Preface

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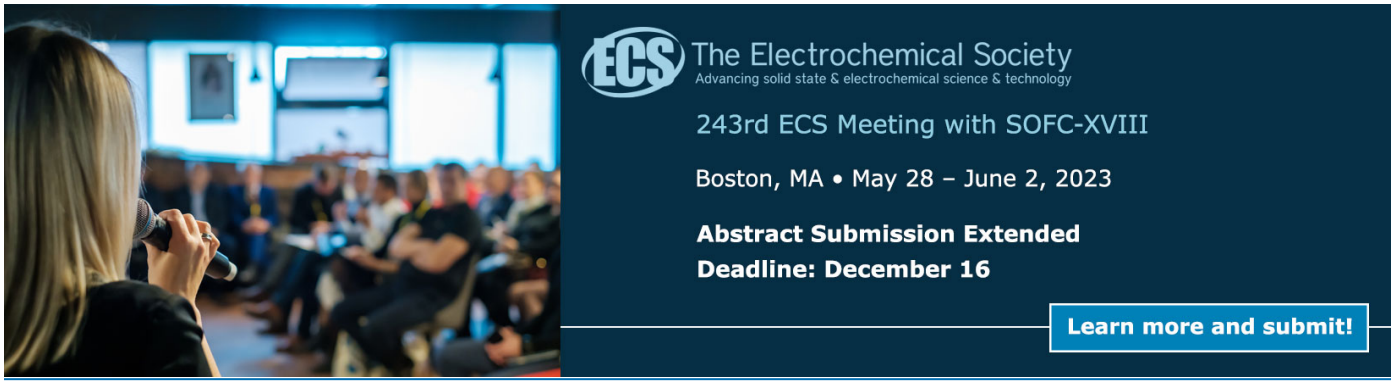

PREFACE

Agriculture Faculty of Sriwijaya University has organized **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE)** on September 29th, 2021 in Palembang, Indonesia. The objective of SAC-SAFSE presented the latest state of the arts related to Sustainable Environment, Agriculture and Farming System.

As we all might have also seen in the last decade that there has been a quickening of the pace of research and scholarship among both social and natural scientists, as well as among policymakers and activists. To this end, with the support of by Agriculture Faculty, Universitas Sriwijaya, Indonesia and co-organized by Kasetsart University, Thailand; SEARCA Southeast Asia; and Murray State University, USA, organize Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System. The SAC-SAFSE was held to bring together social and natural scientists, and environmental activists to discuss results from ongoing research projects, to find ways to enhance the exchange of knowledge among disciplines, and to establish global partnership both in research and business. We also would like to underline that the SAC-SAFSE would be an annual agenda of Agriculture Faculty, Universitas Sriwijaya.

Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE) 2021 was implemented virtually, this is because the cov-19 pandemic is still spreading. The conference was perform using zoom. The **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE)** event is virtually implemented using Zoom breakout room with a model that all invited speakers and presenters are given time to present their material for 10 minutes followed by question and answer session, through chat forums and Q&A forums provided by the Zoom application and also direct questioning system. Overall, the conference took 10 hours, initially from registration into closing ceremony. The participation of the keynote speakers, invited speakers, and participants were originally from inside and outside countries such as Malaysian, Thailand, Philippines, Vietnam, Sri Lanka, Japan, US, and various regions in Indonesia

Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE) 2021 was supported by stable internet network system and a zoom application. It met several technical obstacles encountered by the participants, such as difficulty to present their PPT and video. The virtual conference has weakness due to less interaction between participants.

The **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE)** 2021 committee received 94 manuscripts and a total of 91 papers were presented and discussed. The papers were authored by researchers Indonesia, Malaysian, Thailand, Philippines, Vietnam, Sri Lanka, Japan, US. All papers have been reviewed to be given critical comments and improvements by a panel of reviewers as purpose enhancing quality of the papers. There were 69 papers were selected and eligible to be published in the proceeding as results of review process.

We sincerely express our gratitude to the international/national advisory committee, presenters, participants, contributors of **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE) 2021**. High appreciation to the whole committee team for their excellence in managed and organized all parts of this conference even though should face some obstacles due to pandemic condition. The hard works by the Organizing Committee are also highly appreciated. We also express our sincere gratitude to all sponsors, i.e. BNI and BKS Barat. Last but not the least, we are thankful to IOP EES Conference Series for producing the proceeding.

Palembang, 29th September 2021

Dean of Agriculture Faculty Universitas Sriwijaya

Dr. Ir. A.Muslim, M.Agr

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

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Food Habit and Feeding Habit of The Silver Rasbora (*Rasbora Argyrotaenia* Blkr) In Waters of Sungai Dua Village, Downstream of Komering 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 Komering 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 Komering 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 Komering River, South Sumatra. One of fish that remain found in the waters of Sungai Dua Village, Downstream of Komering 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 rinced by water till formaline odor disappear. 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
Desmidiacae	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
Xanthophycae	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.

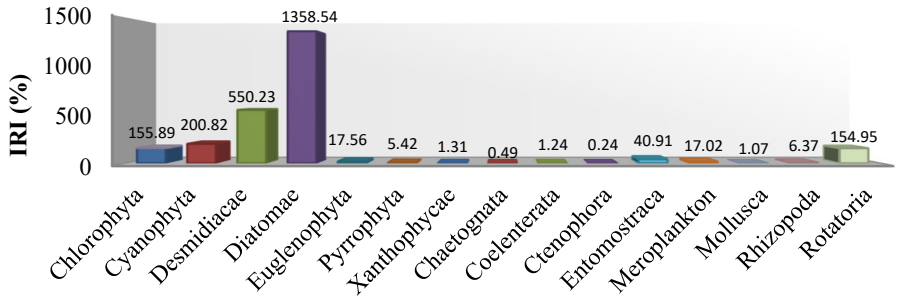

Figure 1. Food habit of The *R. argyrotaenia* Blkr

Estimation IRI result showed that the greatest compotition of The *R. argyrotaenia* Blkr feed were phytoplankton from Diatomae (1358.54%) and Desmidiacae (550.23%); and zooplankton Rotatoria (154.95%). Meanwhile the less compotition 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 Baccilariophyceae. [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 variaty 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.

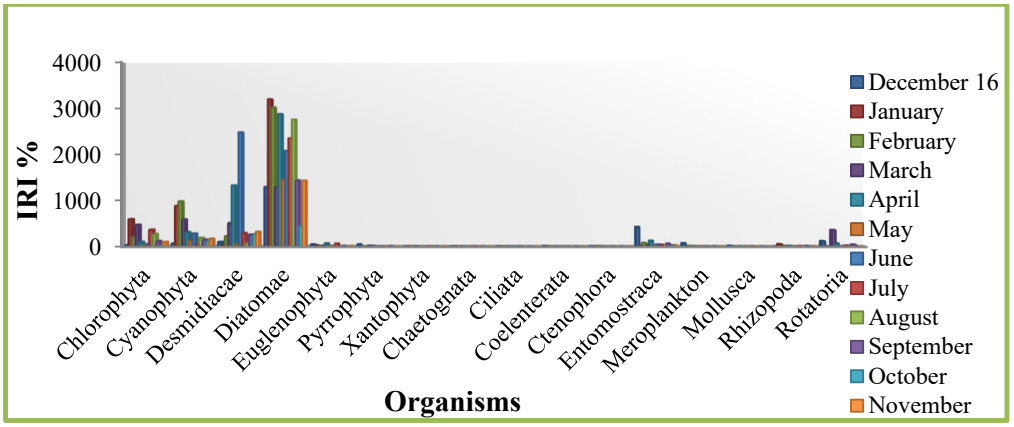

Figure 2. Importance Relative Index (IRI) The *R. argyrotaenia,*Blkr

Based on estimatimation of Importance Relative Index (IRI) in December 2016 till November 2017, feed composition of The *R. argyrotaenia* Blkr was Phytoplankton from Diatomae wit 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 epiteka (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, Desmidiacae, Diatomae, Euglenophyta, Pyrrophyta, Xanthophycae **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 complimantory food was zooplankton of entomostraca (14,61% - 423,15%).

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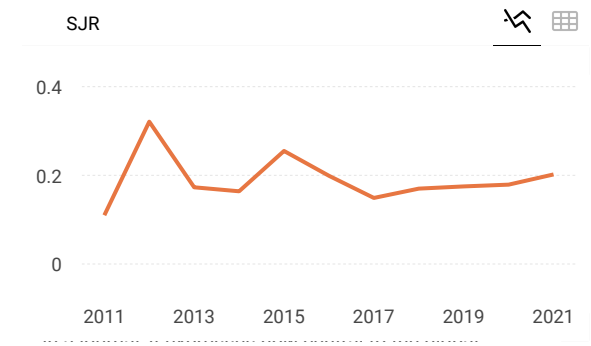

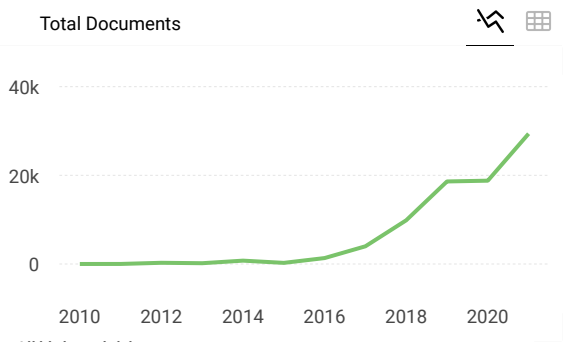

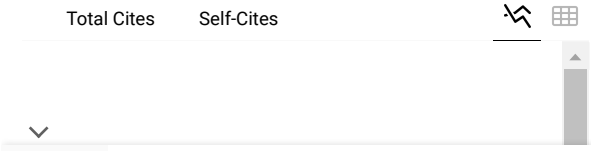

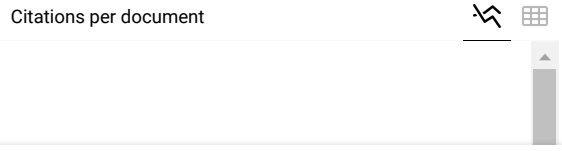

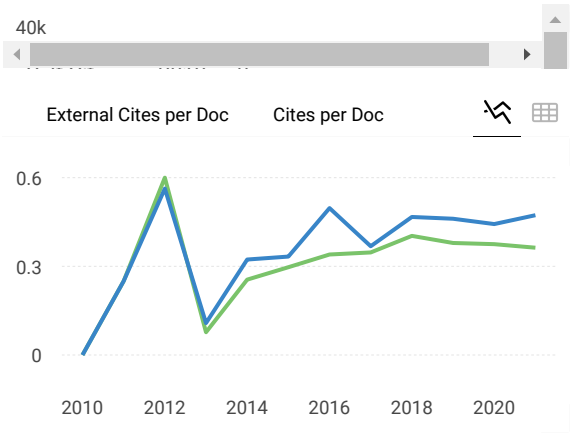

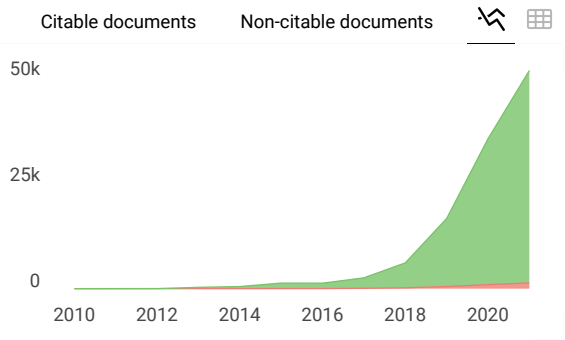

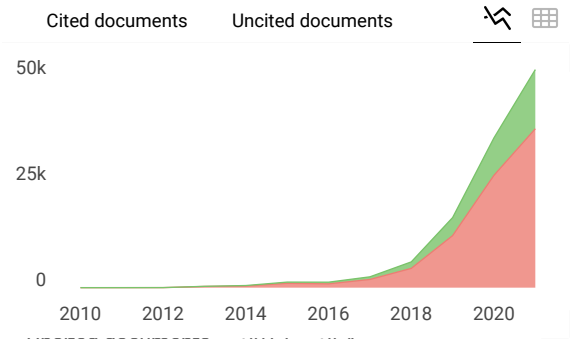

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