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ORIGINAL ARTICLE

Diversity and abundance of ichthyofauna during the rainy season in Kalong Floodplain, Ogan Komering Ilir Regency, South Sumatra, Indonesia

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Abstract
The diversity and abundance of fishare important indicators of ecosystem health. This study aimed to analyze the diversity and abundance of freshwater fishesin the Kalong Floodplain (KF), Ogan Komering Ilir Regency (OKIR), Indonesia. Sampling was conducted during the rainy season, from February to June 2023. Fish samples were collected at three sampling stations. Fish were captured using traditional fishing gear used by local fishermen. All data were analyzed to determine the fish diversity index and relative abundance. A total of 3414 specimens, representing 33 species belonging to 5 orders, 16 families, and 26 genera, were documented during the sampling period. Cyprinidae was the leading family, with *Osteochilus vittatus* having the highest relative abundance. The lowest abundance were *Syncrossus berdmorei* and *Labeo chrysophekadio*. The Shannon-Wiener diversity index, Simpson's dominance index, and evenness index were 1.50, 0.03, and 0.05, respectively. These results indicate that the diversity of freshwater fish species in KF is in the medium category. This data provides information about the biodiversity of fish in the KF and can be useful for the planning of fisheries activities and the setting of precedents for future studies and conservation programs.

Keywords: Biodiversity, Indonesian fish species, Macroecology, Native species

INTRODUCTION

Freshwater ecosystems provide critical resources to humans and are the primary habitat for highly rich, endemic, and sensitive biota (Abell 2002; Strayer & Dudgeon 2010; Cardinale et al. 2012), but they are probably the most endangered ecosystems in the world (Dudgeon et al. 2006; Abell et al. 2008; Cardinale et al. 2012). In this context, according to Reid et al. (2019), freshwater fish contribute to a disproportionately substantial amount of the world's biodiversity, with 18.253 identified species (or more than half of all fish species currently known) living on 2.3% of the surface of the earth (Stoffers et al. 2022). The study of the biodiversity of freshwater fish species is crucial because it provides baseline data for aquatic ecosystems and sustainable fisheries management strategies (Hiddink et al. 2008; Quindo et al. 2019; Andrabi et al. 2022). Biodiversity is a variety of life, including variation among genes, species, functional and habitat traits (Cardinale et al. 2012). Any water body's conservation and management plans must take into account factors such as fish fauna diversity, abundance, and distribution patterns (Mwangi et al. 2012; Hasan et al. 2021; Saptadjaja et al. 2020; Andrabi et al. 2022). Macroecology's core subjects include an understanding of biodiversity patterns, movement and migration patterns, and the biological forces that influence them, which can help with the development of efficient conservation planning techniques (Keil & Chase 2019; He et al. 2020; Zhang et al. 2021; Ndobe at al. 2022).

Currently, one of the biggest difficulties is to apply what we have learned to create predictive models that are grounded in empirically quantified ecological mechanisms, forecast changes in ecosystem services at scales that are relevant to policy, and connect to social, economic, and political systems (Dudgeon et al. 2006; Cardinale et al. 2012; Durance et al. 2016; Reid et al. 2019; Fluet-Chouinard et al. 2018; Gani et al. 2021). Attempts to predict the social impacts of biodiversity loss and achieve policy goals are likely to be unsuccessful without an understanding of the fundamental ecological processes connecting biodiversity, ecosystem functions, and ecosystem services. However, if we had that fundamental knowledge, we might be able to safely put a stop to the current phase of biodiversity loss for humanity (Cardinale et al. 2012; Reid et al. 2019; Ficke et al. 2007). Some of the factors threatening fish biodiversity are climate change (Hermoso 2017), invasive species (Darwall et al. 2018; Pyšek et al. 2020; Widodo et al. 2022; Jerikho et al. 2023), global trade (Levine & D'Antonio 2003; Perrings et al. 2005), infectious diseases (Johnson & Paull 2011; Okamura & Feist 2011), harmful algal blooms (D'Alelio et al. 2016), growing hydroelectric power plants (Reidy Liermann et al. 2012), new contaminants (Kidd et al. 2014), engineered nanomaterials (Selck et al. 2016), microplastic pollution (Ballent et al. 2016; Vermaire et al. 2017), light and noise (Jain-Schlaepfer et al. 2017), calcium depletion (Hadley et al. 2015; Jeziorski & Smol, 2017), and cumulative stressors (Craig et al. 2017).

A megadiverse country is one of a group of nations that harbors the majority of Earth's species and high numbers of endemic species. Conservation International has identified 17 megadiverse countries, one of which is Indonesia (Williams et al. 2001). Indonesia is an archipelago country endowed with a great diversity of flora and fauna, including ichthyofauna (Hubert et al. 2015). Indonesia's area consists of the mainland and open waters. Its waters consist of freshwaters, brackish waters, and oceans. Indonesia's freshwater includes main rivers, tributaries, flooded swamps, natural lakes, canals, man-made lakes, and reservoirs. The area of Indonesia's freshwaters is 13.85 million hectares, and in South Sumatra, it covers 2.5 million hectares. One of the regencies in South Sumatra Province is the Ogan Komering Ilir Regency (OKIR). It has an area of 17.071.33 km^2 (BPS 2023), and 75% of the region is rivers, lakes, swamps, and floodplains. One of them is the Kalong Floodplain (KF), located in the Jejawi Subdistrict (JS). These waters are home to a variety of native freshwater fish species and a source of livelihood for the people who live around them. The diversity of ichthyofauna in KF in this study refers to previous studies that focus on documenting native freshwater fishes spread over several Indonesian freshwaters, including in Aceh River, there are 44 species belonging to 25 families (Dekar et al. 2018), the peat swamp of Singkil (39 species, 26 families) (Razi et al. 2023); Fakfak, Papua (22 species, 14 families) (Ohee 2021); the Serayu Basin, Central Java (21 species, 10 families) (Suryaningsih et al. 2021), the inland water of Banjar, South Kalimantan (35 species, 18 families) (Rusmilyansari et al. 2021), the Kelekar floodplain, South Sumatra (24 species, 17 families) (Muslim & Syaifudin 2022), the inland waters of Muara Bulian, Jambi (51 species, 18 families) (Apriliawati et al. 2024). We hypothesize that the diversity and abundance of freshwater fish species in KF is diverse and abundant. But until now there has been no publication about it. This study aims to determine the species diversity and relative abundance of freshwater fish species in the KF. The results of this study are useful as supporting data to analyze the local situation, solve problems, and consider approaches for sustainable utilization of fisheries resources.

MATERIALS AND METHODS

Study area: The study area lies in KF, located in JS, South Sumatra Province, Indonesia. JS is one of the subdistricts in OKIR, which is about 58 km from the capital of the regency (Kayuagung). JS is 8 meters above sea level, and the total area is 229.36km^2 (BPS 2023). Almost all of the JS area is lowland and floodplain. The floodplains covered an area of six villages: Padang Bulan, Pematang Kijang, Danau Ceper, Air Hitam, Pematang Buluran, and Bubusan. This study area spans the confluence of the Komering River and Ogan Rivers. Sampling surveys were conducted from three sampling stations: station 1 (3°25'55.1" S 104°84'79.3" E), station 2 (3°24'28.7" S 104°83'07.3" E), and station 3 (3°20'72.3" S 104°83'29.4" E) (Fig.1).

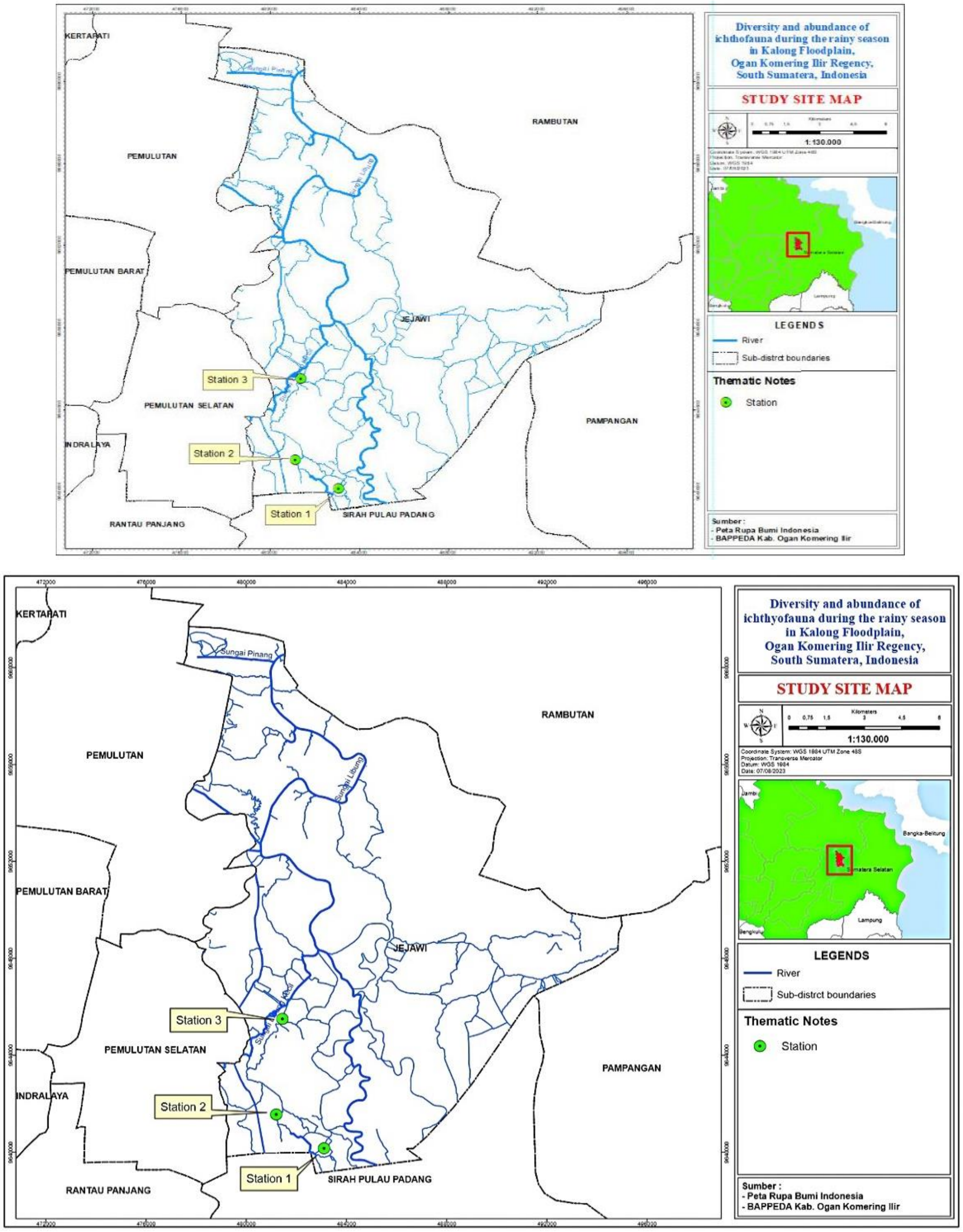

Fig.1. Location map of the study on freshwater fish biodiversity in Kalong Floodplain during the rainy season (February-June 2023).

Data collection: Fish sampling was conducted during the rainy season, from February to June 2023. Fish were collected at each sampling station during the sampling period using traditional fishing gear used by local fishermen, namely penghadang bambu (fish barrier), waring (seine net), jaring tancap (lift net), jaring insang (gill net), bubu payung (fish trap), bengkirai (fish trap), pancing (hooks), tajur (hooks), bubu bambu (fish trap), and pengilar (fish trap). The specimens collected were immediately identified as fish species and then measured for weight and length. The weighing of samples was done with a balance with a precision of 0.01g. The total length of the samples was measured with a measuring stick with a precision of 0.1cm. Specimens that were not identified in the field were immediately preserved in a 10% formalin solution for later identification at the Fisheries Laboratory, Faculty of Fisheries, Universitas Islam Ogan Komering Ilir Kayuagung. Fish identification refers to the primary literature on the identification of Indonesian fishes (Kottelat et al. 1996; Iqbal et al. 2018).

Data analysis: The fish diversity data were calculated using the Shannon-Wiener index (Sweke et al. 2013):

$$H' = \sum_{i=1}^{S} Pi.Ln\,Pi$$

Where, *S*: the number of species in the sample –
Pi: the relative importance values obtained as the squared ratio of the important values of *S* individual values for all species to N the total importance.

Determination of criteria: *H'*<1.0 (low), *H'*=1.0-3.0 (medium), and *H'*>3.0 (high).

The evenness index was calculated by a formula Chankaew (2022):

$$E = \frac{H'}{H'max}$$

Where, *H'*: the Shannon-Wiener diversity index-
E: the evenness index (value 0-1)
H' max: the maximum diversity index.

Determination of criteria: *E*< 0.4 (low), *E*=0.4-0.6 (medium), and *E*>0.6 (high).

The dominant fish species was determined using the following formula Davari et al. (2011):

$$C = \sum_{i=1}^{S} (Pi)^2$$

Where, *C* is Simpson's dominance index, the relative importance value obtained as the squared ratio of the important value is the individual value for all species.

The relative abundance was calculated using the formula:

$$Ar = \frac{Ni}{N} \times 100$$

Where, *Ar* is the relative abundance (%). *Ni* is the number of individuals in the species, and *N* is the total number of individuals.

Data were summarized in Microsoft Excel 2010 and using univariate statistics (e.g. min-max and avarage) in PAST v.3 software. The conservation status of the species refers to the International Union for Conservation of Nature's Red List of Threatened Species (https://www.iucnredlist.org/) (IUCN 2023).

RESULTS

A total of 3414 specimens, representing 33 species, were collected during the study. They belonged to 5 orders, 16 families, and 26 genera (Table 1). A photographic representation of the diversity of freshwater fish species collected in this study is presented in Figure 2. Cypriniformes was the most dominant order, with 15 families, 12 genera and 16 species, accounting for 45% of the total species collected, followed by Perciformes (8 families, 6 genera and 8 species; 24%) and Siluriformes (7 families, 5 genera and 7 species; 21%). The dominant family, Cyprinidae, accounted for 10 species (30%) of the total species collected, followed by Danionidae, Osphronemidae, and Bagridae, each with three species (27%), while Pangasidae and Channidae had two species (12.12%), Botiidae, Xenocyprididae, Notopteridae, Anabantidae, Helostomatidae, Nandidae, Claridae, Siluridae, Mastacembelidae, and Synbranchidae each contributed one species (30%).

The ten species with the highest relative abundance are *O. hasselti* (10.66%), *R. argyrotaenia* (9.17%), *B. schwanenfeldii* (8.85%), *T. trichopterus* (8.14%), *R. trilineata* (8.08%), *H. macrolepidota* (6.59%), *P. grootii* (5.71%), *H. temmincki* (5.59%), *M. singaringan* (5.39%), and *C. apogan* (5.16%) (Fig. 3). The Shannon-Wiener diversity index of freshwater fish species at the study site was 1.50. This value indicates that the diversity of fish species in KF is in the medium category. Simpson's dominance index value was 0.03, meaning that there are no dominating species in KF. The evenness index value was 0.05, and the diversity of fish species in KF is in the medium category (Table 1).

Characteristics of the study site include: a large area of flat land connected to the Ogan and Komering Rivers; a layer of alluvium covering the floodplain; rich and fertile soil; and many swamp plants. The dominant aquatic plants in the study site are water hyacinth (*Eichornia crassipes*), water lily (*Nymphaea cultivar*), water spinach (*Ipomoea aquatic*), water lettuce (*Pistia stratiotes*), sensitive plants (*Mimosa pudica*), and marsh grass (*Hymenachne amplexicaulis*). Water quality parameters at the sampling site ranged from 27 to 29°C, dissolved oxygen ranged from 2.2 to 3.5mg/L, water acidity (pH) ranged from 6 to 6.6, and water depth ranged from 2 to 2.5m.

Fig.2. Photographs of freshwater fish species from Kalong Floodplain, Ogan Komering Ilir Regency during the rainy season (February-June 2023).

Table 1. Diversity and relative abundance of freshwater fishes from the Kalong Floodplain during the rainy season (February-June 2023).

No	Order	Family	Genus	Species	Local Name	Total length (cm)	Body weight (g)	Station 1	Station 2	Station 3	Total (Indv)	Ar (%)	IUCN status (IUCN 2023)
1.	Cypriniformes	Botiidae	*Syncrossus*	*Syncrossus berdmorei* (Blyth, 1860)	Botia	13.8	28.0	1	-	-	1	0.03	NT
2.	Cypriniformes	Cyprinidae	*Osteochilus*	*Osteochilus vittatus* (Valenciennes, 1842)	Palau	8.2-16.5	6.7-84.2	107	102	155	364	10.66	LC
3.	Cypriniformes	Cyprinidae	*Cycloheilichthys*	*Cycloheilichthys apogon* (Valenciennes, 1842)	Kepras	5.2-17.0	3.5-85.0	61	39	76	176	5.16	LC
4.	Cypriniformes	Cyprinidae	*Hampala*	*Hampala ampalong* (Bleeker, 1852)	Kebarau	10.2-19.4	11.0-88.0	107	73	45	225	6.59	LC
5.	Cypriniformes	Cyprinidae	*Barbonymus*	*Barbonymus schwanenfeldii* (Bleeker, 1854)	Lampam	10.5-13.6	14.2-37.4	125	90	87	302	8.85	LC
6.	Cypriniformes	Cyprinidae	*Labiobarbus*	*Labiobarbus leptocheilus* (Valenciennes, 1842)	Ambut	10.2-18.2	13.6-71.4	2	5	5	12	0.35	LC
7.	Cypriniformes	Cyprinidae	*Labiobarbus*	*Labiobarbus ocellatus* (Heckel, 1843)	Lambak	9.8-14.2	9.6-31.7	1	3	4	8	0.23	LC
8.	Cypriniformes	Cyprinidae	*Barbichthys*	*Barbichthys laevis* (Valenciennes, 1842)	Mentulu	12.8-15.2	24.8-40.6	2	3	5	10	0.29	LC
9.	Cypriniformes	Cyprinidae	*Labeo*	*Labeo chrysophekadio* (Bleeker, 1849)	Sihitam	12.6	27.2	-	-	1	1	0.03	LC
10.	Cypriniformes	Cyprinidae	*Striuntius*	*Striuntius lineatus* (Duncker, 1904)	Kemuring	6.1-9.4	2.0-11.5	8	9	14	31	0.91	LC
11.	Cypriniformes	Cyprinidae	*Thynnichthys*	*Thynnichthys polylepis* (Bleeker, 1860)	Lume	9.8-11.6	7.2-14.7	1	2	4	7	0.21	LC
12.	Cypriniformes	Danionidae	*Rasbora*	*Rasbora trilineata* (Steindachner, 1870)	Seluang	4.4-6.2	1.0-2.1	88	105	83	276	8.08	LC
13.	Cypriniformes	Danionidae	*Rasbora*	*Rasbora argyrotaenia* (Bleeker, 1849)	Seluang	5.2-11.8	1.2-13.3	112	90	111	313	9.17	LC
14.	Cypriniformes	Danionidae	*Rasbora*	*Rasbora lateristriata* (Bleeker, 1854)	Seluang	4.6-7.8	1.0-4.2	20	30	32	82	2.40	VU
15.	Cypriniformes	Xenocyprididae	*Parachela*	*Parachela oxygastroides* (Bleeker, 1852)	Siamis	4.8-11.8	0.7-10.4	8	10	12	30	0.88	LC
16.	Osteoglossiformes	Notopteridae	*Notopterus*	*Notopterus notopterus* (Pallas, 1769)	Putak	12.0-18.0	13.0-47.0	25	28	30	83	2.43	LC
17.	Perciformes	Anabantidae	*Anabas*	*Anabas testudineus* (Bloch, 1792)	Betok	7.8-12.4	9.5-39.0	50	40	40	130	3.81	LC
18.	Perciformes	Channidae	*Channa*	*Channa striata* (Bloch, 1793)	Gabus	12.2-42.0	16.8-780.0	50	60	50	160	4.69	LC
19.	Perciformes	Channidae	*Channa*	*Channa micropeltes* (Cuvier, 1831)	Toman	24.5-27.8	185.0-252.0	1	1	2	4	0.12	LC
20.	Perciformes	Helostomatidae	*Helostoma*	*Helostoma temmincki* (Cuvier, 1829)	Tebakang	7.4-15.2	7.6-60.0	75	78	38	191	5.59	LC
21.	Perciformes	Nandidae	*Pristolepis*	*Pristolepis grootii* (Bleeker, 1852)	Sepatung	3.4-13.0	0.7-54.2	50	70	75	195	5.71	LC
22.	Perciformes	Osphronemidae	*Trichopodus*	*Trichopodus trichopterus* (Pallas, 1770)	Sepat rawa	6.7-10.3	4.2-20.0	70	90	118	278	8.14	LC
23.	Perciformes	Osphronemidae	*Trichopodus*	*Trichopodus pectoralis* (Regan, 1910)	Sepat siam	11.8-15.5	27.0-70.0	15	10	15	40	1.17	LC
24.	Perciformes	Osphronemidae	*Trichopsis*	*Trichopsis vittata* (Cuvier, 1831)	Tempalo	3.4-6.6	0.42-3.2	10	10	5	25	0.73	LC
25.	Siluriformes	Bagridae	*Mystus*	*Mystus gulio* (Hamilton, 1822)	Lundu	12.6-13.5	21.5-24.8	7	6	6	19	0.56	LC
26.	Siluriformes	Bagridae	*Mystus*	*Mystus singaringan* (Bleeker, 1846)	Beringit	7.8-15.5	2.8-21.8	60	65	59	184	5.39	LC
27.	Siluriformes	Bagridae	*Hemibagrus*	*Hemibagrus nemurus* (Valenciennes, 1840)	Baung	12.0-23.0	14.8-78.0	4	5	5	14	0.41	LC
28.	Siluriformes	Claridae	*Clarias*	*Clarias batrachus* (Linnaeus, 1758)	Keli	14.4-30.2	28.0-220	60	50	65	175	5.13	LC
29.	Siluriformes	Pangasidae	*Pangasius*	*Pangasius macronema* (Bleeker, 1850)	Riu	6.3-9.0	2.0-5.0	2	3	10	15	0.44	LC
30.	Siluriformes	Pangasidae	*Pangasius*	*Pangasius pangasius* (Hamilton, 1822)	Patin	18.6-21.2	112.0-125.0	-	1	1	2	0.06	LC
31.	Siluriformes	Siluridae	*Kryptopterus*	*Kryptopterus limpok* (Bleeker, 1852)	Lais	11.5-31.6	4.8-35.5	1	5	23	29	0.85	LC
32.	Synbranchiformes	Mastacembelidae	*Macrognathus*	*Macrognathus aculeatus* (Cuvier, 1832)	Tilan	12.6-21.0	8.0-41.0	1	2	3	6	0.18	LC
33.	Synbranchiformes	Synbranchidae	*Monopterus*	*Monopterus albus* (Zuiew, 1793)	Belut	28.2-30.5	13.6-15.4	13	9	4	26	0.76	LC
Σ	5	12	26	33							3.414		
Shannon-Wiener diversity index (H’)												1.50	
Simpson’s dominance index (C)												0.03	
Evenness index (E)												0.05	

Note: LC (least concern); NT(near threatened); VU(vulnerable)

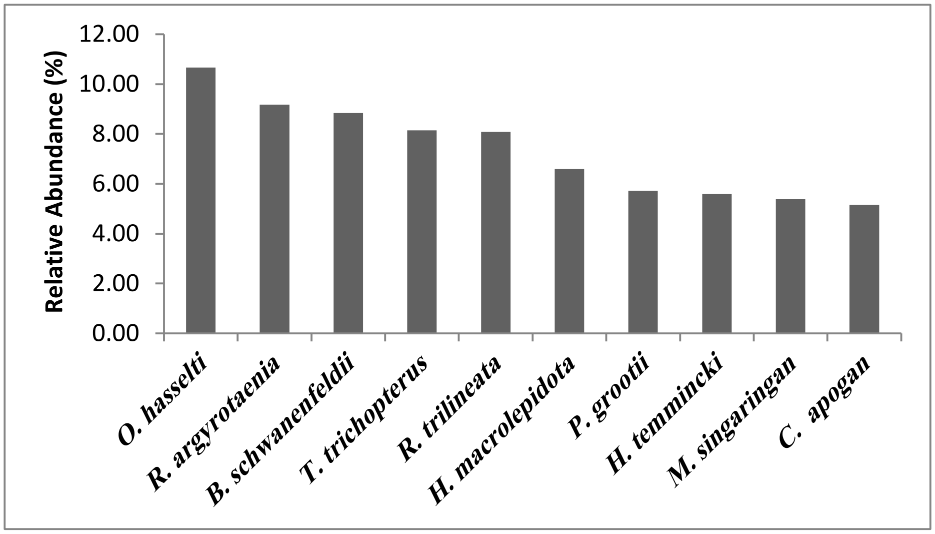

Fig.3. Top ten freshwater fish species collected from Kalong Floodplain during the rainy season (February-June 2023) in terms of relative abundance.

DISCUSSION AND CONCLUSION

This study collected 33 species of freshwater fish specimens from KF. The number of species found at stations 1 and 2 was 31; station 3 had 32 species. Species that were not found at station 1 were *L. chrysophekadion* and *P. pangasius*; at station 2, *S. berdmorei* and *L. chrysophekadion*; and at station 3, *S. berdmorei*. The results of this study compare favorably with other studies in OKIR. Previous studies have published that 20 species of freshwater fish were found in the Padang River, Lebak Jungkal (17 species), Lebak Desa Kuro (15 species), Lebak Pampangan (11 species), Lebak Pematang Bulur (16 species), and Lebak Petai Kecil (15 species) (Fahleny et al. 2023). The fish communities found in KF have higher diversity when compared to other waters in the same province (Muslim & Syaifudin 2022), Besides, the ichthyofauna in KF is lower than the number of freshwater fish species found in other waters (Aryani 2015; Dekar et al. 2018; Razi et al. 2023). Differences in the number of species collected were due to the season of sampling, the type and operating system of fishing gear, and the duration of sampling. In this study, we used various types of fishing gear so that small fish such as *S. lineatus*, *R. trilineata, R. argyrotaenia, P. macronema, S. berdmorei,* and *T. vittata* were caught. Fish collection was done during the rainy season. At that time, fish inhabiting the main water body dispersed into the floodplains, resulting in an increase in the floodplain fish population.

Freshwater fish species obtained at KF were dominated by the Cyprinidae family, totaling 12 species. According to Kottelat et al. (1996), Cyprinidae are the main inhabitants of the largest population of several rivers in Sumatra. Cypriniformes dominance was also found in Lebak Pampangan Swamp, OKIR, Peusangan River, Aceh, Tambatan's River, North Labuhanbatu Regency (Dewi & Dimenta 2021), and rivers in Padang-Bengkulu Border Area. The predominance of Cypriniformes in a water body is not only observed in the fresh waters of Indonesia but also in the Dudhkoshi River, Nepal (Shrestha et al. 2023), and the Tembeling and Pahang Rivers, Malaysia (Rashid et al. 2015).

Aquatic resources are one of the natural renewable resources that must be utilized by a country in its quest for social and economic development (Chankaew et al. 2022). If it, especially fish, are overexploited beyond their natural carrying capacity, the result is resource degradation and the inability to utilize the ecosystem to its full potential in accordance with the production potential of the water resource. Floodplains are areas of flooded swamp land surrounding rivers and their tributaries. When the water is higher than the main river, it will disperse onto the surrounding low-lying land.

According to Welcomme (2000), the diversity of ichthyofauna in this area is extremely high. Today, freshwater ecosystems, including the floodplains, are in the midst of a biodiversity crisis, with species numbers declining faster than at any time in human history (Reid et al. 2019; Albert et al. 2021; Cowie et al. 2022; Stoffers et al. 2022).

The community members living around the study site (KF area) told us that the diversity of fish species in this area has decreased compared to the past. Some native fish species, such as *Chitala hypselionatus*, *Wallago leeri*, and *Kryptopterus apogon*, are very rarely captured. Furthermore, information from local villagers around the study site shows that the endemic species of Palembang (South Sumatra), *Tetraodon palembangensis* and *Kryptopterus palembangensis*, are no longer found here. In addition to the reduction in the number of species, there is also a decrease in the size of the fish caught. This condition is caused by human activities, namely overfishing and environmentally unfriendly fishing, as well as changes in the landscape of floodplain areas. Globally, threats to freshwater biodiversity are due to overexploitation, water pollution, altering flow regimes, fragmenting rivers by dams, habitat destruction or degradation, and the invasion of exotic species (Dudgeon et al. 2006; Reid et al. 2019; Tickner et al. 2020; Su et al. 2021).

Freshwater fish biodiversity contributes to human well-being as a major food supply (Reid et al. 2005) and for recreational and cultural activities (Dudgeon et al. 2006; Arlinghaus et al. 2019). Human activities impact freshwater fish biodiversity (Su et al. 2021). Fish diversity at the study site contributes to the welfare of local communities as a food resource and a daily livelihood. Currently, local fishermen have been affected by the decline in the fish population and the size of the fish they get. They have a hard time getting fish in large quantities. The size of the fish caught has decreased. For example, *Channa striata* weighing 2kg was commonly found in the past, but not now. The declining number of species and populations is an early warning that there is a serious problem with the health of the environment. If this condition persists, it can bring about an ecological disaster.

Anthropogenic activities have brought about new and diverse threats that disproportionately impact freshwater ecosystems (Bukola & Zaid 2015; Amoatey & Baawain 2019).We documented emerging threats to the biodiversity of freshwater fish species at the sampling sites: (i) land use change; many swamp lands are converted into oil palm plantations; (ii) agricultural fertilizer use; currently, rice farmers in swamp lands use inorganic fertilizers, which has a negative impact on the sustainability of the fish life cycle; (iii) climate change (Gangloff et al. 2016) (iv) invasive species; at the study site, non-native species were found, including *Oreochromis niloticus* and *Hypostomus plecostomus*; (v) domestic household waste; residents around the site use various chemicals such as soap, shampoo, and detergents (Reid et al. 2019).

In conclusion, the Kalong Floodplain is a typical ecosystem that has a very diverse range of freshwater fish species. Thirty-three fish species belonging to fifteen orders, sixteen families, and twenty-six genera were identified. Cypriniformes was the most dominant order among the total species collected. The Shannon-Wiener diversity index, Simpson's dominance index, and evenness index were 1.50, 0.03, and 0.05, respectively, indicating a moderately and evenly distributed category with a moderate number of species in the area. These findings suggest that the Kalong Floodplain is still inhabited by a variety of fish species and should be conserved to ensure its aquatic animal richness in the future.

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مقاله کامل

تنوع و فراوانی گونه‌های ماهیان در فصل بارانی در دشت سیلابی کالونگ، منطقه اوگان کومرینگ ایلیر، سوماترای جنوبی، اندونزی

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چکیده: تنوع و فراوانی ماهیان از شاخص‌های مهم سلامت اکوسیستم است. این مطالعه با هدف تجزیه و تحلیل تنوع و فراوانی ماهیان آب شیرین در دشت سیلابی کالونگ (KF)، منطقه اوگان کومرینگ ایلیر (OKIR)، اندونزی انجام شد. نمونه‌برداری در طول فصل بارندگی، از ماه فوریه تا ژوئن ۲۰۲۳ انجام شد. نمونه‌های ماهی در سه ایستگاه نمونه‌برداری جمع‌آوری شد. ماهی‌ها با استفاده از وسایل ماهیگیری سنتی که توسط ماهیگیران محلی استفاده می‌شد، صید شدند. داده‌ها برای تعیین شاخص تنوع ماهی و فراوانی نسبی تجزیه و تحلیل شد. در مجموع ۳۴۱۴ نمونه، بیانگر۳۳ گونه متعلق به ۵ راسته، ۱۶ خانواده و ۲۶ جنس، در طول دوره نمونه‌برداری ثبت شدند. خانواده Cyprinidae پیشتاز بود و *Osteochilus vittatus* بیشترین فراوانی نسبی را داشت. کمترین فراوانی مربوط به گونه‌های *Syncrossus berdmorei* و *Labeo chrysophekadio* بود. شاخص تنوع شانون-وینر، شاخص برتری سیمپسون و شاخص یکنواختی به‌ترتیب ۱/۵۰، ۰/۰۳ و ۰/۰۵ بود. این نتایج نشان می‌دهد که تنوع گونه‌های ماهیان آب شیرین در دشت سیلابی کالونگ (KF) در رده متوسط قرار دارد. این داده‌ها اطلاعاتی در مورد تنوع زیستی ماهی در KF فراهم می‌کند و می‌تواند برای برنامه‌ریزی فعالیت‌های شیلات و ایجاد پیشینه برای مطالعات آینده و برنامه‌های حفاظتی مفید واقع گردد.

کلمات‌کلیدی: تنوع زیستی، گونه ماهیان اندونزی، ماکرواکولوژی، گونه‌های بومی.