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Fitri Agustriani ✉; F. Fauziyah; Iskhaq Iskandar; Muhammad Yazid; Sri Wulandari



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Status of Fish Species in The Waters of Sembilang National Park and Surroundings, Banyuasin Regency, South Sumatera, Indonesia

Fitri Agustriani^{a)}, F Fauziyah, Iskhaq Iskandar, Muhammad Yazid, Sri Wulandari

Universitas Sriwijaya, Palembang, Indonesia

^{a)}Corresponding Author: agustrianifitri@gmail.com

Abstract. The mangrove ecosystem of Sembilang National Park provides services for providing fishery resources. Some of the fish caught are on the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List Status. The purpose of this study was to identify the morphometric status of fish in the waters of the Sembilang National Park and its surroundings. The study was conducted from October 2020, December 2020, January to February 2021 using trammel net and drift gillnet. The research method using survey fishing. The results showed the status of fish in the waters of Sembilang National Park and its surroundings based on the IUCN Red List of fish that have Vulnerable status as many as 4 species, Near Threatened 1 species, Least Concern 49 species, Data Deficient 3 species, and Not Evaluated 3 species.

Keywords: Fish, IUCN, Mangrove, Sembilang Nasional Park

INTRODUCTION

The coastal area of Banyuasin Regency, South Sumatra, is generally still dominated by mangrove ecosystems. This condition is supported by the fact that this area is a Protected Forest and National Park area. The mangrove ecosystem in the East Coast of South Sumatra is included in the Sembilang National Park and is the largest area in South Sumatra Province [1]. Mangrove ecosystems provide ecosystem services, namely supply services, support services, regulatory services and cultural services [2]. One of the mangrove ecosystem services in TN Sembilang and its surroundings that has a direct relationship with the community is the mangrove ecosystem service as a provider of fish resources because they generally work as fishermen. This area has the potential for the biodiversity of fish resources and is an area of great potential and contribution to the fishery production of South Sumatra Province [3][4]. Based on BPS 2017-2019 data, capture fisheries production increased by 23% [5].

Based on research that has been carried out in Sembilang National Park, there are ± 142 fish species from 43 families, 38 crab species and at least 13 shrimp species from 9 families [1, 6] and includes economic fish [7]. Meanwhile ± 87 species were found in the mouths of the Banyuasin River, Musi River, and Upang River [8][9][10][11]. This condition is also supported by the water quality which is still good [12–15] especially in the waters of the Sembilang National Park. Nature reserves are very important to protect habitats rich in species, important radiation, and endemic species that are threatened with extinction [16].

Of the 51 Asian countries listed by the IUCN (1996), nine countries (Indonesia, China, Malaysia, the Philippines, Russia, Sri Lanka, Thailand, Turkey, and Ukraine) accounted for 71% of the fish species listed as threatened. Various types of fish species obtained from The results of fishing activities are also a concern because each fish species has its own status. Currently, information regarding the status of fish species in this area has not become the main concentration, while the existence of the Sembilang National Park needs special attention to maintain the biodiversity of fish resources as a conservation area. which is referred to based on the International Union for the Conservation of Nature and Natural Resources (IUCN) which released the IUCN Red List of Endangered Species in

the category of rarity of a certain status, so it can be seen which fish species are classified as threatened with extinction at the research site.

METHODOLOGY

Study Area

The research method used experimental fishing methods. Sampling was carried out in October 2020, December 2020, and January to February 2021 by participating in fishing activities according to the fishing area in the waters of the Sembilang National Park and its surroundings, Banyuasin Regency, South Sumatra. The fishing gear used were bottom gillnet and drift gillnet.

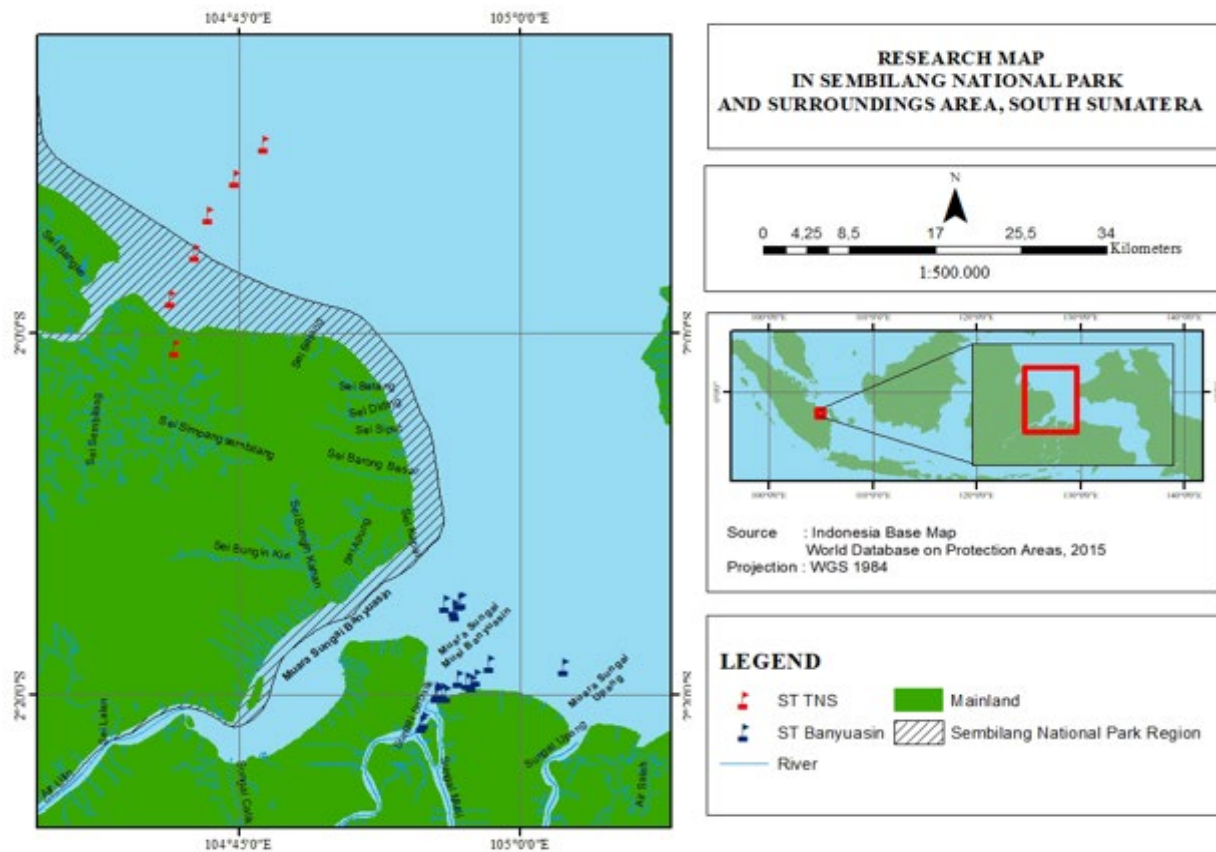


FIGURE 1. Research Location Map

Data analysis

Identification and validation of species based on the Taxonomy and Key Identification Books for Fish Identification [17], Market Fishes of Indonesia [18], and Fish- fish in the Musi River and the East Coast of South Sumatra [19] as well as online tools fishbase.de, FAO.org, and sealifebase.ca. Determination and checking of international status based on the IUCN Red List on the online tool iucnredlist.org and national scale conservation status (Indonesia) Based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.106/MENLHK/SETJEN/KUM.1/12/2018.

RESULTS AND DISCUSSION

The results of the identification of fish samples found in Sembilang National Park and its surroundings were 1,811 individuals, 37 families, and 60 species were obtained. The most common species found in Sembilang National Park and its surroundings were *Eleutheronema tetradactylum* (209 individuals), *Pennahia pawak* (174 individuals), *Anodontostoma chacunda* (158 individuals), *Atropus Atropus* (115 individuals), and *Kurtus indicus* (88 individuals) (Table 1). The fish caught in the Sembilang National Park and its surroundings are generally fish that live in brackish and marine habitats. Although there are several types of river fish that fishermen get. This is supported by the mangrove ecosystem as an ecological function as a nursery ground, feeding ground, and spawning ground, so that this area is a state area for fishermen to carry out fishing activities [20–22].

Criteria for Endangered Animals according to the IUCN found in Sembilang National Park and its surroundings are Vulnerable, Near Threatened, Least Concern, Data Deficient, and Not Evaluated (Figure 2). The results of research on the status of fish in the waters of Sembilang National Park and its surroundings based on the IUCN found as many as 1,7% which are included in the Near threatened, namely *Chiloscyllium punctatum*. this species needs more attention in species restoration and conservation in various government agencies. Furthermore, the Least Concern status became the most frequently found status as much as 81,7%. While the others with Data Deficient Status in the results of this study obtained as much as 5%, namely *Opisthopterus tardoore*, *Ilisha pristigastroides* and *Scomberomorus guttatus*. Not Evaluated status as 5%, namely *Kurtus indicus*, *Sphyræna barracuda*, and *Pseudorhombus arsius*. Lastly, the Vulnerable Status as 6,7%, namely *Chiloscyllium indicum*, *Chiloscyllium hasseltii*, and *Gymnura poecilura*.

Based on the results of the study, it was also found that several species included in the Near Criteria were threatened, namely *Chiloscyllium punctatum* [23]. This species is a species that is usually caught on the beach for meat and other products and used as ornamental fish [24]. Although this species is not a target for fishermen's catch, it still caught fishermen. Similarly, the other 3 types of species are classified as vulnerable because they are generally by-catch, threatened by overfishing, human consumption, and also habitat degradation. Meanwhile, other types of fish that are often caught and become fishing targets are generally included in the Least Concern Criteria.

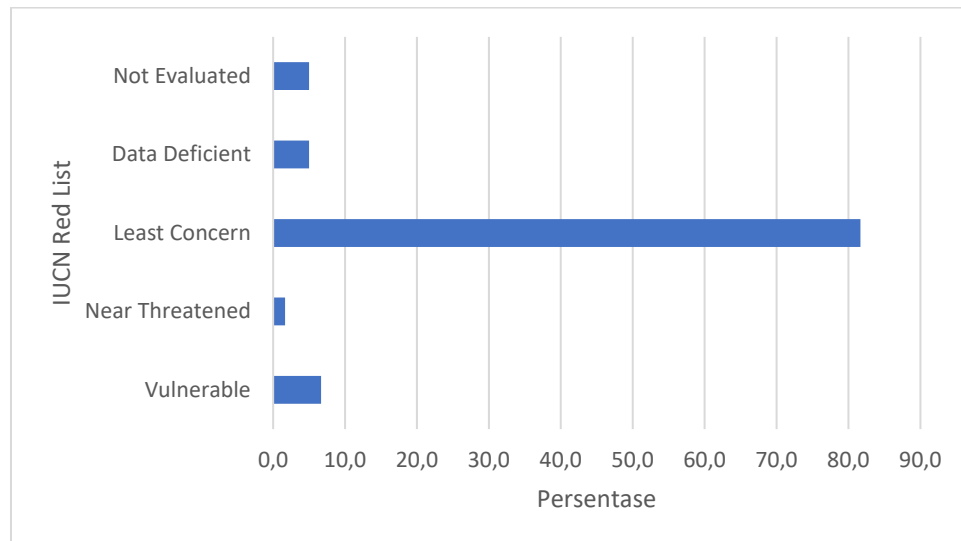


FIGURE 2. Percentage of Fish Resource Status in Sembilang National Park and Surrounding Areas

Based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number 106/MENLHK/SETJEN/KUM.1/12/2018[25] concerning Protected Types of Plants and Animals and List of Aquatic Types/Biotas in the CITES Appendix (Convention on International Trade in Rare Wild Floral Species and Fauna) The Ministry of Maritime Affairs and Fisheries of the Republic of Indonesia stated that of the 60 species of fish found.

TABLE 1. Types and Status of Fish Resources in Sembilang National Park and Surrounding Areas (LC = Least Concern; VU = Vulnerable; NE = Not valued; NT = Near Threatened; DD = Data Deficient)

Family	English Name	Scientific Name	IUCN Red	Environment			Individual
			List Status	Fresh	Brackfish	Marine	
Cynoglossidae	Long tongue sole	Cynoglossus lingua	LC	Yes	Yes	Yes	33
Scorpaenidae	Rouge fish	Tetraroge barbata	LC	Yes	Yes	Yes	22
Clupeidae	Goldstripe Sardinella	Sardinella gibbosa	LC	No	No	Yes	16
Triacanthidae	Silver tripodfish	Triacanthus nieuhofii	LC	No	No	Yes	7
Engraulidae	Hamilton's thryssa	Thryssa hamiltonii	LC	Yes	Yes	Yes	36
Pristigasteridae	Bigeye ilisha	Ilisha megaloptera	LC	Yes	Yes	Yes	20
	Javan ilisha	Ilisha pristigastroides	DD	Yes	Yes	Yes	39
	Longfin shad	Opisthopterus tardoore	DD	No	Yes	Yes	16
Gobiidae	Eel goby	Odontamblyopus rubicundus	LC	No	Yes	Yes	1
	Small-eye worm goby	Paratrypauchen microcephalus	LC	No	Yes	Yes	1
Hemiscylliidae	Slender Bamboo Shark	Chiloscyllium indicum	VU	Yes	Yes	Yes	4
	Hasselt's Bamboo Shark	Chiloscyllium hasseltii	VU	No	No	Yes	1
	Brownbanded bamboo shark	Chiloscyllium punctatum	NT	No	No	Yes	1
Leiognathidae	Common ponyfish	Leiognathus equulus	LC	Yes	Yes	Yes	11
	Deep pugnose ponyfish	Leiognathus ruconius	LC	Yes	Yes	Yes	30
Serranidae	Orange spotted grouper	Epinephelus coioides	LC	No	Yes	Yes	1
	Sixbar grouper	Epinephelus sexfasciatus	LC	No	No	Yes	1
Paralichthyidae	Large tooth flounder	Pseudorhombus arsius	NE	No	Yes	Yes	10
	Lefteye flounders	Bothus sp.	LC	No	Yes	Yes	12
Ariidae	Threadfin sea catfish	Arius arius	LC	No	Yes	Yes	35
	Engraved catfish	Nemapteryx caelata	LC	No	Yes	Yes	17
	Sagor sea catfish	Hexanemataichthys sagor	LC	No	Yes	Yes	17
Plotosidae	Eel catfish	Plotosus canius	LC	Yes	Yes	Yes	7
Sillaginidae	Silver sihago	Sillago sihama	LC	No	Yes	Yes	1
Tetraodontidae	Spotted green pufferfish	Dichomyctere nigroviridis	LC	Yes	Yes	No	1
	Halfsmooth Golden Puffer	Lagocephalus spadiceus	LC	No	Yes	Yes	1
Synbranchidae	Asian swamp eel	Monopterus albus	LC	Yes	Yes	No	1
Hemiscylliidae		Cyclocheilichthys enoplos	LC	Yes	No	No	11
Platycephalidae	Bartail flathead	Platycephalus indicus	LC	No	Yes	Yes	5
Datnioididae	Finescale tigerfish	Datnioides microlepis	LC	Yes	No	No	2
Synodontidae	Lizardfish	Saurida micropectoralis	LC	No	Yes	Yes	1
Chirocentridae	Dorab wolf-herring	Chirocentrus dorab	LC	No	Yes	Yes	158
Clupeidae	Chacunda gizzard shad	Anodontostoma chacunda	LC	Yes	Yes	Yes	4
Dussumeriidae	Rainbow sardine	Dussumeria acuta	LC	Yes	Yes	Yes	32
	Slender rainbow sardine	Dussumeria elopsoides	LC	No	No	Yes	32
Engraulidae	Gold-spotted anchovy	Coilia dussumieri	LC	Yes	Yes	Yes	64
	Scaly hairfin anchovy	Setipinna taty	LC	No	Yes	Yes	79
	Horthead hairfin anchovy	Setipinna breviceps	LC	No	Yes	Yes	58
Dasyatidae	Pink whipray	Pateobatis fai	VU	No	No	Yes	14
Carangidae	Cleftbelly trevally	Atropus Atropus	LC	No	No	Yes	115
	Indian threadfish	Alectis indica	LC	No	No	Yes	2
	Black pomfret	Parastromateus niger	LC	No	Yes	Yes	20
	Yellowtai scad	Atule mate	LC	No	Yes	Yes	5
Gymnuridae	Longtail butterfly ray	Gymnura poecilura	VU	No	No	Yes	3
Kurtidae	Indian forehead brooder	Kurtus indicus	NE	Yes	Yes	Yes	88
Lobotidae	Atlantic tripletail	Lobotes surinamensis	LC	No	Yes	Yes	1
Polynemidae	Fourfinger threadfin	Eleutheronema tetradactylum	LC	Yes	Yes	Yes	209
Scatophagidae	Spotted scat	Scatophagus argus	LC	Yes	Yes	Yes	5
Sciaenidae	Soldier croaker	Nibea soldado	LC	Yes	Yes	Yes	78
	Panna croaker	Panna microdon	LC	No	Yes	Yes	86
	Pawak croaker	Pennahia pawak	LC	No	No	Yes	174
	Torpedo scad	Megalaspis cordyla	LC	No	Yes	Yes	5
Scombridae	Indo-Pacific king mackerel	Scomberomorus guttatus	DD	No	Yes	Yes	36
	Bearded croaker	Johnius amblycephalus	LC	Yes	Yes	Yes	53
Stromateidae	Silver pomfret	Pampus argenteus	LC	No	No	Yes	3
	Chinese silver pomfret	Pampus chinensis	LC	No	Yes	Yes	52
Sphyrnidae	Great barracuda	Sphyrna barracuda	NE	No	Yes	Yes	9
Terapontidae	Narrow barred Spanish mackerel	Scomberomorus commerson	LC	No	No	Yes	42

Family	English Name	Scientific Name	IUCN Red	Environment			Individual
			List Status	Fresh	Brackfish	Marine	
Continued							
	Largescale grunter	Terapon theraps	LC	Yes	Yes	Yes	15
Trichiuridae	Largerhead hairtail	Trichiurus lepturus	LC	No	Yes	Yes	8
TOTAL							1181

in the waters of the Sembilang National Park and its surroundings, there are no species with national status registered as protected aquatic biota [25]. This condition is possible due to the lack of information on the status of fish resources listed by IUCN. The government is expected to pay more attention to the status of fish species approved by the IUCN to prevent the extinction of fishery resources in the future.

CONCLUSION

The status of fish in the waters of Sembilang National Park and its surroundings is based on the IUCN Red List of fish that have Vulnerable status as many as 4 species, Near Threatened 1 species, Least Concern 49 species, Data Deficient 3 species, and Not Evaluated 3 species. However, based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.106/MENLHK/SETJEN/KUM.1/12/2018, it is stated that there is no species that has been identified as having a nationally registered status as a protected aquatic species/biota.

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