

POTENTIAL AND DIVERSITY OF FISH SPECIES IN RIVER WATERS IN DHARMASRAYA REGENCY, WEST SUMATRA PROVINCE

Potensi dan Keanekaragaman Species Ikan di Perairan Sungai Kabupaten
Dharmasraya, Provinsi Sumatera Barat

Masrizal^{1*}, Endryeni Endryeni², Lisa Mayasari²

¹Animal Science Study Program, Faculty of Animal Husbandry, Andalas University

²Aquaculture Study Program, Faculty of Science, Nahdlatul Ulama University of West
Sumatera

South Limau Manis, Pauh District, Padang City, West Sumatra.

*Corresponding author: masrizal1961@gmail.com

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ABSTRACT

This study aims to assess the potential and diversity of fish species inhabiting the rivers of Dharmasraya Regency, West Sumatra Province. This study was conducted from May to November 2023 across five rivers: Batang Hari, Batang Momong, Batang Timpeh, Batang Siat, and Batang Jujuhan. Each river comprises two locations, or fishing stations. Fishing is carried out using cast nets, gill nets, scoop nets, and traps. During the study, 2255 fish were caught and classified into five orders, 11 families, 26 genera, and 33 species. Of the 33 species, two species of fish are protected by the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia No. 106/MENLHK/SETJEN/KUM.1/12/2018, and the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. 1 of 2021, namely *Schismatorhynchus heterorhynchus* Blkr and *Notopterus borneensis* (Blkr). The Diversity Index (H') shows that the diversity of fish species in the river waters in Dharmasraya Regency was relatively high, namely with a diversity index of 3.8973 – 4.5219, there was no dominant species, with a dominance index (D) of 0.0490 – 0.0810, and species richness index (R) of 3.2956 – 4.2892.

Keywords: Dharmasraya, Diversity, Freshwater Fish, Potential, Species

ABSTRAK

Penelitian ini bertujuan untuk mengetahui potensi dan keanekaragaman species ikan yang hidup pada perairan sungai di Kabupaten Dharmasraya, Provinsi Sumatera Barat. Penelitian ini dilaksanakan pada bulan Mei - November 2023 di lima sungai yaitu sungai Batang Hari, Batang Momong, Batang Timpeh, Batang Siat, dan Batang Jujuhan. Setiap sungai terdiri dari dua lokasi atau stasiun penangkapan ikan. Penangkapan ikan dilakukan dengan menggunakan jala, jaring insang, tangguk dan bubu. Selama penelitian, telah tertangkap 2255 ekor ikan yang dapat dikelompokkan ke dalam 5 ordo, 11 famili, 26 genus, dan 33 species. Dari 33 species ikan tersebut ditemukan 2 species ikan yang dilindungi berdasarkan Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia No. 106/MENLHK/SETJEN/KUM.1/12/2018, dan

Keputusan Menteri Kelautan dan Perikanan Republik Indonesia No. 1 Tahun 2021, yaitu *Schismatorhynchus heterorhynchus* Blkr dan *Notopterus/Chitala borneensis* (Blkr). Indeks Keanekaragaman (H') menunjukkan bahwa keanekaragaman species ikan di perairan sungai Kabupaten Dharmasraya cukup tinggi, yaitu dengan Indeks Keanekaragaman 3.8973 – 4.5219 dan tidak ditemukan species yang dominan, dengan indeks dominansi (D) sebesar 0.0490 – 0.0810 dan indeks kekayaan jenis (R) adalah 3.2956 – 4.2892.

Kata Kunci: Potensi, Keanekaragaman, Species, Ikan Air Tawar, Dharmasraya

INTRODUCTION

West Sumatra is a province located on the island of Sumatra, boasting a vast expanse of public waters, encompassing 64,200 hectares, consisting of lakes, reservoirs, rivers, swamps, and ponds. These waters are spread across 19 regencies/cities, one of which is Dharmasraya Regency. The regency is home to numerous rivers, including the Batang Hari, Batang Jujuhan (Batang Sinamar), Batang Momong (Batang Gumanti), Batang Piruko-Palangko, Batang Pangian, Batang Timpeh, Batang Kilangan, and Batang Siat. These rivers provide habitat for a variety of fish species native to Indonesia.

According to data from the Statistics Indonesia (BPS) of West Sumatra Province, capture fisheries production in Dharmasraya Regency in 2012 was recorded at 559.20 tons, with 479 fishermen. Of these, 146 were permanent fishermen, 183 were part-time fishermen, and 150 were part-time fishermen (West Sumatra in Figures, 2013). In 2017, fisheries production decreased to 202,000 tons, with a total of 2,051 fishermen, consisting of 128 permanent fishermen, 174 main part-time fishermen, and 1,749 additional part-time fishermen (West Sumatra in Figures, 2018). Furthermore, in 2022, capture fisheries production in Dharmasraya Regency reached 230,15 tons, with a total of 226 fishermen who were main part-time fishermen (West Sumatra in Figures, 2023). This data shows a decrease in fishermen's catch, which fell from 559,20 tons in 2012 to 230,15 tons in 2022. The number of fishermen also decreased, from 479 people in 2012 to 226 people in 2022. This decrease is most likely caused by the rapid land clearing for the plantation, agriculture, and residential sectors. Waste from plantation, agricultural, and residential activities flows into rivers, increasing pressure on the aquatic environment, which in turn causes changes in the physical, chemical, and biological properties of the waters. All of these changes impact the life of fish communities in the waters, reflected in a decline in fishermen's catches. This decline in catches may also be accompanied by a decline in the number of fish species in the freshwaters of Dharmasraya Regency.

With the issuance of Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number 106/MENLHK/SETJEN/KUM.1/12/2018 concerning the Second Amendment to Regulation of the Minister of Environment and Forestry Number P.20/Menlhk/Setjen/Kum.1/6/2018 concerning Protected Plant and Animal Species, as well as Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number 1 of 2021 concerning Protected Fish Species, there may be protected fish species in the rivers of Dharmasraya Regency. Based on interviews with the community and relevant agencies, information obtained indicates that the list of protected fish species in the rivers of Dharmasraya Regency is not yet fully recorded.

Based on these issues, a study was conducted on the potential and diversity of fish species in river waters in Dharmasraya Regency, West Sumatra Province. The purpose of this study was to determine the types of fish inhabiting the river waters, their conservation status, and the diversity of these fish species. The results are expected to provide information on the condition of fish communities in the river waters of Dharmasraya Regency, which serve as a source of livelihood for the local community. This information will serve as basic input for policymakers (stakeholders) in developing freshwater capture fisheries programs in Dharmasraya Regency in

particular and West Sumatra Province in general.

METHODS

This research was conducted between May and November 2023 in Dharmasraya Regency, West Sumatra Province. Fishing was conducted in five rivers: the Batang Hari, Batang Momong, Batang Timpeh, Batang Siat, and Batang Jujuhan. Each river had two locations or stations for fishing activities. Fishing activities were carried out by local fishermen using various fishing gear, such as cast nets, gillnets, traps, and fish traps. A more detailed study location can be seen on the map in Figure 1.



Figure 1. Map of Research Sample Fishing Locations (Source: Google Earth)

Information: Batang Hari: 0°59'38"S 101°26'26"E
Batang Momong: 0°59'30"S 101°18'04"E
Batang Timpeh: 0°56'55"S 101°39'09"E
Batang Siat: 1°08'52"S 101°40'35"E
Batang Jujuhan: 1°29'01"S 101°36'17"E

After the fish were caught, their species and numbers were recorded. They were then preserved in a 4% formalin solution and stored in large, labeled jars for later identification in the laboratory. Identification and classification of the sampled fish were performed by observing their morphological and anatomical characteristics. Observations of fish morphology and anatomy were conducted using a magnifying glass and a microscope at 5x10 magnification. The results of these observations were then compared with reference books, such as those used by Saanin (1984) and Kottelat *et al.* (1993) for identification purposes.

Data were analyzed descriptively and quantitatively based on the Diversity Index, Dominance Index, and Species Richness Index (Odum, 1971), as follows:

1. Diversity Index

$$H' = - \sum_{i=1}^n p_i \cdot \log_2 p_i$$

Where:

H' = diversity index.

P_i = proportion of species i or the ratio of the number of individuals of species i to the

total number of individuals of species i (n_i/N)
 Diversity index value criteria:
 $H' < 1$ = Low diversity
 $1 < H' < 3$ = Medium diversity
 $H' > 3$ = High diversity

2. Dominance Index

$$D = \sum \left[\frac{n_i}{N} \right]^2$$

Where:

D = dominance index
 n_i = number of individuals of the i -th species
 N = total number of individuals

Dominance index value criteria:

$0.00 \leq D < 0.50$ = Low dominance (no dominant species)
 $0.50 \leq D \leq 1.00$ = High dominance (some dominant species)

3. Species Richness Index

$$R = \frac{S - 1}{\ln N}$$

Where:

R = species richness index
 S = number of species
 N = total number of fish individuals

Type wealth index value criteria:

$R < 2.5$ = Low species richness
 $2.5 < R < 4$ = Medium richness
 $R > 4$ = High species richness

RESULTS

Species Potential

Based on the identification results of fish caught in five rivers: the Batang Hari, Batang Momong, Batang Timpeh, Batang Siat, and Batang Jujuhan, 33 fish species were found, consisting of five orders, 11 families, and 26 genera, as presented in Table 1. The number of fish caught in each river is presented in Table 2.

Table 1. Fish Species Caught in the Five Rivers at the Research Location

Ordo	Famili	No	Species	Local/Regional Name
Cypriniformes	Cyprinidae	1.	<i>Tor douronensis</i> (C.V)	Garing, Soma
		2.	<i>Chyclocheilichthys apagon</i> (C.V)	Opang-opang
		3.	<i>Mystacoleucus marginatus</i> (C.V)	Mansai
		4.	<i>Puntioplites waandersi</i> (Blkr)	Lampan
		5.	<i>Schismatorhynchus heterorhynchus</i> (Blkr)	Simancuang/Pasa

Ordo	Famili	No	Species	Local/Regional Name
		6.	<i>Hampala macrolepidota</i> (C.V)	Barau
		7.	<i>Leptobarbus malanopterus</i> (W.B)	Mintulu
		8.	<i>Osteochilus vittatus</i> (C.V)	Molabung
		9.	<i>Osteochilus waandersi</i> (Blkr)	Lelan
		10.	<i>Osteochilus kappenii</i> (Blkr)	Palau
		11.	<i>Lobocheilos kajanensis</i> (Popta)	Kulari
		12.	<i>Crossocheilus cobitis</i> (Blkr)	Salimang
		13.	<i>Labiobarbus leptocheilus</i> (C.V)	Mali, Maliah
		14.	<i>Puntius lateristriga</i> (C.V)	Kapiul, Catu
		15.	<i>Puntius tetrazona</i> (Blkr)	Bada Pimpiang
		16.	<i>Rasbora sumatrana</i> (Blkr)	Pantau
	Cobitidae	17.	<i>Botia reversa</i> (R)	Baung Tili
		18.	<i>Acanthopsis dialuzona</i> (Blkr)	Jolong-jolong
	Balitoridae	19.	<i>Nemacheilus selangoricus</i> (Blkr)	Tali-tali
Osteoglossiformes	Notopteridae	20.	<i>Notopterus borneensis</i> (Blkr)	Belida
Siluriformes	Bagridae	21.	<i>Bagroides melapterus</i> (Blkr)	Tampang Durian
		22.	<i>Mytus numerus</i> (V)	Baung
		23.	<i>Mytus planiceps</i> (V)	Baung
		24.	<i>Mytus nigriceps</i> (V)	Nggiu-nggiu
	Schilbidae	25.	<i>Pseudeutropius brachyopterus</i> (Blkr)	Nggiu-nggiu
	Sisoridae	26.	<i>Bagarius yarrelli</i> (Sykes)	Dokek
	Pristolepididae	27.	<i>Pristolepis fasciata</i> (Blkr)	Tangkurak Labu
Perciformes	Mastacembelidae	28.	<i>Mastacembelus armatus</i> (Lec)	Tilan
		29.	<i>Mastacambalus perakensis</i> (Her)	Tilan
		30.	<i>Mastacembelus notophthalmus</i> (R)	Tilan Baro
		31.	<i>Macrognathus maculatus</i> (Bl)	Tilan Sarok
	Channidae	32.	<i>Channa striata</i> (B.I)	Gabus/Toman
Tetraodontiformes	Tetraodontidae	33.	<i>Tetraodon kretamensis</i> (Inger)	Buntal

Table 2. Number of Fish Caught Based on Species in Each River at the Research Location

No	Species	River					Total	
		Btg. Hari	Btg. Momong	Btg. Timpeh	Btg. Siat	Btg. Jujuhan	Fish	%
1.	<i>Tor tambra/T. duoronensis</i> (C.V)	32	18	15	10	32	107	4.75
2.	<i>Chyclocheilichthys apagon</i> (C.V)	20	29	25	2	46	122	5.41
3.	<i>Mystacoleucus marginatus</i> (C.V)	58	43	34	7	30	172	7.63
4.	<i>Puntioplites waandersi</i> (Blkr)	18	21	17	0	13	69	3.06
5.	<i>Schismatorhynchus heterorhynchus</i> (Blkr)	0	12	0	0	6	18	0.80
6.	<i>Hampala macrolepidota</i> (C.V)	45	19	17	15	10	106	4.70
7.	<i>Leptobarbus malanopterus</i> (W.B)	18	15	0	2	3	38	1.69
8.	<i>Osteochilus vittatus</i> (C.V)	19	30	0	0	0	49	2.17
9.	<i>Osteochilus waandersi</i> (Blkr)	20	22	18	2	14	76	3.37
10.	<i>Osteochilus kappenii</i> (Blkr)	25	7	23	4	10	69	3.06
11.	<i>Lobocheilos kajanensis</i> (Popta)	58	13	8	0	16	95	4.21
12.	<i>Crossocheilus cobitis</i> (Blkr)	14	23	12	2	3	54	2.39
13.	<i>Labiobarbus leptocheilus</i> (C.V)	21	15	17	10	16	79	3.50
14.	<i>Puntius lateristriga</i> (C.V)	35	51	0	20	10	116	5.14
15.	<i>Puntius tetrazona</i> (Blkr)	4	0	0	35	0	39	1.73
16.	<i>Rasbora sumatrana</i> (Blkr)	42	26	22	15	51	156	6.92
17.	<i>Botia reversa</i> (R)	3	3	2	0	5	13	0.58
18.	<i>Acanthopsis dialuzona</i> (Blkr)	35	0	13	32	0	80	3.55
19.	<i>Nemacheilus selangoricus</i> (Blkr)	0	17	0	0	54	71	3.15
20.	<i>Chitalata borneensis</i> (Blkr)	14	15	18	2	2	51	2.26
21.	<i>Bagroides melapterus</i> (Blkr)	5	0	2	0	0	7	0.31
22.	<i>Hemibagrus numerus</i> (V)	35	39	30	9	31	144	6.39
23.	<i>Hemibagrus planiceps</i> (V)	12	10	0	0	0	22	0.98
24.	<i>Mytus nigriceps</i> (V)	75	23	18	19	13	148	6.56
25.	<i>Pseudeutropius brachypterus</i> (Blkr)	5	13	0	0	0	18	0.80
26.	<i>Bagarius bagarius</i> (Sykes)	8	3	0	2	15	28	1.24
27.	<i>Pristolepis fasciata</i> (Blkr)	5	0	0	8	0	13	0.58
28.	<i>Mastacembelus favus</i> (Lec)	24	27	18	0	33	102	4.52
29.	<i>Mastacembelus perakensis</i> (Her)	0	5	0	0	0	5	0.22
30.	<i>Mastacembelus notophthalmus</i> (R)	13	17	0	0	15	45	2.00
31.	<i>Macrogathus maculatus</i> (Bl)	15	23	0	22	0	60	2.66
32.	<i>Channa striata</i> (B.I)	0	0	7	8	0	15	0.67
33.	<i>Tetraodon/Dichotomyctere kretamensis</i> (Inger)	6	0	3	28	31	68	3.02
Number of individuals (fish)		684	539	319	254	459	2255	100

No	Species	River					Total	
		Btg. Hari	Btg. Momong	Btg. Timpeh	Btg. Siat	Btg. Jujuhan	Fish	%
Number of species		29	27	20	21	23	33	-

Species Diversity Index

Data analysis revealed that the Shannon-Wiener (H') species diversity index for fish in each river in Dharmasraya Regency ranged from 3.8973 to 4.5219, as shown in Figure 2.

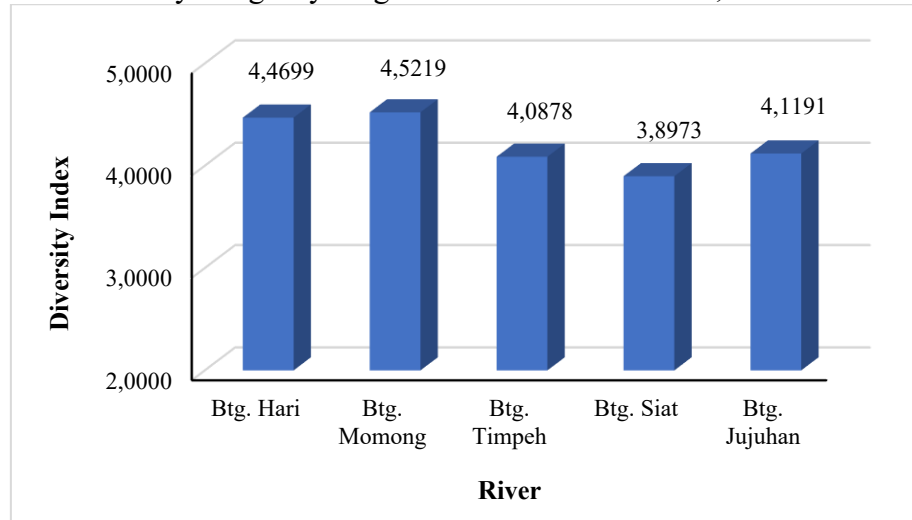


Figure 2. Fish Species Diversity Index in Rivers in Dharmasraya Regency

Species Dominance Index

The dominance index is a parameter that indicates the concentration of a species' dominance within a biota community. Dominance index values in the five rivers in Dharmasraya Regency varied from 0.0490 to 0.810 (Figure 3).

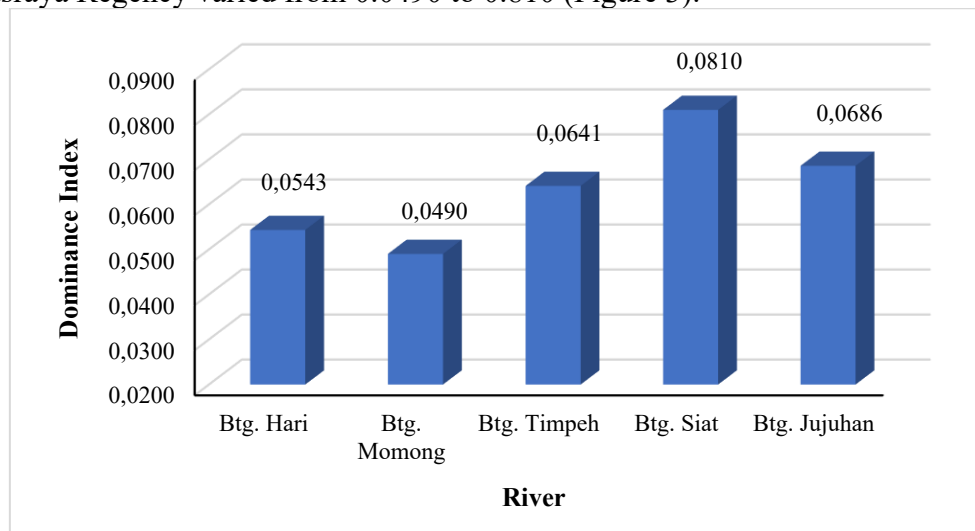


Figure 3. Fish Species Dominance Index in Rivers in Dharmasraya Regency

Species Richness Index

The species richness index is a measure of species richness within a fish community. The research results found that the species richness index values in the five rivers in Dharmasraya Regency ranged from 3.2956 to 4.2892 (Figure 4).

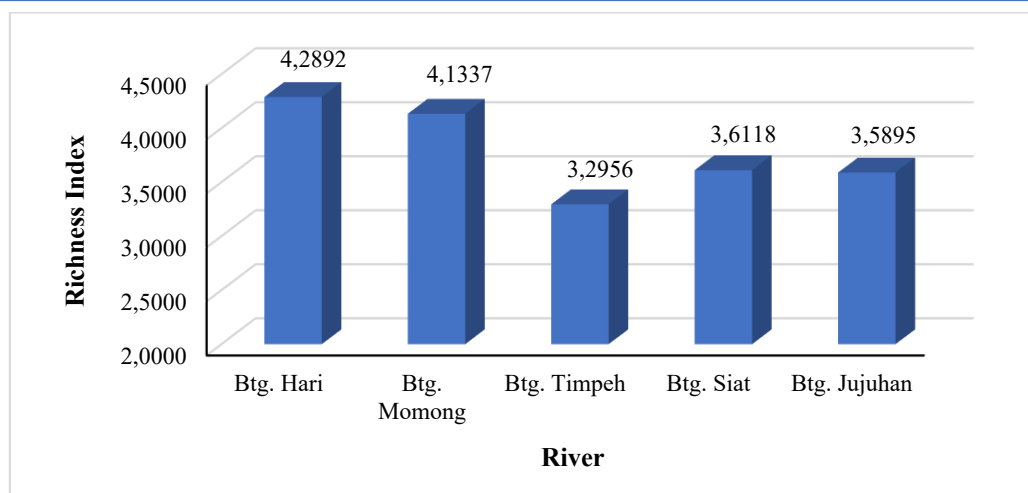


Figure 4. Fish Species Richness Index in the Rivers of Dharmasraya Regency

DISCUSSION

Potential Species

Based on the data presented in Table 1, the most common fish species found in the rivers of Dharmasraya Regency are from the Cypriniformes order, with a total of 19 species. Furthermore, the Siluriformes and Perciformes orders each contain six species, while the Osteoglossiformes and Tetraodontiformes each contain one species. When analyzed by family, fish from the Cyprinidae family dominate with 16 species, followed by Bagridae (four species), Mastacembelidae (four species), and Cobitidae (two species). Other less common families, each with one species, include Balitoridae, Notopteridae, Schilbidae, Sisoridae, Pristolepididae, Channidae, and Tetraodontidae. Goldman & Horne (1983) stated that fish commonly found in rivers generally belong to the Cyprinidae, Bagridae, Pangasidae, and Bagaridae families. Wahyuni & Zakaria (2018) also noted that members of the Cyprinidae family thrive in rivers with varying currents, both strong and weak, provided the water quality is good.

Table 2 shows that the highest number of fish caught during the study came from the Batang Hari River, with 684 individuals representing 29 species. The Batang Momong River followed with 539 individuals and 27 species. The Batang Siat River, on the other hand, had the lowest number of fish caught, with 254 individuals representing 21 species. By family, the Cyprinidae family had the highest number of individuals, accounting for 1,365 individuals, or 60.53% of the total fish caught, followed by the Bagridae family with 365 individuals, or 16.19%. Meanwhile, the Notopteridae family had the lowest number, with only 7 individuals, or approximately 0.31%. As mentioned by Goldman & Horne (1983), fish from the families Cyprinidae, Bagridae, Pangasidae, and Bagaridae are the most common in river waters.

Table 2 shows that the highest number of fish caught during the study came from the Batang Hari River, reaching 684 individuals across 29 species. The Batang Momong River followed with 539 individuals and 27 species. Conversely, the lowest number of fish caught was found in the Batang Siat River, with 254 individuals across 21 species. By family, Cyprinidae was the family with the largest number of individuals, reaching 1,365 individuals, or 60.53% of the total fish caught, followed by Bagridae with 365 individuals, or 16.19%. Meanwhile, the Notopteridae family recorded the lowest number, with only 7 individuals, or approximately 0.31%. As mentioned by Goldman & Horne (1983), fish from the families Cyprinidae, Bagridae, Pangasidae, and Bagaridae are the most commonly found in river waters.

Based on the research results presented, it can be concluded that the number of fish species found in a river varies greatly from river to river. This variation is influenced by

differences in habitat conditions, such as physical, chemical, and biological factors in the water. As explained by Bhukaswan (1980), fish distribution in river waters is influenced by various factors, including fish interactions with the environment, such as temperature, water depth, turbidity, light, pH, dissolved oxygen, food, and aquatic plants. Kottelat et al. (1993) also stated that wider rivers have more habitat variety than narrower rivers, so the longer and wider the river, the more fish can live there. Li et al. (2012) stated that species richness and abundance of fish are closely related to habitat variability and the presence of microhabitats, as well as substrate composition and water depth. The diversity and structure of fish communities reflect species characteristics and life cycles, which are related to fluctuating environmental conditions (Mote, 2017). Guo et al. (2018) and Huang et al. (2019) added that factors such as elevation, current velocity, conductivity, turbidity, depth, and river width are closely related to fish community composition. Each fish species selects environmental conditions that suit its ecological needs.

Referring to the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia No. 106/MENLHK/SETJEN/KUM.1/12/2018, and the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia No. 1 of 2021, two protected fish species were found, namely *Schismatorhynchus heterorhynchus* Blkr and *Notopterus borneensis* (Blkr) or *Chitala borneensis* with a conservation status of “Full Protection”. Then based on the IUCN Red List of Threatened Species 2020, both species have the status of “Least Concern (LC)” (Lumbantobing, 2020a and Ng, 2020a). Based on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, the majority (26 species) are at Least Concern (LC). Only one species, *Leptobarbus malanopterus* (W.B.), is Near Threatened (NT). Two species are Vulnerable (VU), *Hemibagrus planiceps* (V) and *Bagarius yarrelli* (*B. bagarius* Sykes), and six species have not yet been recorded (insufficient information). The conservation status of each fish species is presented in Table 3.

Table 3. Conservation Status of Each Based on Ministerial Regulation of the Environment and Forestry No. 106 of 2018, Ministerial Decree of the Ministry of Marine Affairs and Fisheries No. 1 of 2021, and IUCN

Species	Conservation Status	
	Minister of Environment and Forestry Regulation No. 106 of 2018 & Minister of Marine Affairs and Fisheries Decree No. 1 of 2021	IUCN
		Status Reference
<i>Tor douronensis</i> /T. tambra (C.V)	—	DD Kottelat, Pinder & Harrison. 2018
<i>Chyclocheilichthys apagon</i> (C.V)	—	LC Lumbantobing & Vidthayanon, 2020a
<i>Mystacoleucus marginatus</i> (C.V)	—	LC Vidthayanon, 2012
<i>Puntioplites waandersi</i> (Blkr)	—	LC Lumbantobing & Allen, 2020
<i>Schismatorhynchus heterorhynchus</i> (Blkr)	Full Protection	LC Lumbantobing, 2020a
<i>Hampala macrolepidota</i> (C.V)	—	LC Ahmad, 2019a
<i>Leptobarbus malanopterus</i> (W.B)	—	NT Lumbantobing, 2019a

Species		Conservation Status	
		Minister of Environment and Forestry Regulation No. 106 of 2018 & Minister of Marine Affairs and Fisheries Decree No. 1 of 2021	IUCN
		Status	Reference
<i>Osteochilus vittatus</i> (C.V)	—	LC	Lumbantobing & Vidthayanon, 2020b
<i>Osteochilus waandersi</i> (Blkr)	—	LC	Lumbantobing & Vidthayanon, 2020c
<i>Osteochilus kappenii</i> (Blkr)	—	LC	Lumbantobing, 2021
<i>Lobocheilos kajanensis</i> (Popta)	—	LC	Lumbantobing, 2020b
<i>Crossocheilus cobitis</i> (Blkr)	—	LC	Ahmad, 2020a
<i>Labiobarbus leptocheilus</i> (C.V)	—	LC	Lumbantobing & Baird, 2020
<i>Puntius/Barbodes lateristriga</i> (C.V)	—	LC	Lumbantobing, 2019b
<i>Puntius/Puntigrus tetrazona</i> (Blkr)	—	LC	Lumbantobing, 2020c
<i>Rasbora sumatrana</i> (Blkr)	—	DD	Lumbantobing, 2019c
<i>Botia reversa/Syncrossus reversus</i> (R)	—	DD	Daniels, 2020a
<i>Acanthopsis dialuzona</i> (Blkr)	—	LC	Allen & Daniels, 2020
<i>Nemacheilus selangoricus</i> (Blkr)	—	LC	Ahmad, 2020b
<i>Notopterus/Chitala borneensis</i> (Blkr)	Full Protection	LC	Ng, 2020a
<i>Bagroides melapterus</i> (Blkr)	—	LC	Ng, 2019a
<i>Mytus/Hemibagrus numerus</i> (V)	—	LC	Ng, 2020b
<i>Mytus/Hemibagrus planiceps</i> (V)	—	VU	Ng, 2019b
<i>Mytus nigriceps</i> (V)	—	LC	Ng, 2019c
<i>Pseudeutropius brachyopterus</i> (Blkr)	—	LC	Ng, 2019d
<i>Bagarius yarreli/B. bagarius</i> (Sykes)	—	VU	Ng, 2022
<i>Pristolepis fasciata</i> (Blkr)	—	LC	Ng & Abraham, 2019
<i>Mastacembelus armatus/M. favus</i> (Lec)	—	LC	Fernado, Kotagama & Goonatilake. 2019
<i>Mastacembalus/Macrognathus perakensis</i> (Her)	—	DD	Ahmad, 2019b

Species	Conservation Status		
	Minister of Environment and Forestry Regulation No. 106 of 2018 & Minister of Marine Affairs and Fisheries Decree No. 1 of 2021	Status	IUCN Reference
<i>Mastacembelus notophthalmus</i> (R)	—	LC	Ahmad, 2020c
<i>Macrogathus maculatus</i> (Bl)	—	LC	Vidthayanon & Daniels, 2020
<i>Channa striata</i> (B.I)	—	LC	Chaudhry et al., 2019
<i>Tetraodon/Dichotomyctere kretamensis</i> (Inger)	—	LC	Daniels, 2020b

Information:

EX: Extinct (Punah)	NT: Near Threatened (Hampir Terancam)
EW: Extinct in the Wild (Punah di Alam Liar)	LC: Least Concern (Beresiko Rendah)
CR: Critically Endangered (Kritis)	DD: Data Deficient (Informasi Kurang)
EN: Endangered (Terancam/Genting)	NE: Not Evaluated (Belum Dievaluasi)
VU: Vulnerable (Rentan)	

Species Diversity Index

Figure 2 shows that the highest species diversity index was found in the Batang Momong River, with a value of 4.5219, while the lowest index was recorded in the Batang Siat River, at 3.8973. According to Yazwar (2008), differences in diversity index values between rivers are caused by variations in water physical factors, as well as differences in nutrient availability and utilization by each individual, and the ability of fish species to adapt to their respective environmental conditions. This diversity index indicates that the fish species diversity in the Dharmasraya Regency River is considered high, with more than 3 (three) (Odum, 1971). Furthermore, this diversity index can also be used to determine the level of pollution in a river. As stated by Wilhm (1975), based on the diversity index (H'), water quality in a body of water can be categorized as follows:

1. Heavily polluted, if the diversity index is less than one ($H' < 1$).
2. Moderately polluted, if the diversity index is between one and two ($1 < H' < 2$).
3. Lightly polluted, if the diversity index is between two and three ($2 < H' < 3$).
4. Very lightly polluted, if the diversity index is between three and four point five ($3 < H' < 4.5$).

Based on these diversity index standards, it can be concluded that the river water quality in Dharmasraya Regency is still considered good. This study showed that the diversity index in the river waters ranged from 3.8973 to 4.5219, indicating a very low level of pollution ($3 < ID < 4.5$). Preniti (2019) explains that fish diversity and abundance in waters are strongly influenced by habitat characteristics. The number of fish species found at the research site is also influenced by various environmental parameters, such as water quality, surrounding vegetation, weather conditions at the time of the study, and fishing techniques used. Therefore, differences in fish species caught in different locations can vary significantly (Akhrianti, 2017). Faradiana (2018) also noted that environmental factors such as light intensity and current velocity significantly influence fish species diversity, with lower currents in a body of water tending to increase fish diversity.

Species Dominance Index

The results showed the highest dominance index in the Batang Siat River, at 0.0810, while the lowest was in the Batang Momong River, at 0.0490. This dominance index indicates

that no particular species dominates the fish community living in the river waters of Dharmasraya Regency, where the dominance index is less than 0.5. According to Odum (1971), a dominance index approaching 0 indicates almost no dominant individuals, and a value approaching 1 indicates a dominant species. Then it is stated again that if the dominance index is less than 0.5 then no species of a biota dominates in its community ($0.00 \leq D < 0.50$). Furthermore, Magurran (1988 and 2013) stated that the presence of species affects the number of species, individuals, families and also affects the value of diversity, evenness and dominance in a river water. The results of research by Syafraldi and Amrullah (2025) in the Batang Bungo River, Bungo Regency, Jambi Province, obtained a species dominance index ranging from 0.11 to 0.23. These results also indicate that no fish species dominate its presence in the Batang Bungo River waters. According to Jean Olive Doffou et. al., (2019), a low or minimal dominance index indicates a stable environmental condition of a body of water. Several other studies show that the dominance of a fish species in a body of water is determined by the ability of a species to utilize available energy sources efficiently, and this is greatly influenced by abiotic factors (Maureaud et. al., 2019), changes in land use (Aryani et. al., 2019), and the distribution and productivity of biotic communities in aquatic ecosystems (Liu et. al., 2018).

Species Richness Index

Figure 4 shows that the Batang Hari River has the highest species richness index, at 4.2892, while the Batang Timpeh River has the lowest, at 3.2956. Referring to the criteria proposed by (Odum, 1971), the Batang Hari and Batang Momong rivers have high fish species richness, with species richness indices exceeding 4, namely 4.2892 and 4.1337 ($R > 4$). Furthermore, the Batang Timpeh, Batang Siat, and Batang Jujuhan rivers have moderate species richness indices, namely 3.2956, 3.6118, and 3.5885 ($2.5 < R < 4$). These richness indices indicate that these four rivers have high species richness. This is certainly related to the water quality of these rivers, which is still considered very good. According to Ngor et al. (2023), species richness and abundance are determined by water level, alkalinity, dissolved oxygen, water temperature, and total nitrate are important predictors of species richness, while conductivity is important in determining the abundance of fish species. Then it was stated that species richness increased with increasing water level, dissolved oxygen, and water temperature, but decreased with increasing alkalinity and total nitrate. Furthermore, it was also stated that the abundance of fish species increased with conductivity, but decreased with increasing water level and alkalinity.

CONCLUSION

The results of this study indicate that the potential of fish species living in river waters in Dharmasraya Regency, West Sumatra Province is quite high with moderate to high species diversity and richness, and dominated by fish species from the Cyprinidae family. This study found 2 species with Full Protection conservation status, namely *Schismatorhynchus heterorhynchus* (Blkr) (Simuncung fish or Pasa fish), and *Notopterus/Chitala borneensis* (Blkr) (Belida fish).

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