

Providing biodiversity information to support sustainable development of Sugihan wetlands, South Sumatra

By Arum Setiawan

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Arum Setiawan^{1*}, Muhammad Iqbal², Doni Setiawan¹, and Indra Yustian¹

¹ Department of Biology, Faculty of Science, Sriwijaya University, Jalan Raya Palembang-Prabumulih km 32, Indralaya, Sumatera Selatan 30662, Indonesia.

² Conservation Biology Program, Faculty of Science, Sriwijaya University, Jalan Padang Selasa 524, Palembang, Sumatera Selatan 30139, Indonesia.

*Corresponding author: arum.setiawan@unsri.ac.id

ABSTRACT. Air Sugihan or Sugihan wetlands is a subdistrict in Ogan Komering Ilir district, South Sumatra province, Indonesia. The area covering is about 2.593 km², mostly dominated by wetlands, ranging from peatland to the mangrove zone. The Padang-Sugihan Wildlife Reserve is a Wildlife Sanctuary that borderly or within Air Sugihan wetlands. Before the area was set aside for a wetland reserve in April 1983 the area was being prepared for transmigrant settlers. Among other threatened wildlife, birds and fishes are two taxa that very fragile to human disturbances. Since November 2016, we explore basic biodiversity information of Sugihan wetlands, particularly focus on fish and bird diversity. A total of 33 species of fishes and 39 birds were recorded, suggest the wetlands in this area support important habitat of rich diversity. To collect information on bird diversity, three survey methods were applied (riverine survey, time point counts and incidental search). For collecting data of fishes, we collect specimens from local fishermen, with additional data collected by us using hand netting and fish trap netting. Long-term study was initiate to providing comprehensive biodiversity information to support sustainable development of Sugihan wetlands.

1. Background

Wetlands play a pivotal role in sediment and nutrient cycling and retention at the catchment level and are important ecosystems for local and regional biodiversity (Smith et al. 2007). Forest fragmentation is a common disturbance affecting biological diversity, yet the impacts of fragmentation on many forest processes remain poorly understood (Flaspohler et al. 2010). Evidence has shown that larger forest, higher quality fragments are better for supporting primary forest species, but there is very little evidence to quantify the importance of small forest patches for improving connectivity or the benefit of enhanced connectivity for conserving populations of species in the landscape (Loong et al. 2016).

Air Sugihan or Sugihan wetlands is a subdistrict in Ogan Komering Ilir district, South Sumatra province, Indonesia. Before the area was set aside for a wetland reserve in April 1983 the area was being prepared for transmigrant settlers. The area covering is about 2.593 km², mostly dominated by wetlands, ranging from peatland to the mangrove zone. It is presumed total wetlands c. 75% from total area. According to the announcement by Dinas Kehutanan Kabupaten Ogan Komering Ilir (OKI), deforestation and forest degradation is ongoing in 65% of the protection forest in coastal area of OKI (YLB 2015). The Padang-Sugihan Wildlife Reserve is a Wildlife Sanctuary that borderly or within Air Sugihan wetlands, and one important fishes habitat in Sumatra (Iqbal 2004). This area is one important



breeding site for endangered Milky stork *Mycteria cinerea* (Iqbal 2008a, Iqbal 2008b). To support sustainable development for sugihan wetlands, since November 2016, we explore basic biodiversity information of Sugihan wetlands, particularly focus on fish and bird diversity. The information from these studies are summarised here.

2. Methods

From November 2016 to December 2017, two field surveys were conducted to collect information of birds and fish diversity in Sugihan wetlands, South Sumatra (Figure 1).



Figure 1. Sugihan wetlands, South Sumatra.

To collect information on bird diversity, three survey methods were applied (riverine survey, time point counts and incidental search), especially by audio-visual observation. Identification of birds were done with the aid field guides, mainly of MacKinnon & Phillipps (1993). For collecting data of fishes, we collect specimens from local fishermen, with additional data collected by us using hand netting and fish trap netting. The fishes were identified mainly using Kottelat et al. (1993) and Iqbal et al. (2018).

3. Result and Discussion

3.1. Birds in Sugihan wetlands

Our survey to Sugihan wetlands found a total of 39 species of birds. The species checklist and localities are presented in table 1. Taxonomy and scientific name follow MacKinnon & Phillipps (1993). The high conservation value species of birds were recorded in Sugihan wetlands, including three species are listed by IUCN redlist (International Union for Conservation of Nature), eight species protected by Indonesian law, and four species listed by CITES appendix (the Convention on International Trade in Endangered Species of Wild Fauna and Flora).

There are three IUCN redlist criterias found during the survey, including: Endangered (EN), Vulnerable (VU) and Near Threatened (NT). All species protected by Indonesian law cited as P (Protected). Following CITES (2019), The CITES Appendices are lists of species afforded different levels or types of protection from over-exploitation. Appendix I lists species that are the most endangered among CITES-listed animals and plants. Appendix II lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled.

Table 1. Birds observed during survey on 27-30 November 2016 in Sugihan wetlands, Ogan Komering Ilir District, South Sumatra Province.

No.	Species	STATUS		
		IUCN Redlist	Protected by Indonesian law	CITES Appendix
1	<i>Actitis hypoleucos</i>			
2	<i>Phalacrocorax</i> sp			
3	<i>Dendrocygna javanica</i>			
4	<i>Ahinga melanogaster</i>	NT	P	
5	<i>Ixobrychus cinnamomeus</i>			
6	<i>Egretta intermedia</i>			
7	<i>Egretta garzetta</i>			
8	<i>Butorides striatus</i>			
9	<i>Ardeola speciosa speciose</i>			
10	<i>Mycteria cinerea</i>	EN	P	I
11	<i>Leptoptilos javanicus</i>	VU	P	
12	<i>Gallinula chloropus</i>			
13	<i>Amaurornis phoenicurus</i>			
14	<i>Nisaetus cirrhatus</i>		P	II
15	<i>Haliastur indus</i>		P	II
16	<i>Elanus caeruleus</i>		P	II
17	<i>Streptopelia chinensis</i>			
18	<i>Ducula aenea</i>			
19	<i>Treron vernans</i>			
20	<i>Cuculus</i> sp			
21	<i>Centropus sinensis</i>			
22	<i>Centropus bengalensis</i>			
23	<i>Merops philippinus</i>			
24	<i>Collocalia</i> sp			
25	<i>Hirundo rustica</i>			
26	<i>Dinopium javanense</i>			
27	<i>Halcyon chloris</i>			
28	<i>Alcedo coerulescens</i>			
29	<i>Pycnonotus</i> sp			
30	<i>Aplonis panayensis</i>			
31	<i>Orthotomus ruficeps</i>			
32	<i>Prinia familiaris</i>			
33	<i>Acrocephalus</i> sp			
34	<i>Prinia flaviventris</i>			
35	<i>Lonchura malacca Malacca</i>			
36	<i>Aethophya siparaja</i>		P	
37	<i>Lanius schach</i>			
38	<i>Acridotheres javanicus</i>		P	
39	<i>Ploceus</i> sp			
Total		3	8	4

3.2. Fishes in estuarine of Sugihan wetlands

A total 32 species of estuarine fishes recorded during a field survey on August 11-15th, 2018. The species found in this area are presented in table 2. Taxonomy and scientific name follow Kottelat et al. (1993).

Table 2. Fishes recorded during survey on August 11-15th, 2018 in estuarine area of Sugihan wetlands, Ogan Komering Ilir District, South Sumatra Province.

No.	Species	Family
1	<i>Muraenesox</i> sp	Muraenesocidae
2	<i>Muraenesox cinereus</i>	Muraenesocidae
3	<i>Anodontostoma chacunda</i>	Clupeidae
4	<i>Nemotalosasp</i> [cf. <i>Sardenella</i> sp]	Clupeidae
5	<i>Coilia</i> sp	Engraulidae
6	<i>Thryssa</i> sp	Engraulidae
7	<i>Stolephorus</i> sp	Engraulidae
8	<i>Mystus</i> sp [cf. <i>Arius</i> sp]	Ariidae
9	<i>Otolithes ruber</i>	Sciaenidae
10	<i>Nibea soldado</i>	Sciaenidae
11	<i>Johnius macropterus</i>	Sciaenidae
12	<i>Terapon theraps</i>	Terapontidae
13	<i>Rastrelliger kanagurta</i>	Scombridae
14	<i>Scomberoide ssp</i>	Carangidae
15	<i>Parastromateus niger</i>	Carangidae
16	<i>Sauridamicro pectoralis</i>	Synodontidae
17	<i>Periophthalmus</i> sp	Oxudercidae
18	<i>Ambassis</i> sp	Ambassidae
19	<i>Eubleekeria</i> sp	Leiognathidae
20	<i>Secutor insidiator</i>	Leiognathidae
21	<i>Lutjanus johnii</i>	Lutjanidae
22	<i>Scatophagus argus</i>	Scatophagidae
23	<i>Liza</i> sp	Mugilidae
24	<i>Nemipterus</i> sp	Nemipteridae
25	<i>Sillago sihama</i>	Sillaginidae
26	<i>Filimanus</i> sp	Polynemidae
27	<i>Eleutheronema tetradactylum</i>	Polynemidae
28	<i>Inegocia japonica</i>	Platycephalidae
29	<i>Pseudorhombus arsius</i>	Paralichthyidae
30	<i>Cynoglossus lingua</i>	Cynoglossidae
31	Unid species 1	
32	Unid species 2	

3.3. Recommendation for Future Actions

The records of 39 species of birds and 32 species of estuarine fishes in Sugihan wetlands indicate that Sugihan wetlands support rich of biodiversity. In the case of other parts of many countries, biodiversity in wetlands also face high level of direct exploitation. Conservation action plan is a powerful guide conservation to develop focused strategies and measures of success (TNC 2007). When regional priorities have been set, conservation action planning is used to determine the plan of action for these priorities. The conservation action plans in Sugihan wetlands would have not been possible without information on basic data information of its biodiversity. Providing basic data of each species in Sugihan wetlands will demonstrate the role of science in sustainable management of fragile wetlands biodiversity.

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