

Food Habit and Feeding Habit of The
Silver Rasbora (*Rasbora Argyrotaenia*
Blkr) In Waters of Sungai Dua Village,
Downstream of Komering River, South
Sumatra

By Arum Setiawan

Food Habit and Feeding Habit of The Silver Rasbora (*Rasbora Argyrotaenia* Blkr) In Waters of Sungai Dua Village, Downstream of Komerling River, South Sumatra

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Abstract. The research about food habit and feeding habit of The Silver Rasbora (*R. argyrotaenia* Blkr) in the waters of Sungai Dua Village, Downstream of Komerling River, South Sumatra was conducted in December 2016 until November 2017. The aims of this research were to determine food habit and feeding habit of The *R. argyrotaenia* Blkr in waters of Sungai Dua Village, Downstream of Komerling River, South Sumatra. The 94 Samples of fish were collected by using purposive sampling method with six sampling sites. This research was carried out by examining the gut contents of The *R. argyrotaenia* Blkr. Organisms in gut content were observed and identified, also measured of total length and weight of the The *R. argyrotaenia* Blkr. Based on the analysis result of gut contents, The *R. argyrotaenia* Blkr categorized as plankton feeder. Importance Relative Index (IRI) showed the main food of The *R. argyrotaenia* Blkr is phytoplankton from taxa Diatomae (454.38-3197.31%) and complimentary food is zooplankton from taxa Entomostraca (14.61-423.15%).

1. Introduction

The role of inland fisheries in Asian countries is very important, especially for income and food [1,2]. Potential of Biological resources is quite large, especially in the fisheries sector which contributes 37% of animal protein source for people of South Sumatra [3].

One of the inland waters in South Sumatra that has potential fisheries is waters at Sungai Dua Village, Downstream of Komerling River, South Sumatra. One of fish that remain found in the waters of Sungai Dua Village, Downstream of Komerling River is The *R. argyrotaenia* Blkr. It is Indonesian local fish, and most known as bada fish in Sumatra while in Java known as paray or wader fish. The natural distribution of *R. argyrotaenia* Blkr including Sumatra, Kalimantan and Java [4]. The *R. argyrotaenia* Blkr in Sumatra also used for consumption that has high economic value.

Recently, The *R. argyrotaenia* Blkr population exposed by a lot of pressure due to overfishing or aquatic environment degradation. As at Sungai Dua Village which is a densely populated and also fishermen area. Villagers daily activities of Sungai Dua Village mostly in the waters. In addition, villagers habit tends to dispose of garbage and carry out activities such as bathing, washing, latrines



directly into the waters, as well as sand mining activities and the disposal of rice mill waste directly to the river can cause negative effect to the aquatic environment and decreasing The *R. argyrotaenia* Blkr populations eventually.

Considering to The *R. argyrotaenia* Blkr as vulnerable fish due to decreasing water quality effect, and the utilization of The *R. argyrotaenia* Blkr is currently quite high and it's fishing intensive also, but the biological data of The *R. argyrotaenia* Blkr that are still remaining poor [4]. For this reason, as an effort for fisheries management, biological data of The *R. argyrotaenia* Blkr such as food habit and feeding habit are really important. Those information are required as an effort for domestication and culture purpose as a preventive action for decreasing population or extinction of The *R. argyrotaenia* Blkr.

2. Research Methodology

2.1. Time and Research Location

This research has been carried out in December 2016 until November 2017. Samples collected in The waters of Sungai Dua Village, Downstream of Komering River, South Sumatra, with six sampling sites, Samples collected with six sampling sites, namely station 1 the Teriti River (upstream Sungai Dua Village); station 2 the central part of Sungai Dua Village; station 3 waters near by paddy processing, station 4 waters near by alternative rice field, station 5 waters near by settlement areas and station 6 Pucung River (downstream of Sungai Dua Village).

2.2 Sampling

Samples collected using gillnet and lift net [5]. The 94 fishes of the *R. argyrotaenia* Blkr were caught and placed into a bottle containing 40% formalin, then specimens wrapped using fabric for absorbing, then placed into coolbox [6].

2.3 Laboratory Analysis

The *R. argyrotaenia* Blkr taken out from fabric cover and rinsed by water till formaline odor disappeared. The total length of the fish was measured using a ruler with an accuracy of 1.0 millimeter, and the weight was measured using a digital scale with an accuracy of 0.01 gram. After that, fish is dissected using surgical scissors. The digestive tract separated from other organs [7]. The type and amount of food was counted and identified to the lowest possible taxa using a microscope [8]. The weight of gut and fish intestine measured and put into bottle sample for preserved using Gilson's solution.

The part of gut and intestine that has been preserved, dissected and then measured the contents of the stomach and diluted 10 times. Furthermore, observations were made using a microscope. The organisms obtained during the observation were identified using The identification book A Guide to Fresh Water Biology [9] and Algae of the Western Great Lakes Area [10].

2.4. Food Composition and Food Habit Analysis

Food composition and food habit analysis carried out to determine the type of food eaten by The Silver Rasbora fish. Analysis of food habit by calculating the Importance Relative Index (IRI) [11].

2.5 Stomach-Content Analysis

Stomach-Content Analysis aims to determine fish feed consumption percentage which evaluate with formula [12].

3. Results and Discussion

3.1. Feeding Habit of The *R. argyrotaenia* Blkr

Feeding habit of The *R. argyrotaenia* Blkr determined by analysis of food composition. Food composition is everything inside intestine of fish. Based on the data that has been obtained it was known that contents of the digestive tract of The *R. argyrotaenia* Blkr were plankton consisting of

phytoplankton and zooplankton. According to [13]. The *R. argyrotaenia* Blkr is omnivorous fish, but these fish tend to eat more plankton and materials from plants including leaves and algae. Total food composition of The *R. argyrotaenia* presented in Table 1.

Table 1. Food composition of The *R. argyrotaenia* Blkr.

Feed	Month (Individu). Month (I=December 2016) until (XII=November 2017)											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Fitoplankton												
Chlorophyta	2	50	30	58	17	13	28	53	53	40	10	36
Cyanophyta	8	58	71	17	28	24	47	22	51	35	33	37
Desmidiaceae	10	36	53	37	57	20	40	42	33	40	29	56
Diatomae	48	280	257	73	86	122	169	166	205	135	42	128
Euglenophyta	5	4	2	3	14	5	3	15	2	5	2	5
Pyrrophyta	3	0	1	3	0	1	2	4	2	4	0	1
Xanthophyceae	0	1	2	1	4	0	0	1	1	2	0	2
Zooplankton												
Chaetognata	0	1	0	0	0	1	0	1	0	0	0	0
Ciliata	0	0	0	0	1	0	0	0	0	0	0	0
Coelenterata	1	1	1	0	0	0	3	0	0	0	0	0
Ctenophora	1	1	2	0	0	0	0	0	0	0	0	0
Entomostraca	20	3	6	5	15	8	13	10	3	18	5	12
Meroplankton	6	0	2	0	0	3	2	0	0	2	0	1
Mollusca	2	0	0	0	0	2	0	0	4	0	0	0
Rhizopoda	0	9	4	2	3	4	3	4	2	6	1	4
Rotatoria	7	0	0	5	11	3	3	6	0	12	0	5

Table 1, showed the highest total food composition of The *R. argyrotaenia* Blkr during the research period from December till November 2017 was phytoplankton from Diatomae taxa around 42-280 individuals. According [12] total food composition of fish influenced by differences of season and location. The *R. argyrotaenia* Blkr can utilize food in their environment because its a generalist feeder, so even though there is a difference of season, The *R. argyrotaenia* Blkr remain can get enough food.

Furthermore, food habit of The *R. argyrotaenia* Blkr data showed in Figure 1.

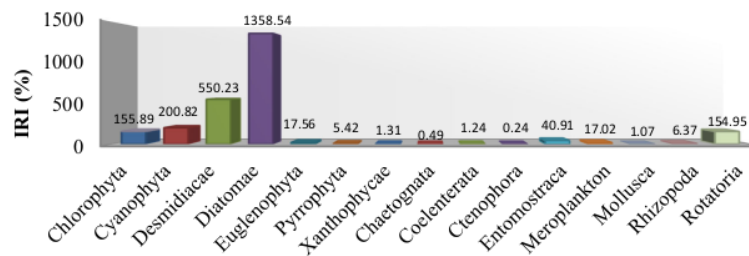


Figure 1. Food habit of The *R. argyrotaenia* Blkr

Estimation IRI result showed that the greatest composition of The *R. argyrotaenia* Blkr feed were phytoplankton from Diatomae (1358.54%) and Desmidiaceae (550.23%); and zooplankton Rotatoria (154.95%). Meanwhile the less composition of The *R. argyrotaenia* Blkr feed was zooplankton from Ctenophora (0.24%). The food composition of The *R. argyrotaenia* Blkr based on Index of Relative

Importance value indicating that the main food of The *R. argyrotaenia* Blkr was a group of phytoplankton from taxa Bacillariophyceae. [12] states that Bacillariophyceae which is always abundant in acid waters can be a good predictor for the abundance of The *R. argyrotaenia* Blkr.

Feeding habit of The *R. argyrotaenia* Blkr which determined by Importance Relative Index (IRI) every month aims to know feed variety eaten by The *R. argyrotaenia* Blkr in waters of Sungai Dua Village. The monthly food composition of The *R. argyrotaenia* Blkr based on IRI value calculation presented in Figure 2.

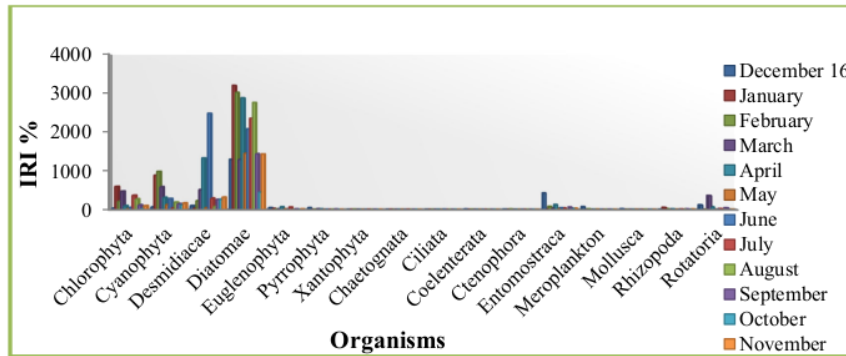


Figure 2. Importance Relative Index (IRI) The *R. argyrotaenia*, Blkr

Based on estimation of Importance Relative Index (IRI) in December 2016 till November 2017, feed composition of The *R. argyrotaenia* Blkr was Phytoplankton from Diatomae with IRI about 454,38 - 3197,31%, Cyanophyta 48,93% - 980,95%; and zooplankton from Entomostraca has the highest IRI in December 2016 about 423,15%.

Based on Figure 2, it is known that Diatomae is the main food of The *R. argyrotaenia* Blkr in December 2016 until November 2017. According to [14], Diatomae is a single-celled plant that enters the Bacillariophyceae class, consisting of two cells which combine to become one called epitheka (top) and hypotheka (bottom). The distribution of diatomae varies depending on the environmental factors that influence it such as factors of temperature, salinity, water flow, and turbidity [15].

3.2 Stomach-Content Analysis of The *R. argyrotaenia* Blkr

Stomach-content Analysis use to observe relative feed composition of The *R. argyrotaenia* Blkr with comparing between weight of stomach content and total body weight of fish. [13] and [16] stated that determination relative feed composition level based on size to know stomach-content index of each level of fish size, and fish species. Every size level have different stomach content level because gut has optimum capacity to digest food depend on each level size. The value of the relative feed consumption level based on the size class showed in Figure 3.

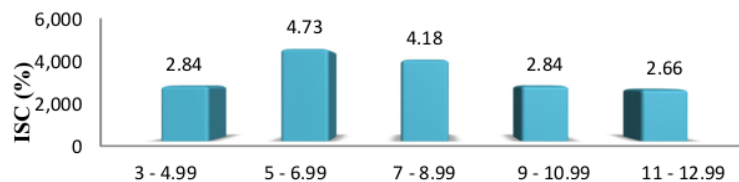


Figure. 3 Relative food consumption of The (*R. argyrotaenia*) Blkr

According to Figure 3 that relative food consumption based on size level have different value. The *R. argyrotaenia* Blkr with size from 11-12.99 cm has the lowest value of feed consumption was equal to 2.66%, while The *R. argyrotaenia* Blkr at medium size ie 7-8.99 have a relatively high feed consumption value of 4.18%. Then for The *R. argyrotaenia* Blkr in large sizes, ie 5-6.99, the highest feed consumption value was 4.73%. According to [12], the factors that influence the index of gastric fullness include body weight and size, shape and size of the stomach, the condition of the body of the fish, and differences in fish habitat.

3.3 Feeding Habit of The *R. argyrotaenia* Blkr

Feeding habit has great relation with food habit. Feeding habit of The *R. argyrotaenia* Blkr showed in Tabel 2:

Table 2. Feeding habit of The *R. argyrotaenia* Blkr.

Teeth	Mouth	Intestine
Blunt teeth and small	Small mouth, mouth inside cavity consist of gill	long, longer than its body
Gut	Stomach content	Note
There is no gut, front side of intestine extended like a gut	Phytoplankton: Chlorophyta, Cyanophyta, Desmidiaceae, Diatomae, Euglenophyta, Pyrrophyta, Xanthophyceae Zooplankton: Chaetognata, Coelenterata, Ctenophora, Entomostraca, Meroplankton, Mollusca, Rhizopoda, Rotatoria	Omnivore eats plankton

According to Table 2 that The *R. argyrotaenia* Blkr categorized as omnivore fish. Omnivore fish dominance eat plankton has small mouth. Mouth also consist of long and soft gill fillament to filter plankton as food. Plankton will come through to the mouth with water simultaneously. Generally, plankton feeder's mouth have no teeth, no gut like wild fish and long intestine [5]

4. Conclusions

Based on the result, can be concluded that: (1) The *R. argyrotaenia* Blkr categorized as Omnivore fish, (2) The primary food of The *R. argyrotaenia* Blkr was phytoplankton of diatomae (454,38% - 3197,31%) and complimentary food was zooplankton of entomostraca (14,61% - 423,15%).

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