-winged Kite     -     1     LC     P       Accipiridae     -     1     LC     P     Accipiridae     -     LC     UP       Accipiridae     -     -     LC     UP     Accipiridae     -     LC     UP       Acadinae     -     -     LC     UP     Acadeiae     -     LC     UP       Aradeidae     -     10     Callocali linchi     Walet linchi     Cave Swiftlet     -     10     C     LC     UP       7     kobrychus cinanomenes     Bangau tongtong     Lesser Adjutant     -     I.C     UP       6     Collocalia linchi     Achromus rafleges     Cinenen kelabu     Ashy Tailorbirid     1     -     I.C <th></th> <th colspan="3">Species and family <math>\mathbf{L}</math> acal/Indensia <math>\Sigma</math> individuals found at <b>LUCN P</b></th> <th>P 106</th>		Species and family $\mathbf{L}$ acal/Indensia $\Sigma$ individuals found at <b>LUCN P</b>			P 106				
Acumbizidate     Ferretuk laut     Golden-bellied Gerygone     1     2     -     LC     UP       Accipitridae     Elangs coerdeus     Elangs tikus     Black-winged Kite     -     -     1     LC     P       Acedinidae     -     1     LC     P       Acedinidae     -     1     LC     P       Active     Wate linchi     Collared Kingfisher     2     -     LC     UP       Ardelidae     -     1.C     UP     Ardelidae     -     1.C     UP       Ardelidae     -     1.C     UP     Ardelidae     -     1.C     UP       Ardelidae     -     -     1.C     UP     Ardelidae     -     1.C     UP       Statovikoe     Bangau tongtong     Lesser Adjutant     -     1.C     UP       Orbitoromsus ruffceps     Cinenen kelahu     Ashy Tailorbitid     1     -     1.C     UP       Orbitoroms ruffceps     Cinenen kelahu     Ashy Tailorbitid     1     -     1.C	No.	name	name	Common name	Swamps	Rubber plantations	Paddy fields	(2023)	(2018)
1   Gerygene sulphurea   Remetak laut   Golden-bellied Gerygene   1   2   -   LC   UP     2   Elang titus   Blang kus   Black-winged Kite   -   -   2   LC   P     Altediaturi indus   Elang bondol   Brahminy Kite   -   -   LC   UP     5   Halcsum indus   Cekakak belukar   White-breasted Kingfisher   2   -   LC   UP     6   Collaced Linchi   Cave Swiftlet   -   10   6   LC   UP     Artanidae   Bambangan merah Cinnamon Bittern   2   -   -   LC   UP     Cistocifidae   7   Lobryoluc innamonesis   Cinenen kelaha   Ashy Tajlorhid   1   -   -   LC   UP     10   Orthoromus raficeps   Cinenen kelaha   Ashy Tajlorhid   1   -   -   LC   UP     12   Geopelia striata   Perkutat   Zebra Dove   3   -   1   LC   UP     13   Splitopelia chinensis   Bubut alang-alang   Lesser Coucal   3   -   LC	Acant	hizidae							
Accprintate   2   Elans corrideus   Elang tikus   Black-winged Kite   -   -   2   LC   P     3   Haltastur indus   Elang bondol   Brahminy Kite   -   -   1   LC   P     4   Todiramphus chloris   Cekakak sungai   Collared Kingfisher   2   -   -   LC   UP     Apolidae   6   Collocalla Inchi   Cave Swiftlet   -   10   6   LC   UP     Artamidae   Bambangan merah   Cinnamon Bittern   2   -   -   LC   UP     Collocalia Inchi   Walet Inchi   Cave Swiftlet   -   10   6   LC   UP     Connidae   Bangau tongtong   Lesser Adjutant   -   1   -   Vu   P     Stationidae   Cineene kelabu   Ashy Tailorbird   1   -   -   LC   UP     Collineitae   Freinjak rawa   Yeltow-belied Prinia   2   -   LC   UP     Colonidae   Techonya bengalensis   Bubut alang-alang Lesser Coucal   3   -   LC   UP	1	Gerygone sulphurea	Remetuk laut	Golden-bellied Gerygone	1	2	-	LC	UP
2   Edina Coefficients   Elang bond of Brahminy Kite   -   -   1   LC   P     Alcedinidae   Cekakak sungai   Collaced Kingfisher   2   -   -   LC   UP     Apodidae   Cekakak belukar   White-breasted Kingfisher   2   -   -   LC   UP     Ardeidae   -   10   6   LC   UP     Artamus leucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Cisticolidae   -   -   LC   UP   P   Controlidae   -   -   LC   UP     10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     11   Perinia flaviventris   Perenjak rawa   Yellow-bellied Prinia   2   -   LC   UP     Columbidae   -   -   LC	Accip	itridae	Elong tilma	Dlask winged Vite			2	IC	р
A Todiramphus chloris   Cekakak sungai   Collared Kingfisher   2   -   -   LC   UP     A Todiramphus chloris   Cekakak sungai   Collared Kingfisher   2   -   -   LC   UP     Apodidae   Collared Kingfisher   2   -   -   LC   UP     Apodidae   Collared Kingfisher   2   -   -   LC   UP     Apodidae   Collared Kingfisher   2   -   -   LC   UP     Actanual eucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Costochidae   Bangau tongtong   Lesser Adjutant   -   1   C   Vu   P     Costochidae   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     Costochidae   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     Costochidae   Derohatomus raficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     Columbidae   Derohatomatos   Perenjak rawa   <	3	Elanus caeruleus Haliastur indus	Elang bondol	Brahminy Kite	-	-	2		P P
4   Todramphus chloris   Cekakak belukar   Collared Kingfisher   2   -   -   LC   UP     5   Halcyon smyrnensis   Cekakak belukar   White-breasted Kingfisher   1   -   -   LC   UP     6   Collocalla linchi   Walet linchi   Cave Swiftlet   -   10   6   LC   UP     7   Izobrychus cinnamoneus   Bambangan merah   Cave Swiftlet   -   10   6   LC   UP     7   Izobrychus cinnamoneus   Bangau tongtong   Lesser Adjutant   -   1   -   LC   UP     7   Izobrychus cinnamoneus   Bangau tongtong   Lesser Adjutant   -   1   -   LC   UP     10   Orthoomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     11   Orthoomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     13   Spilopelia chinensis   Tekukur   Eastern Spotted Dove   3   -   1   LC   UP     14   Centro	Alced	inidae	Liang bolidor	Draininity Kite	-	-	1	LC	1
5   Hadryon'smyrnensis   Cekakak belukar   White-breasted Kingfisher   1   -   -   LC   UP     Apodidae   -   10   6   LC   UP     Ardeidae   -   10   6   LC   UP     Artamidae   Bambangan merah Cinnamon Bittern   2   -   -   LC   UP     S Artamus leucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Georidae   -   -   LC   UP   Perenjai rawa   Yellow-bellied Prinia   2   -   -   LC   UP     Oprihotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     Columbidae   -   -   LC   UP   -   LC   UP     12   Geopelia striata   Perkutu   Zebra Dove   3   -   1   LC   UP     13   Spilopelia chinensis   Teckukur   Eastern Spotted Dove   3   -   LC   UP     Coundidae   -   -   LC   UP   <	4	Todiramphus chloris	Cekakak sungai	Collared Kingfisher	2	-	-	LC	UP
Apolidae   6   Collocalia linchi   Walet linchi   Cave Swiftlet   -   10   6   LC   UP     Ardeidae   7   Lobrychus cinnumomeus   Bambangan merah Cinnamon Bittern   2   -   -   LC   UP     Artamidae   8   Artamus leucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Ciconiidae   9   Leptoptilos javanicus   Bangau tongtong   Lesser Adjutant   -   1   -   Vu   P     Cisticolidae   10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     13   Spilopelia chinensis   Perkutut   Zebra Dove   3   -   1   LC   UP     Caudidae   14   Cautropus bengalensis   Bubut alang-alang Lesser Coucal   3   -   3   LC   UP     15   Dicaeum trochileum   Cabai jawa   Scarlet-beade Flowerpecker   1   -   LC   UP     14   Cantra malacca   Bondol rawa   Triciolured Munia   6   4   LC	5	Halcyon smyrnensis	Cekakak belukar	White-breasted Kingfisher	1	-	-	LC	UP
6   Collocalia linchi   Walet linchi   Cave Swiftlet   -   10   6   LC   UP     7   Ixobrychus cinnamomeus   Bambangan merah Cinnamon Bittern   2   -   -   LC   UP     Artamidae   8   Artamus leucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Ciconidae   9   Leptoptilos javanicus   Bangau tongtong   Lesser Adjutant   -   1   -   LC   UP     10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbrird   1   -   -   LC   UP     Coluculidae   1   -   -   LC   UP   Combidae   -   -   LC   UP     12   Geopelia striata   Perkutu   Zebra Dove   3   -   1   LC   UP     12   Geopelia striata   Perkutu   Zebra Dove   3   -   LC   UP     13   Spilopelia chinensis   Teckukur   Eastern Spotted Dove   3   -   LC   UP     Coundiae   Dondol rawa   Tr	Apodi	idae							
Ardeidae   7   Lobrychus cinnamomeus   Bambangan merah Cinnamon Bittern   2   -   -   LC   UP     Artamidae   8   Artamus leucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Ciconidae   Bangau tongtong   Lesser Adjutant   -   1   -   Vu   P     Strictoildae   1   -   -   LC   UP   1     10   Orthotomus nficeps   Cinnen kelabu   Ashy Tailorbird   1   -   -   LC   UP     Columbidae   Perenjak rawa   Yellow-belied Prinia   2   -   LC   UP     Claudidae   Perkutut   Zebra Dove   3   -   1   LC   UP     Caculidae   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     15   Dicaeidae   Bondol rawa   Tricoloured Munia   5   4   1   UC   UP     16   Locnchura malacca   Bondol peking   Scaly-breasted Munia   7   -   LC   UP     17	6	Collocalia linchi	Walet linchi	Cave Swiftlet	-	10	6	LC	UP
1   Loopychus cunanomenus   Bambangan meran Cinnamon Bittern   2   -   -   LC   UP     8   Artamuka   Bangau tongtong   Lesser Adjutant   -   -   LC   UP     Cisciolidae   0   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     11   Prinia flaviventris   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     12   Geopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     Oucutidae   -   LC   UP   Up   Eastern Spotted Dove   3   -   LC   UP     Dicaeidae   Dicaeidae   -   LC   UP   Estididae   -   LC   UP     14   Centropus bengalensis   Bubut alang-alang Lesser Coucal   3   -   3   LC   UP     Estididae   -   -   LC   UP	Ardei	dae		C' D''	2			LC	LID
Artamusae   8 Artamus leucoryn   Kekep babi   White-breasted Woodswallow   1   -   -   LC   UP     Ciconidae   9   Leptoptilos javanicus   Bangau tongtong   Lesser Adjutant   -   1   -   Vu   P     Otisticolidae   1   -   -   LC   UP     10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     Columbidae   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     Claudiae   Perkutut   Zebra Dove   3   -   1   LC   UP     Cuculidae   14   Centropus bengalensis   Bubut alang-alang   Lesser Coucal   3   -   3   LC   UP     16   Lonchura malacca   Bondol rawa   Ticoloured Munia   6   -   4   LC   UP     17   Lochura pinectulata   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     18   Lonchura pinectulata   Bondol peking   Scaly-breasted Munia   <	1	Ixobrychus cinnamomeus	Bambangan merah	Cinnamon Bittern	2	-	-	LC	UP
a Multiniz Jette(Dy)   Rekep Data   Hume Scaled Housinadow   1   -   LC   C1     26/conidae   Bangau tongtong   Lesser Adjutant   -   1   -   Vu   P     0   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     11   Prinia flavivenris   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     12   Geopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     Columbidae   Tekukur   Eastern Spotted Dove   3   -   1   LC   UP     Cuedidae   Tekukur   Eastern Spotted Dove   3   -   1   LC   UP     Dicaeidae   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     18   Lonchura punculata   Bondol peking   Scaly-breasted Munia   7   -   LC   UP     18   Lonchura punculata   Bondol peking   Scaly-breasted Munia   7   -   LC   UP     1		Artamus laucomm	Kakan babi	White-breasted Woodswallow	1			IC	UD
9   Leptoptilos javanicus   Bangau tongtong   Lesser Adjutant   -   1   -   Vu   P     Cisticolidae   10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     10   Printa flaviventris   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     Columbidae   1   -   -   LC   UP     12   Geopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     Cuculidae   14   Centropus bengalensis   Bubut alang-alang   Lesser Coucal   3   -   1   LC   UP     15   Dicacient rocchileum   Cabai jawa   Scarlet-headed Flowerpecker   1   -   LC   UP     15   Dicacient rocchura fuscans   Bondol kalimantan Dusky Munia   5   4   1   LC   UP     16   Lonchura functulata   Bondol peking   Scarlet-headed Flowerpecker   1   -   E   UP     17   Lochura functulata   Bondol peking   Scarlet-headed Mun	Cicon	iidae	Kekep babi	while bleased woodswahow	1	-	-	LC	01
Cisticolidae 10 Orthotomus rigiceps 11 Prinia flaviventris Perenjak rawa Yellow-bellied Pinia 12 Geopelia striata 13 Spilopedia chinensis Tekukur 24 Devetukur 25 Dicaeum trochileum 24 Lonchura malacca 15 Dicaeum trochileum 25 Dicaeum trochileum 20 Lanius schach 20 Lanius schach 20 Lanius schach 20 Lanius schach 21 Aniureptes malacensis Madu kelapa Borwn-throated Sunbird 21 Aniureptes malacensis Madu kelapa 21 Aniureptes malacensis 21 Aniureptes malacensis 22 Lanius schach 23 Passeridae 23 Passer montanus 24 Picoides 25 Pyenonotus goiavier 25 Pyenonotus goiavier 26 Lanius aurung gereja 27 Abigen Aniureptes malacensis 28 Lonchura suitalitik 29 Acridotheres javanicas 20 Kathila Kerbah cerucuk 20 Yellow-vented Bulbul 20 Lanius schach 23 Passer montanus 24 Picoides 25 Pyenonotus goiavier 26 Pyenonotus goiavier 27 Rhipidiura javanica 28 Anaurornis phoenicurus Kerak kerbau 29 Acridotheres javanicas Kerak kerbau 20 Janiureptes malacensis 20 Lanius schach 21 Aniureptes malacensis 22 Cinnyris jugularis 23 Passer montanus 24 Picoides 25 Pyenonotus goiavier 26 Pyenonotus goiavier 27 Rhipidiura javanica 28 Anaurornis phoenicurus Kareo padi 29 Acridotheres javanicas 20 Kerak kutilang 20 Javan Myna 20 LC UP 20 Acridotheres javanicas 20 Kerak kerbau 20 Javan Myna 20 LC UP 20 Curupter javanicas 20 Javan Myna 20 LC UP 20 Acridotheres javanicus 20 Javan Myna 20 LC UP 20 Curupter javanicus 20 Javan Myna 20 LC UP 20 Acridotheres javanicus 20 Javan Myna 20 LC UP 20 Acridotheres javanicus 20 Javan Myna 20 LC UP 20 Acridotheres javanicus 20 Javan Myna 20	9	Leptoptilos iavanicus	Bangau tongtong	Lesser Adjutant	-	1	-	Vu	Р
10   Orthotomus ruficeps   Cinenen kelabu   Ashy Tailorbird   1   -   -   LC   UP     11   Prinia flaviventris   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     20 decopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     Cuculidae   Tekukur   Eastern Spotted Dove   3   -   1   LC   UP     Cuculidae   Eastern Spotted Dove   3   -   1   LC   UP     Cuculidae   Cabai jawa   Scarlet-headed Flowerpecker   1   -   -   LC   UP     Estrildidae   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     Hirundinidae   Lanchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     Hirundinidae   Layang-layang batu   Tahti Svallow   -   -   8   LC   UP     20   Lanitus schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP	Cistic	olidae	8	Jan					
11   Prinia flaviventris   Perenjak rawa   Yellow-bellied Prinia   2   -   -   LC   UP     Columbidae   12   Geopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     13   Spilopelia chinensis   Tekukur   Eastern Spotted Dove   3   -   LC   UP     Cuculidae   14   Centropus bengalensis   Bubut alang-alang Lesser Coucal   3   -   3   LC   UP     Dicacidae   15   Dicaceum trochileum   Cabai jawa   Scarlet-headed Flowerpecker   1   -   -   LC   UP     15   Loceutur fuscans   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     16   Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     18   Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   8   LC   UP     19   Hirundo tahitica   Layang-layang batu   Tahiti Swallow   -   -   RC   UP     20<	10	Orthotomus ruficeps	Cinenen kelabu	Ashy Tailorbird	1	-	-	LC	UP
Columbidae      12   Geopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     13   Spilopelia chinensis   Tekukur   Eastern Spotted Dove   3   -   -   LC   UP     Cuculidae   1   Centropus bengalensis   Bubut alang-alang   Lesser Coucal   3   -   3   LC   UP     Dicaeidae   1   Cabai jawa   Scarlet-headed Flowerpecker   1   -   -   LC   UP     Estrildidae   1   Lonchura malacca   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     16   Lonchura fuscans   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     18   Lonchura punculata   Bondol peking   Scaly-breasted Munia   7   -   8   LC   UP     Laniidae   19   Hirundo tahitica   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     20   Lanius schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP <td>11</td> <td>Prinia flaviventris</td> <td>Perenjak rawa</td> <td>Yellow-bellied Prinia</td> <td>2</td> <td>-</td> <td>-</td> <td>LC</td> <td>UP</td>	11	Prinia flaviventris	Perenjak rawa	Yellow-bellied Prinia	2	-	-	LC	UP
12   Geopelia striata   Perkutut   Zebra Dove   3   -   1   LC   UP     13   Spilopelia chinensis   Tekukur   Eastern Spotted Dove   3   -   -   LC   UP     Cuculidae   14   Centropus bengalensis   Bubut alang-alang   Lesser Coucal   3   -   -   LC   UP     Dicaeidae   15   Dicaeidae   Cabai jawa   Scarlet-headed Flowerpecker   1   -   -   LC   UP     15   Dicaeidae   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     16   Lonchura punctulata   Bondol kalimantan   Dusky Munia   5   4   1   LC   UP     18   Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   8   LC   UP     14   Iuc   Up   Itrundo tahitica   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     20   Lanitas chach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP	Colun	nbidae							
13 Sphopetia chinensis   Fekukur   Eastern Spotted Dove   3   -   1.CC   UP     14 Centropus bengalensis   Bubut alang-alang   Lesser Coucal   3   -   3   LC   UP     Dicacidae   15 Dicaceum trochileum   Cabai jawa   Scarlet-headed Flowerpecker   1   -   -   LC   UP     Estrildidae   16 Lonchura malacca   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     18 Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     19 Hirundo tahitica   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     20 Lamius schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP     21 Anthreptes malacensis   Madu kelapa   Brown-throated Sunbird   7   -   LC   UP     22 Cinnyris jugularis   Madu kelapa   Brown-throated Sunbird   7   -   LC   UP     Pycnonotidae   -   -   LC   UP   -   LC   UP	12	Geopelia striata	Perkutut	Zebra Dove	3	-	1	LC	UP
Cucundae14Centropus bengalensisBubut alang-alangLesser Coucal3-3LCUPDicaeidae15Dicaeidae1LCUP15DicaeintrochileumCabai jawaScarlet-headed Flowerpecker1LCUPEstriklidae16Lonchura malaccaBondol rawaTricoloured Munia6-4LCUP16Lonchura malaccaBondol rawaTricoloured Munia541LCUP17Lonchura punctulataBondol pekingScaly-breasted Munia7-5LCUP18Lonchura punctulataBondol pekingScaly-breasted Munia7-8LCUP19Hirundoi tahiticaLayang-layang batuTahiti Swallow8LCUP20Lanitas schachBentet kelabuLong-tailed Shrike-14LCUP21Anthreptes malacensisMadu kelapaBrown-throated Sunbird7LCUPPasseridae23Passer montanusBurung gerejaEurasian Tree Sparrow434LCUP24Picoides moluccensisCaladi tilikSunda Pygmy Woodpecker1LCUP25Pycmonotus gaivaierMerbah cerucukYellow-vented Bulbul31-LCUP28Amaurornis phoenicurusKarea kerbauJavan	13	Spilopelia chinensis	Tekukur	Eastern Spotted Dove	3	-	-	LC	UP
14   Centropus Denguteristy   Budut adage adange Cesser Colucat   3   -   3   1C   OF     Dicaeidae   15   Dicaeidae   Scarlet-headed Flowerpecker   1   -   -   LC   UP     15   Dicaeidae   Bondol rawa   Tricoloured Munia   6   -   4   LC   UP     16   Lonchura fuscans   Bondol rawa   Tricoloured Munia   5   4   1   LC   UP     17   Lonchura fuscans   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     18   Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   8   LC   UP     19   Hirundinidae   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     Laniidae   Loury is guidaris   Madu kelapa   Brown-throated Sunbird   7   -   LC   UP     20   Lanius schach   Madu sriganti   Olive-backed Sunbird   7   -   LC   UP     21   Anthreptes molacensis   Madu sriganti   Olive		Idae	Pubut alang alang	Lasser Coursel	2		2	IC	UD
DistrictionCabai jawaScarlet-headed Flowerpecker1LCUPEstrildidaeBondol rawaTricoloured Munia6-4LCUP16Lonchura malaccaBondol kalimantan Dusky Munia541LCUP18Lonchura punctulataBondol pekingScaly-breasted Munia7-5LCUP18Lonchura punctulataBondol pekingScaly-breasted Munia7-5LCUP19Hirundo tahiticaLayang-layang batuTahiti Swallow8LCUP20LaniudaeLayang-layang batuTahiti Swallow8LCUP20Lanius schachBentet kelabuLong-tailed Shrike-14LCUP21Anthreptes malacensisMadu kelapaBrown-throated Sunbird7LCUP22Cinnyris jugularisMadu srigantiOlive-backed Sunbird7LCUPPasseridae23Passer montanusBurung gerejaEurasian Tree Sparrow433LCUP24Picoides moluccensisCalai tilikSunda Pygmy Woodpecker1LCUP25Pyconotus aurigasterCucak kutilangSooty-headed Bulbul31-LCUP25Pyconotus goiavierMerbah cerucukYellow-vented Bulbul31-LC	14 Dicae	idae	Bubut alang-alang	Lesser Coucai	3	-	3	LC	UF
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16Lonchura malacca Bondol rawaBondol rawa Tricoloured Munia6-4LCUP17Lonchura fuscans Bondol kalimantan Dusky Munia541LCUP18Lonchura fuscans Bondol pekingBondol peking Scaly-breasted Munia7-5LCUP19HirundinidaeLayang-layang batu Tahiti Swallow8LCUP19Hirundo tahitica LanidaeLayang-layang batu Tahiti Swallow8LCUP20Lanius schach DectarinidaeBentet kelabu Long-tailed Shrike-14LCUP21Anthreptes malacensis Madu srigantiMadu kelapa Brown-throated Sunbird7LCUP23Passeridae23Passer montanus Burung gerejaBurung gereja Eurasian Tree Sparrow434LCUP24Picoidae2PicoidaeLCUP25Pycononotus aurigaster OpticarCucak kutilang Merbah cerucuk Yellow-vented Bulbul31-LCUP26Pycnonotus goiavier RhipiduridaeKipasan belang Sunda Pied Fantail21-LCUP29Acridotheres javanicus Number of individualsG227454545Number of individuals72274545144545454510Hernipus hirundinaceusJingji	Estrilo	didae	Subul Junu	1	•			20	01
17   Lonchura fuscans   Bondol kalimantan Dusky Munia   5   4   1   LC   UP     18   Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     Hirundinidae   19   Hirundo tahtica   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     Laniidae   20   Lanius schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP     20   Lanitys schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP     21   Anthreptes malacensis   Madu kelapa   Brown-throated Sunbird   7   -   -   LC   UP     22   Cimnyris jugularis   Madu sriganti   Olive-backed Sunbird   7   -   -   LC   UP     Picidae   23   Passer montanus   Burung gereja   Eurasian Tree Sparrow   4   3   3   LC   UP     Pycnonotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP	16	Lonchura malacca	Bondol rawa	Tricoloured Munia	6	-	4	LC	UP
18   Lonchura punctulata   Bondol peking   Scaly-breasted Munia   7   -   5   LC   UP     Hirundinidae   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     Laniidae   20   Laniids schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP     Nectariniidae   21   Anthreptes malacensis   Madu kelapa   Brown-throated Sunbird   7   -   -   LC   UP     Passeridae   23   Passer montanus   Burung gereja   Eurasian Tree Sparrow   4   3   4   LC   UP     Picidae   24   Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     26   Pycnonotus agiaster   Cucak kutilang   Sooty-headed Bulbul   3   1   -   LC   UP     27   Rhipidura javanica   Kipasan belang   Sunda Pied Fantail   2   1   -   LC   UP     Rallidae   29   Acridotheres javanicas   Kareo padi   White-breasted Waterhen   3	17	Lonchura fuscans	Bondol kalimantan	Dusky Munia	5	4	1	LC	UP
Hirundinidae     19   Hirundo tahitica   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     Laniidae   20   Lanius schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP     Nectariniidae   21   Anthreptes malacensis   Madu kelapa   Brown-throated Sunbird   7   -   -   LC   UP     22   Cinnyris jugularis   Madu sriganti   Olive-backed Sunbird   7   -   -   LC   UP     Passeridae   23   Passeridae   24   Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     Picidae   24   Piconotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP     26   Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     Rallidae   23   Aamurornis phoenicurus   Kareo padi   White-breasted Waterhen   3   -   1   LC   UP     Sumidae <td>18</td> <td>Lonchura punctulata</td> <td>Bondol peking</td> <td>Scaly-breasted Munia</td> <td>7</td> <td>-</td> <td>5</td> <td>LC</td> <td>UP</td>	18	Lonchura punctulata	Bondol peking	Scaly-breasted Munia	7	-	5	LC	UP
19   Hirundo tahitica   Layang-layang batu   Tahiti Swallow   -   -   8   LC   UP     Laniidae   20   Lanius schach   Bentet kelabu   Long-tailed Shrike   -   1   4   LC   UP     Nectariniidae   21   Anthreptes malacensis   Madu kelapa   Brown-throated Sunbird   7   -   -   LC   UP     22   Cinnyris jugularis   Madu sriganti   Olive-backed Sunbird   7   -   -   LC   UP     23   Passer montanus   Burung gereja   Eurasian Tree Sparrow   4   3   4   LC   UP     Picidae   24   Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     Pycnonotidae   25   Pycnonotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP     Rallidae   21   -   LC   UP   Nup   Nup   3   1   -   LC   UP     Rallidae   21   -   LC   UP   Nup	Hirun	dinidae						_	
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20 Lanius schach   Benet keradu   Long-tanted sinike   -   1   4   LC   UP     Nectariniidae   21 Anthreptes malacensis   Madu kelapa   Brown-throated Sunbird   7   -   -   LC   UP     22 Cinnyris jugularis   Madu sriganti   Olive-backed Sunbird   7   -   -   LC   UP     23 Passer montanus   Burung gereja   Eurasian Tree Sparrow   4   3   4   LC   UP     24 Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     Pycnonotidae   25   Pycnonotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP     26   Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     Rallidae   2   1   -   LC   UP   Rallidae   -   LC   UP     28   Anaurornis phoenicurus   Kareo padi   White-breasted Waterhen   3   -   1   LC   UP     Vangidae   30	Lanno	lae	Dontot Iralahu	Long toiled Shuike		1	4	IC	UD
Prectamindae21Anthreptes malacensisMadu kelapaBrown-throated Sunbird7LCUP22Cinyris jugularisMadu srigantiOlive-backed Sunbird7LCUPPasseridae23Passer montanusBurung gerejaEurasian Tree Sparrow434LCUPPicidae24Picoides moluccensisCaladi tilikSunda Pygmy Woodpecker1LCUPPycnonotidae25Pycnonotus aurigasterCucak kutilangSooty-headed Bulbul433LCUP26Pycnonotus goiavierMerbah cerucukYellow-vented Bulbul31-LCUPRhipiduridae21-LCUPUPRallidae23Amaurornis phoenicurusKareo padiWhite-breasted Waterhen3-1LCUPVangidae30Hemipus hirundinaceusJingjing batuBlack-winged Flycatcher- shrike-1-LCUPNumber of individuals722745Number of species231014Number of species23101414244244	20 Nooto	Lanius schach	Bentet keladu	Long-tailed Shrike	-	1	4	LC	UP
21   Antimepris matacensis   Mada kalapa   Drown moded standad   7   -   -   LC   UP     Passeridae   23   Passeridae   Burung gereja   Eurasian Tree Sparrow   4   3   4   LC   UP     Picidae   24   Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     Pycnonotidae   25   Pycnonotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP     26   Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     27   Rhipidura javanica   Kipasan belang   Sunda Pied Fantail   2   1   -   LC   UP     Rallidae   29   Acridotheres javanicus   Kareo padi   White-breasted Waterhen   3   -   1   LC   UP     Vangidae   30   Hernipus hirundinaceus   Jingjing batu   Black-winged Flycatcher-   -   1   -   LC   UP     Number of individuals   72   27   45   - </td <td>21</td> <td>Anthroptos malaconsis</td> <td>Madu kelana</td> <td>Brown-throated Sunbird</td> <td>7</td> <td>_</td> <td>_</td> <td>IC</td> <td>IJР</td>	21	Anthroptos malaconsis	Madu kelana	Brown-throated Sunbird	7	_	_	IC	IJР
Passeridae   23 Passer montanus   Burung gereja   Eurasian Tree Sparrow   4   3   4   LC   UP     Picidae   24 Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     Pycnonotidae   25   Pycnonotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP     26   Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     26   Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     26   Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     Rhipiduridae   2   1   -   LC   UP     Rallidae   28   Amaurornis phoenicurus Kareo padi   White-breasted Waterhen   3   -   1   LC   UP     Vangidae   30   Hemipus hirundinaceus   Jingjing batu   Black-winged Flycatcher-   -   1   -   LC   UP	22	Cinnvris iugularis	Madu sriganti	Olive-backed Sunbird	7	_	_	LC	UP
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24 Picoides moluccensis   Caladi tilik   Sunda Pygmy Woodpecker   1   -   -   LC   UP     Pycnonotidae   25 Pycnonotus aurigaster   Cucak kutilang   Sooty-headed Bulbul   4   3   3   LC   UP     26 Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     26 Pycnonotus goiavier   Merbah cerucuk   Yellow-vented Bulbul   3   1   -   LC   UP     Rhipidura javanica   Kipasan belang   Sunda Pied Fantail   2   1   -   LC   UP     Rallidae   28   Amaurornis phoenicurus   Kareo padi   White-breasted Waterhen   3   -   1   LC   UP     Sturnidae   29   Acridotheres javanicus   Kerak kerbau   Javan Myna   3   -   2   LC   UP     Vangidae   30   Hemipus hirundinaceus   Jingjing batu   Black-winged Flycatcher-   -   1   -   LC   UP     Number of individuals   72   27   45   45   9   11     Diversity Index (H')	Picida	ie		-					
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shrikeNumber of individuals722745Number of species231014Number of families15911Diversity Index (H')2244	30	Hemipus hirundinaceus	Jingjing batu	Black-winged Flycatcher-	-	1	-	LC	UP
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Number of species231014Number of families15911Diversity Index (H')2.941.942.44		Nu	umber of individuals	3	72	27	45		
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		Г Г	Viversity Index (H')		2.94	9 194	2.44		

Notes:

1. UP = unprotected; P = protected; LC = least concerned; Vu = vulnerable

2. P.106: Permen-LHK P.106.

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Only a bird species (3.33%) has vulnerable status and coincidentally this bird, namely the tongtong stork or Lesser Adjutant, is a protected bird. These low-risk birds appear to be able to adapt to changing or modified wetland conditions. This type of bird is mostly active and can be found carrying out activities (nesting, jumping over plant branches and twigs to find food) in rubber agroforestry areas (Marsuki et al., 2022), former mining reclamation areas (Atmoko et al., 2015; Soendjoto et al., 2022), and coastal areas, including in this case around ports (Riefani & Arsyad 2019; Riefani & Soendjoto, 2021; Soendjoto et al., 2015b).

An increase in the number of bird species whose protection status is low risk is believed to have a negative impact on bird conservation or overall environmental sustainability. People, especially those whose job is catching or hunting birds, can continue work that is actually categorized as negative (Commerçon et al., 2021; Noraini et al., 2013; Pattiselanno & Mentansan, 2010; Suroto, 2018). No one disturbs their source of livelihood. In the end, they have a greater opportunity to continue to threaten and destroy the environment which is actually the bird's habitat.

It is the government's duty to be wiser in determining the protection status of birds. The government definitely knows that each bird species has a different ecological function or role from other species. Pycnonotidae, such as *P. aurigaster* and *P. goiavier* act as frugivores. With this role they help seed dispersal (Saputra et al., 2020). They can also act as insectivores, a role that allows them to not only increase their protein intake but also help control pests and disease. Nectarinidae, such as *A. malacensis* and *C. jugularis* act as nectarivores-insectivores (Munira et al., 2012). When they are nectarivores, these two species either directly or indirectly help pollinate flowers. Columbidae, and Estrildidae are two families of granivorous birds (Tohir et al., 2021). Through this role, they may only consume bad seeds and leave superior seeds to grow and develop. Accipitridae act as carnivores (Hadi et al., 2022) which then function as top predators to maintain environmental balance.

### **Community Similarities**

The bird community similarity index at the compared sites ranged from 0.31 to 0.36 (Table 2). This index is identical to the difference between sites, which ranges from 0.64 to 0.69. Differences in index are normal because the sites are indeed different, both biologically and physically. The main biological differences include the availability (quantity) and quality of food, both from vegetable sources (such as leaves, fruit, seeds) and from animals (such as insect larvae, imago). Other biological differences concern micro elements (such as viruses, bacteria, and other micro-organisms) that cause disease, as well as macro elements (such as predators and other large animals) that cause predation or competition. Micro elements or macro elements have the potential to reduce bird populations. Physical differences concern the atmosphere, which includes humidity, shade, and hiddenness due to the presence of air, water, or hot sun. This atmosphere makes the birds feel safe and comfortable doing activities on the research site. Soendioto et al. (2014, 2018) and Riefani et al. (2019) argues that fluctuations in the number of bird species in an area are influenced by the time of observation (dry season or rainy season), species preferences (preferences) for habitat, quantity (availability) and quality (diversity) of plant species as food sources, convenience for activities (breeding, finding partners, mating, building nests, laying eggs, caring for and caring for children) as well as security from biological factors (predators, competition for space and food, and human disturbance or threats) or physical factors (environmental temperature and humidity, shading conditions, ease of finding and obtaining nest material).

Table 2. Similarity index				
Areas	Swamps	Paddy fields	<b>Rubber plantations</b>	
Swamps	1,00	-	-	
Paddy fields	0,36	1,00	-	
Rubber plantations	0,31	0,34	1,00	

In the current research, the similarity index between sites is lower than 0.40 and this already indicates that there are no striking differences between sites. However, when compared with the similarity index between sites in modified areas found in other studies in the Kalimantan region, this index is relatively small. The bird community similarity index between sites in agroforestry areas in Banjar Regency, South Kalimantan is around 0.70–0.75 (Marsuki et al., 2022) and in the revegetation areas of former coal mines in Balangan Regency and Tabalong Regency, South Kalimantan is 0.29–0.65 (Pranata et al., 2022).

A similarity index lower than 0.40 is of course not permanent or does not happen forever. The similarity index can increase if the frequency of data collection repetitions is increased to more than 3 repetitions and then stops when the results are constant. In addition, an increase in the index can occur if site maintenance is not carried out, thereby allowing plant diversity to increase, diversity of food sources to increase, and human disturbance to decrease. The problem is whether the owners of modified areas want to do this in their areas and become a source of livelihood.

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## 4. CONCLUSION

Thirty bird species were found with varying diversity between research locations (range 1.94 - 2.94) in the wetlands and less than 10% were categorized as waterbird families. Most of the birds are of least concerned status and are also not protected. The frequency of bird observations should be more or not only three times as in this study. The frequency of lots produces data that is not just a lot but more importantly, relatively constant. With more constant data, the conclusions are more consistent. Even so, data from low frequency observations can still be used, especially for activities related to biology learning for students.

### 5. REFERENCES

- Afkar M Hadi, Suhad Y Jassim, Hind D Hadi and Hani S Khalif. (2022). Morphological study for Accipitrid birds (Accipitridforms, Accipitridae) in Iraq. GSC Biological and Pharmaceutical Sciences, 2022, 19(03), 262–269.
- APSSI [Asosiasi Program Studi Sosiologi Indonesia]. (2022). Desa Literasi Menuju Eco-Cultural Tourism Aksi Bidang Pemberdayaan Masyarakat APSSI – Prodi Sosiologi ULM. Accessed 31 July 2023 from https://portalapssi.id/desa-literasi-menuju-eco-cultural-tourism-aksi-bidang-pemberdayaan-masyarakatapssi-prodi-sosiologi-ulm/
- BirdLife International. (2017). Waterbirds Are Showing Widespread Declines, Particularly in Asia. Accessed 20 July 2023 from http://www.birdlife.org.
- Britannica Dictionary. (2023). Waterbird. Encyclopædia Britannica, Inc. Accessd 20 September 2023 from <a href="https://www.britannica.com/dictionary/waterbird">https://www.britannica.com/dictionary/waterbird</a>.
- Commerçon, F.A., Zhang, M., Solomon, J.N. (2021). Social norms shape wild bird hunting: A case study from southwest China. *Global Ecology and Conservation*, 32: e01882
- Diskominfo Batola [Dinas Komunikasi dan Informatika Kabupaten Barito Kuala]. (2020). Kabupaten Barito Kuala Secara Geografis. Accessed 20 June 2023 from https://diskominfo.baritokualakab.go.id/geografis/
- Eaton, J.A., Balen, B.v, Brickle, N.W., Rheindt, F. E. (2022). *Burung-burung Pulau Paparan Sunda dan Wallacea di Kepulauan Indonesia*. Barcelona: Lynx Editions.
- Husna, H., Azis, Y. & Fauzi, M. (2020). Efisiensi teknis usahatani padi sawah pasang surut varietas lokal di Kecamatan Barambai Kabupaten Barito Kuala: pendekatan Dea. *Journal of Agricultural Socio-Economics*, 1(2): 76-83. DOI: 10.33474/jase.v1i2.9093
- IUCN [International Union for Conservation of Nature and Natural Resources]. (2023). *The IUCN Red List of Threatened Species*. Version 2022-2. https://www.iucnredlist.org.
- Koesrini, Saleh, M., Thamrin, M. (2018). Adaptasi agronomi padi unggul varietas Inpara pada lahan rawa pasang surut. *Penelitian Pertanian Tanaman Pangan*, 2(2): 77-83. DOI: http://dx.doi.org/10.21082/jpptp.v2n2.2018.p77-83
- Marsuki, I., Soendjoto, M.A., Indrayatie, E.R. (2022). Bird species in the agroforestry areas of Karang Intan District, Banjar Regency, Indonesia. *Quagga*, 14(2): 151-158. DOI: https://doi.org/10.25134/quagga.v14i2.5848.
- Merriam-Webster.com Dictionary. (2023). Waterbird. Merriam-Webster. Accessed 20 September 2023 from <u>https://www.merriam-webster.com/dictionary/waterbird</u>.
- Mulyana, D., Aluyah, C., Heptiana, E. (2021). Analisis populasi burung air di Semenanjung Banyuasin SPTN Wilayah II Kawasan Taman Nasional Berbak Dan Sembilang Kabupaten Banyuasin. *Sylva*, 10(2): 1-10. DOI: <u>https://doi.org/10.32502/sylva.v10i2.3946</u>
- Munira, A.N., Salmi A.L.N., Anuar, M.S.S., Juliani, S.N. (2012). Bird communities and feeding guilds from three land use types in Kerian River Basin, Perak. *The Proceedings of the 2nd Annual International Conference Syiah Kuala University 2012 & The 8th IMT-GT Uninet Biosciences Conference Banda Aceh*, 22-24 November 2012. pp. 115-121.

Bird Species in the Wetlands of Barito Kuala District, Indonesia (Muhammad Mirza Fahlevi)

- Noraini, N., Soendjoto, M.A., Naparin, A. (2013). Alat tangkap burung yang digunakan penduduk di rawa Kecamatan Danau Panggang, Kabupaten Hulu Sungai Utara. Jurnal Manusia dan Lingkungan, 20(3): 241-251. DOI: <u>https://doi.org/10.22146/jml.18491</u>
- Oxford Advanced Learner's Dictionary. (2023). Waterbird. Oxford University Press, Oxford. Accessed 20 September 2023 from https://www.oxfordlearnersdictionaries.com/definition/english/waterbird.
- Pattiselanno, F., Mentansan, G. (2010). Kearifan tradisional Suku Maybrat dalam perburuan satwa sebagai penunjang pelestarian satwa. *Makara, Sosial Humaniora*, 14(2): 75-82.
- Permen-LHK P.106. (2018). Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.106/MenLHK/Setjen/Kum.1/12/2018 Tahun 2018 tentang Perubahan Kedua atas Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.20//MenLHK/Setjen/Kum.1/6/2018 tentang Jenis Tumbuhan dan Satwa yang Dilindungi.
- Pranata, Y., Soendjoto, M.A., Nisa, K., Wahyudi, F. (2022). Keragaman spesies dan kemiripan komunitas burung di area revegetasi perusahaan tambang batubara di Kalimantan Selatan, Indonesia. *Jurnal Sylva Scienteae*, 5(1): 1-7. DOI: <u>https://doi.org/10.20527/jss.v5i1.5040</u>
- Riefani, M.K., Arsyad, M. (2019). Spesies burung di Kawasan Ekowisata Mangrof Pagatan Besar, Kabupaten Tanah Laut, Indonesia. *Prosiding Seminar Nasional Lingkungan Lahan Basah*, 4(1): 192–196.
- Riefani, M.K., Soendjoto, M.A. (2021). Birds in the west coast of South Kalimantan, Indonesia. *Biodiversitas*, 22(1): 278-287. DOI: 10.13057/biodiv/d220134
- Riefani, M.K., Soendjoto, M.A., Munir, A.M. (2019). Bird species in the cement factory complex of Tarjun, South Kalimantan, Indonesia. *Biodiversitas*, 20(1): 218-225.
- Saputra, A., Hidayati, N.A., Mardiastuti, A. (2020). Keanekaragaman burung pemakan buah di Hutan Kampus Universitas Bangka Belitung. *Ekotonia*, 5(1): 1-8. DOI: 10.33019/ekotonia.v5i1.1943.
- Soendjoto, M.A., Riefani, M.K., Triwibowo, D., Metasari, D. (2018). Birds observed during the monitoring period of 2013-2017 in the revegetation area of ex-coal mining sites in South Kalimantan, Indonesia. *Biodiversitas*, 19(1): 323-329. DOI: 10.13057/biodiv/ d190144.
- Soendjoto, M.A., Nugroho, Y., Suyanto, Riefani, M.K., Supandi, Yudha, H.E.S. (2019). Avifauna di Area PT Borneo Indobara Kalimantan Selatan. Banjarbaru: Banyubening.
- Soendjoto, M.A., Riefani, M.K., Triwibowo, D., Wahyudi, F. (2015a). Avifauna di Area Reklamasi PT Adaro Indonesia. Banjarbaru, Indonesia: Universitas Lambung Mangkurat Press.
- Soendjoto, M.A., Riefani, M.K., Triwibowo, D., Wahyudi, F. (2016). Jenis burung di area reklamasi PT Adaro Indonesia yang direvegetasi tahun 1996/1997. *Proceeding Biology Education Conference*, 13(1): 723-729.
- Soendjoto, M.A., Riefani, M.K., Zen, M. (2014). Penggunaan tipe habitat oleh avifauna di lingkungan PT Arutmin Indonesia – NPLCT, Kabupaten Kotabaru, Kalimantan Selatan. *Sains & Matematika*, 3(1): 19-25.
- Soendjoto, M.A., Riefani, M.K., Zen, M. (2015b). Evaluasi spesies avifauna yang ditemukan di area PT Arutmin Indonesia - NPLCT, Kotabaru, Kalimantan Selatan. *Prosiding Seminar Nasional XII Pendidikan Biologi*, UNS, Surakarta, h. 727-732.
- Suroto, H. (2018). Tradisi Berburu di Antara Masyarakat Danau Sentani. Accessed 21 June 2023 from https://www.cnnindonesia.com/edukasi/20171229141857-445-265489/tradisi-berburu-di-antaramasyarakat-danau-sentani
- Tohir, R.K., Dwiputra, M.A., Sitanggang, F.I. (2021). Bird distribution in Itera Campus Area based on value changes in Normalized Difference Vegetation Index (NDVI). *Media Konservasi*, 26(2): 83-91. DOI: 10.29244/medkon.26.1.83-91. DOI: 10.30574/gscbps.2022.19.3.0233

Bird Species in the Wetlands of Barito Kuala District, Indonesia (Muhammad Mirza Fahlevi)

- Wetlands International. (2012). Waterbird Population Estimates, Fifth Edition. Summary Report. Wetlands International, Wageningen, The Netherlands. Accessed 20 July 2023 from https://www.wetlands.org/wp-content/uploads/2015/11/Waterbird-Populations-Estimates-Fifth-Edition.pdf.
- Wibawanto, P. (2022). Berburu Cuan Secara Halal, Menangkap Burung Liar Hidup-hidup dengan Alat Tradisional. Accessed 20 July 2023 from https://tuban.inews.id/read/156474/berburu-cuan-secara-halal-menangkap-burung-liar-hidup-dengan-alat-tradisional