Diversity of Waterbirds and Their Status in Batubara District

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Abstract: Research on the diversity of waterbirds at Batubara Regency was carried out from October 2017 to April 2018. The study aimed to determine types of waterbirds found in Batubara Regency and their status in nature. The method used was roaming method. Research location was determined by the purposive sampling method. The observation area was in villages of Durian, Medang, Pematang Nibung, Kuala Tanjung Indah, Durian, Mesjid Lama, Lalang, and Kelurahan Bogak in coastal areas (mudflat), mangroves, ponds, swamps, and rice fields. The results found 49 waterbird species with 8 families consisted of Rallidae, Recurvirostridae, Charadriidae, Scolopacidae, Laridae, Phalacrocoracidae, Ciconiidae, and Ardeidae. The dominant family is Scolopacidae with 20 species. A total of 33 species are migratory waterbirds and 16 species are residents waterbirds, 13 species are globally threatened waterbirds based on the IUCN red list criteria, namely 4 species are endangered/threatened, 1 species vulnerable, 8 species near/near threatened and 36 species others are low risk. Based on the CITES criteria, 2 waterbird species are included in Appendix I. A total of 20 species are waterbirds protected by law Republic of Indonesia.

1 INTRODUCTION

The eastern coast of North Sumatera has an important role as a habitat for various types of waterbirds. The region is also known as regional transit (stopover areas) for waterbirds migrating for doing a migration from breeding areas in different parts of the earth north (Russia, China, Siberia, and Alaska) that the conditions of the season cold to parts of the earth south which is warmer. Because functions are, then in the year 2001 Birdlife International set the region is as Region Important Bird (Important Bird Areas - IBAS) with criteria A1 and A4i. Criteria A1 explains that this location Meru p will be the area that is regularly visited by the endangered species globally or species of concern to the global conservation, and criteria A4i means that the location is known or suspected to be capable of accommodating regularly >1% biogeography of waterbird populations.

Development in the eastern coastal area of North Sumatera continues and mostly utilizes mangrove forest areas, resulting in the conversion of mangrove forests to become residential, industrial, aquaculture, rice fields, tourist areas, and even palm oil plantations. Based on data from the North Sumatera Environmental Agency (BLH), nearly 90 percent of the mangrove forest area on the east coast of North Sumatera was damaged. Damage to mangrove forests has occurred in almost all districts on the east coast of North Sumatera with levels of damage generally above 60%, even in Asahan District reaching 89%. The biggest cause of damage to mangrove land has been converted into plantation and pond areas.

The enormous damage to mangrove land will have an impact, either directly or indirectly, on the life of various organisms around it, including water birds. Damage to mangroves will result in habitats for organisms such as birds, which will reduce the population of waterbirds. The incessant planting of mangroves in coastal areas (mudflat) without paying attention to their functions and benefits for waterbirds, is feared that will also result in reduced foraging for waterbirds, especially migratory birds, which rely heavily on mudflat areas as a foraging area. Apart from that, hunting is also one of the biggest threats to the sustainability of waterbirds in North Sumatera. Therefore, this research was conducted to obtain more complete current data on

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waterbirds, especially the type of data and its distribution, especially on the east coast of the batubara regency where data on waterbirds are still very minimal. From this data, it is hoped that later efforts can be made to preserve and protect the birds in this area.

2 MATERIALS AND METHODS

This waterbird research has carried out for 5 months, starting with preparations in November 2017 including preparing a schedule, collecting tools, compiling tally sheets, designing research activities, and others. Field activities and data collection were carried out in December 2017, January 2018, March 2018, and May 2018.

Data was collected by the survey method at all predetermined locations. For habitat types that do not allow physical exploration, scanning data is collected (overall observation) of the habitat from one point of view (Bibby et al. 1992). The research location was determined by a purposive sampling method, namely based on the locations which are the habitat of water birds. A total of 8 villages have been visited, namely Durian, Pematang Nibung, Medang, Lalang, Kuala Tanjung Indah, Perupuk, Mesjid Lama, and Bogak Villages. Field data collection was carried out 4 times, namely:

- Observation I : 10 - 21 December 2017,
- Observation II : 2 - 13 January 2018,
- Observation III : 12 - 23 March 2018,
- Observation IV : 2 - 13 May 2018

This research begins with an overview of the location and meetings with government officials in each village in order to convey the objectives of the activities to be carried out as well as asking permission to carry out research activities in their village. Furthermore, observation and data collection of the water birds were carried out. Observations were made in locations that are habitats and places for feeding water birds, such as coastal areas (mudflat), mangroves, ponds, swamps, and rice fields. Identification of bird species found refers to the guidebook of Eaton et al. (2016); Hayman et al. (1986); MacKinnon et al. (2010); and Sonobi and Usui (1993).

Table 1: Location and observation points

Location Name	Habitat Type	Coordinate point
Durian Village (White Sand Beach)	beach (*mudflat*), ponds and mangroves	3 ° 2 4 ' 12 "N , 99 ° 2 1 ' 5 4 " E
Pematang Nibung Village (Surya Baru Beach)	beach (*mudflat*), ponds and rice fields	3 ° 23'54 "N , 99 ° 22'5" E
Medang Village	beach (*mudflat*), ponds and mangroves	3 ° 23 '33 "N , 99 ° 2 3 ' 32 " E
Lalang Village (Sujono Beach)	beach (*mudflat*) and *river bank* (*river bank*)	3 ° 23'14 "N , 99 ° 25'0" E
Desa Kuala Tanjung Indah (Turkish Kuala Tanjung Indah)	beach (*mudflat*) and mangroves	3 ° 20'54 "N , 99 ° 28'23" E
Perupuk Village (Historical Beach)	beach (*mudflat*) and mangroves	3 ° 16'5 "N, 99 ° 31'49" E
Old Mesjid Village (Pantai Bunga)	beach (*mudflat*) and ponds	3 ° 14'16 "N, 99 ° 33'34" E
Bogak Village (Bogak Beach)	beach (*mudflat*) and mangroves	3 ° 14'16 "N, 99 ° 33'34" E

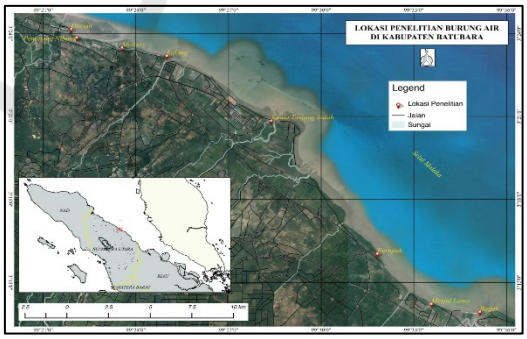

Figure 1: Research location of Batubara Regency

3 RESULTS AND DISCUSSION

The results of research and data collection that have carried out for 4 months, found as many as 49 water bird species with 8 families, namely Rallidae, Recurvirostridae, Charadriidae, Scolopacidae, Laridae, Phalacrocoracidae, Ciconiidae and

Ardeidae. The family that dominates because it has the most number of species found is Scolopacidae with 20 species (Figure 2).

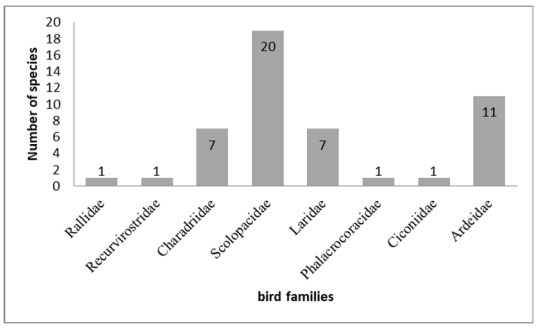

Figure 2: Species of birds that found in each family

Figure 2 showed that the Scolopacidae family has the largest number of species consisted of 20 species. This bird species found was consistent to Howes et al. (2003) that these families were the most diverse species in the shorebird group. The birds are long-distance adventurers/migrants, they breed in the north and migrate to the south during winter. Our results were in concordance to Putera et al. (2014) that in the Wonorejo Conservation area there are many species Scolopacidae family and their presence in nature was closely related to human activities around the area.

The birds species were found in each location or village is not much different, 9 species of which are scattered and found throughout the research location, namely Cerekpasir Besar, Trinil Bedaran, Trinil Pantai, Gajahan Besar (Eurasia), Daralaut Ordinary, Bangau Bluwok, Cangak Besar, Little Herons, and Kokokan Laut. Besides, the number of species found at each location varies considerably. The location with the most waterbird species found was in Durian Village with 40 species, and the second most was Lalang Village with 38 species.

Consecutively, the number of species found in each location, from the highest to the lowest were as follows: Kuala Tanjung Indah Village found 36 species, Pematang Nibung Village and Mesjid Lama were found 30 species, Perupuk Village found 27 species and Kelurahan Bogak found 24 species.There are 7 species of waterbirds found in only one location, namely the *Anarhynchus peronii* and the *Tringa brevipes* found only in Durian Village. The *Charadrius dubius*, *Calidris alba* and *Calidris pugnax* were found only in Lalang Village.

Furthermore, *Egretta eulophotes* were only found in the Old Mosque and *Nycticorax nycticorax* was only found in Pematang Nibung Village.

The most birds species found were endangered species and listed in the IUCN red list and CITES Appendices. in addition to protected by law in Indonesia (Appendix 1). Based on the IUCN red list, there are 4 species categorized as endangered, such as *Tringa guttifer*, *Calidris tenuirostris*), *Numenius madagascariensis,* dan *Mycteria cinerea*. One species is included in vulnerable namely *Egretta eulophotes*). Eight species are included in the near threatened category, namely *Anarhynchus peronii*, *Tringa brevipes*, *Calidris ruficollis*, *Calidris ferruginea*, *Limnodromus semipalmatus*, *Limosa limosa*, *Limosa lapponica*, and *Numenius arquata*. 36 other species still have Least Concern (LC). Trinil Nordmann's dan Bangau Bluwok are also species that are included in Appendix I CITES (Table 2, Figure 3).

Regarding the protection and conservation of animals, especially birds that apply in the Republic of Indonesia, there are 3 laws (and applicable regulations, namely Law No.5 of 1990 concerning Conservation of Living Natural Resources and their Ecosystems, Government Regulation No.7 years 1999 concerning the Preservation of Plant and Animal Species and Regulation of the Minister of Environment and Forestry No.20 of 2018 concerning protected types of plants and animals. Based on the three laws, there are 20 protected species in Indonesia, namely *Himantopus himantopus*, *Vanellus cinereus*, *Tringa guttifer*, *Limnodromus semipalmatus*, *Numenius phaeopus*, *Numenius madagascariensis*, *Numenius arquata*, *Sternula albifrons*, *Gelochelidon nilotica*, *Chlidonias leucopterus*, *Chlidonias hybridus*, *Sterna sumatrana*, *Sterna hirundo*, *Thalasseus bengalensis*, *Mycteria cinerea*, *Ardea ibis*, *Casmerodius modestus*, *Mesophoyx intermedia*, *Egretta eulophotes,* and *Egretta garzetta*.

Based on the classification, migratory waterbirds and resident waterbirds, as many as 33 species of migratory waterbirds that originate and breed in the northern hemisphere and migrate to the southern hemisphere every year, and as many as 16 species are resident aquatic birds that breed and spend their entire lives in the territory of Indonesia.

Table 2: Types and status of the waterbirds that found

Local name	Status			
	IUCN	CITES	UU	M/R
Kareo Padi	LC	-	-	R
Gagangbayam Kepala-putih	LC	-	ABC	R
Cerek Kernyut	LC	-	-	M
Cerek Besar	LC	-	-	M
Trulek Kelabu	LC	-	C	M
Cerekpasir Mongolia	LC	-	-	M
Cerekpasir Besar	LC	-	-	M
Cerek Melayu	NT	-	-	M
Cerek Kalung-kecil	LC	-	-	M
Trinil Bedaran	LC	-	-	M
Trinil Pantai	LC	-	-	M
Trinil Ekor-kelabu	NT	-	-	M
Trinil Kaki-hijau	LC	-	-	M
Trinil Nordmann's	EN	App I	ABC	M
Trinil Rawa	LC	-	-	M
Trinil Kaki-merah	LC	-	-	M
Trinil Pembalik-batu	LC	-	-	M
Kedidi Besar	EN	-	-	M
Kedidi Putih	LC	-	-	M
Kedidi Leher-merah	NT	-	-	M
Kedidi Golgol	NT	-	-	M
Kedidi Paruh-lebar	LC	-	-	M
Trinil Rumbai	LC	-	-	M
Trinillumpur Asia	NT	-	ABC	M
Birulaut Ekor-hitam	NT	-	-	M
Birulaut Ekor-blorok	NT	-	-	M
Gajahan Penggala	LC	-	ABC	M
Gajahan Timur	EN	-	ABC	M
Gajahan Erasia	NT	-	ABC	M
Daralaut Kecil	LC	-	ABC	R
Daralaut Tiram	LC	-	AB	M
Daralaut Sayap-putih	LC	-	AB	M
Daralaut Kumis	LC	-	AB	M
Daralaut Tengkuk-hitam	LC	-	ABC	R
Daralaut Biasa	LC	-	ABC	M
Daralaut Benggala	LC	-	ABC	M
Pecukpadi Kecil	LC	-	-	R
Bangau Bluwok	EN	App I	ABC	R
Bambangan Kuning	LC	-	-	R
Bambangan Merah	LC	-	-	R
Kuntul Kerbau	LC	-	AB	R
Cangak Besar	LC	-	ABC	R
Kuntul Perak	LC	-	AB	R
Cangak Abu	LC	-	-	R
Cangak Merah	LC	-	-	R
Kuntul Cina	VU	-	ABC	M
Kuntul Kecil	LC	-	AB	R
Kokokan Laut	LC	-	-	R
Kowakmalam Abu	LC	-	-	R

- Status: describes the status of protection and the level of threat of extinction globally as well as the types of migrants or residents
- **IUCN** (*International Union for Conservation of Nature and Natural Resources*), threat status based on IUCN *redlist*: EN = *Endangered*; VU = *Vulnerable*; NT = *Near Threatened*; dan LC = *Least Concern*
- **CITES** (*Convention On International Trade In Endangered Species Of Wild Fauna And Flora*); App I (Appendix I) contains a list of attachment and protects all species of wild plants and animals that are threatened from all forms of commercial international trade.
- The Status of Protection and Conservation in the laws of the Republic of Indonesia A = UU No.5 Tahun 1990; **B** = PP No.7 Tahun 1999; **C** = Permen LHK No P.20 Tahun 2018 (UU = Undang-undang; PP = Peraturan Pemerintah; Permen LHK = Regulation of the minister of Environment and forestry).

M = *migratory waterbirds*; **R** = *resident waterbirds*

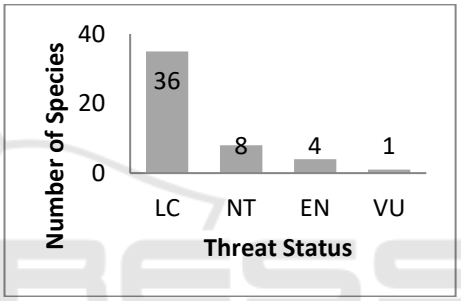

Figure 3: Global threat status for waterbirds encountered

There are 4 families which are groups of migratory waterbirds and are dominated by the Scolopacidae (20 species), then the Charadriidae (7 species), Laridae (5 species), and the Ardeidae (1 species) family. These results indicate that all members of the Scolopacidae and Charadriidae families are migratory species. Meanwhile, those included in the resident aquatic bird group are dominated by the Ardeidae family (10 species), then the Laridae family (2 species), and others each only consisting of 1 species, namely the Rallidae, Recurvirostridae, Phalacrocoracidae, and Ciconiidae families. Previous research on the existence of migratory waterbirds by Crossland et al. (2009) in the Asahan area found 23 migratory waterbirds. In addition, Putra et al. (2017) also found as many as 30 species of migratory birds on the coast of Deli Serdang.

4 CONCLUSION

There were 49 types of waterbirds in the Batubara Regency which were grouped into 8 families, namely:

Rallidae, Recurvirostridae, Charadriidae, Scolopacidae, Laridae, Phalacrocoracidae, Ciconiidae, and Ardeidae.

A total of 33 species are migratory waterbirds and 16 species are resident birds, 13 of which are globally threatened waterbirds according to the IUCN Red List, namely 4 species with endangered status (Endangered) 1 species vulnerable (Vulnerable), 8 species close to / almost threatened (Near Threatened) and 36 low-risk species (Least Concern). Based on CITES, there are 2 species of water birds that are included in Appendix I, and as many as 20 species are water birds that are protected by law in the Republic of Indonesia.

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