

**FOOD HABITS AND FEEDING HABITS OF WHITE SNAPPER FISH  
(*Lates calcarifer* Block) IN TERUSAN DALAM (INSIDE CANAL) WATERS, EAST  
COAST OF SOUTH SUMATERA PROVINCE**

**Moh. Rasyid Ridho<sup>1</sup> and Enggar Patriono<sup>1</sup>**

**<sup>1</sup>Biology Department, Faculty of Mathematics and Natural Sciences, Sriwijaya  
University. Jl. Raya Palembang-Prabumulih KM 32 Indralaya, Indonesia**

Corresponding author: Moh. Rasyid Ridho, email: rasyid\_mr@yahoo.com

**ABSTRAK**

Penelitian mengenai kebiasaan makanan dan cara makan ikan kakap putih (*Lates calcarifer* Block) di perairan Terusan Dalam pantai Timur Provinsi Sumatera Selatan telah dilakukan pada bulan Maret – Juni 2012. Tujuan penelitian ini adalah untuk menganalisis kebiasaan makanan dan cara makan ikan kakap putih (*Lates calcarifer* Block) yang terdapat di perairan Terusan Dalam Taman Nasional Sembilang. Pengambilan sampel dilakukan dengan metode *purposive sampling* dengan menggunakan alat tangkap jaring tangsi dengan mata jala berdiameter 3-4 inchi. Hasil penelitian dari bulan Maret sampai bulan juni didapatkan 31 ekor *Lates calcarifer* Block. Berdasarkan Indeks Relatif Penting (IRP), makanan alami ikan kakap putih (*Lates calcarifer* Block) pada bulan Maret – Juni 2012 terdiri dari udang sebagai pakan utama dengan Indeks Relatif Penting 72,37%-99,51%, ikan sebagai pakan pelengkap dengan Indeks Relatif Penting 11,33%-27,63% dan sebagai pakan tambahan yaitu cacing dengan Indeks Relatif Penting (IRP) 0,49%.

Kata kunci: kebiasaan, makanan, cara makan, ikan kakap putih

**ABSTRACT**

Research about the food habits and feeding habits of white snapper fish (*Lates calcarifer* Block) in Terusan Dalam (inside canal) waters, East coast of South Sumatera Province, had been done during March to June 2012. The purpose of this research was to analyze the food habits and feeding habits of white snapper fish (*Lates calcarifer* Block) on Terusan Dalam (inside canal) waters, East coast of South Sumatera Province. Sampling method of the fish was purposive sampling method using Tangsi net. The results of this research showed that the number of fish from March to June totaled 31 individuals of fish. Based on the Relative Importance Index (RII), the natural food of white snapper fish (*Lates calcarifer* Block) in March to June 2012 consisted of shrimp as the main food with the Relative Importance Index 72.37-99.51%, the fish was as the complement food with the Relative Importance Index 11.33-27.63%, and as the additional food was the worm with Relative Importance Index 0.49%.

Key words: food habits, feeding habits, white snapper fish

## INTRODUCTION

Canal In is located in the east coast of South Sumatra Province, and is an area of wetland conservation tidal widest on the east coast of Sumatra island which consists mainly of mangrove forests. South Sumatra, East coast fed by more than 30 rivers and empties into the Bangka Strait and South China Sea. These rivers originate from freshwater swamp forest and peat bog which is behind the mangrove forest. Seaway located in Region Sembilang National Park. Nine National Parks are set based on the Minister of Forestry No. 95 / Kpts-II / 2003 dated March 19, 2003 with an area of  $\pm 202,896,31$  ha. National park is a nature conservation area which has original ecosystem, managed by the zoning system that is used for the purposes of research, science, education, aquaculture, tourism and recreation (Anon<sup>c</sup> 2010: 1).

Barramundi (*Lates calcarifer* Block) is a fish that has a large enough tolerance to salinity (*euryhaline*) and a fish katadromous (bred in freshwater and seawater mating). The properties that causes white snapper can be cultivated in the sea, and fresh water ponds. In some areas in Indonesia barramundi known by several names such as: Obviously, map, cabek, shreds (Central Java and East Java), dubit Tekong (Madura), talungtar, pica-pica, glass (Sulawesi). White snapper fish belongs to the family Centroponidae (Mintardjo 1995: 2).

Another factor affecting the number of fish population is the availability of food in the waters where her life. According Effendie (1997) is an organism of food, materials and substances used fish to support their needs. While eating habits (*feeding habits*) is when taking fish behavior and foraging. To support the successful cultivation of barramundi (*Lates calcarifer* Block) natural food fish would be necessary, therefore there is need to investigate the eating habits of barramundi (*Lates calcarifer* Block) so that it can be seen the food habits of barramundi (*Lates calcarifer* Block).

## MATERIALS AND METHODS

This study was carried out from March to June 2012. The samples of water and fish do in Seaway East Coast of South Sumatra province. Further more the identification. Analysis of the stomach contents barramundi conducted at the Laboratory of Animal Physiology, Department of Biology, State University of Sriwijaya.

### Tools and materials

The tools used in this study include: distilled water, bottled *Fial*, *dissecting sets*, DO meter, buckets, measuring cups, *ice box*, fishnets, camera, plastic bags, rubber bands, paper labels, filter *paper*, *microscope*, *petri disk*, pH meter, a pipette, a ruler, a *refractometer*, gloves, *Secchi disk*, digital thermometer, *tissue* and an analytical balance and weight per kg. While the materials needed are water, formalin 4%, and samples White snapper fish (*Lates calcarifer* Block) which is derived from water canal in Sembilang National Park South Sumatra.

### Ways of working

Fish sampling using *purposive sampling* method use a net barracks with mounting zig-zag with nets measuring length of 100-500 meters and with a diameter of 3-4 inch mesh mounted cover part of the waters along the river with nets height ranges from 5-15 m , installation at night and in the lift in the morning.

Fish numbered, measured the total length, body weight is weighed, then dissected to download the contents in the intestines and cleaned with water, put in a plastic containing 4% formalin and included in the *ice box*.

Intestine that has been preserved is then washed with clean water, then each intestine dissected samples, extracted the contents of feed and weighed to determine the volume of food in the gut contents of fish. Food contents are separated according to its kind, and one each in the measuring volume, and then identified.

### Data analysis

The food composition and including everything that is in the stomach barramundi will be analyzed as follows: the stomach is opened, bulk density measured and in daily frequency of gastric contents, while to know the type of food eaten is used Index Relative Important (IRP) Pinkas *et al.* (1977) in Ridho *et al.* (2010).

$$\text{IRP} = (\text{N} + \text{V}) \text{F}$$

Where: N = The total percentage of one kind of food (%)

V = Percentage of one kind of food (%)

F = Frequency of one kind of food in the stomach (%)

### How Eating Habits

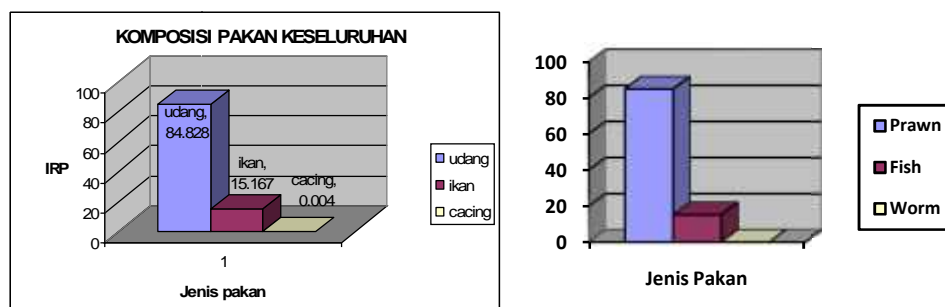
Determination habitual way of eating is used to determine whether the fish is properly included in the class of carnivorous and to determine variations in a wide group of food.

## RESULTS AND DISCUSSION

### Habits of Food Composition and Analysis

Based on the research that has been conducted from March to June of 2012 at the point of sampling sites have been analyzed intestines and stomach as much as 6 tails in March, 11 head in April, and as many as 14 tails in June. From the analysis of the intestines and stomach barramundi (*Lates calcarifer* Block) taken in the waters of the canal in Sembilang National Park, it was found that the natural food of fish barramundi consists of fish and shrimp.

Important Relative Value Index of the composition of natural forage fish and white snapper (*Lates calcarifer* Block) can be seen in Figure 1.



Picture. 1 The bar chart Relative Index Important Fish White Snapper

Based Relative Index Important (IRP), the main feed barramundi (*Lates calcarifer* Block), in March, April and June 2012, namely shrimp with important values Relative Index (IRP) ranged from 72.37 to 99.51%. While the fish is a complementary feed with important Relative Index (IRP) ranged from 11.33 to 27.63%. And as a feed supplement that is a worm with important Relative Index (IRP) 12:49%.

Based on Figure 1, shrimp is the main feed barramundi (*Lates calcarifer* Block), especially in March and May 2012, according to Hystin in Anggraini (1999: 20) states that the shrimp abundant in waters many water plants that serve to shelter and area foraging for shrimp. In addition, the shrimp have limited movement in reaching feed and have properties that can adapt to the feed tersedian in the environment. The state of shrimp that is not too far-reaching in seeking food or activity causing barramundi (*Lates calcarifer* Block) is easy to eat it. Because shrimp have the same properties as the barramundi that is the habit of eating at night as well as the movement of shrimp which is relatively slow compared to fish, so that they have greater chances of getting caught and eaten by the fish barramundi (*Lates calcarifer* Block).

The discovery of the shrimp in the contents of the intestine and stomach barramundi (*Lates calcarifer* Block) also can clarify the type of substrate that is where the waters of the canal In previously known these waters have a substrate of mud and sand which is also the preferred habitat of the shrimp. Because in general the shrimp would hide during the day to avoid predators, many of whom live in holes in the sand (Pratiwi 2008: 22).

Fish is a complementary feed eaten by fish for barramundi (*Lates calcarifer* Block). According Sutomo, *et al* (1997), Son of barramundi (*Lates calcarifer* Block) the nature of cannibals, namely eating others and they like to live alone (*solitary*). Barramundi (*Lates calcarifer* Block) including carnivores (meat eaters). He really liked the food that is still alive and active as crustaceans and fish.

Based on the research that has been done fish feed also prefer barramundi (*Lates calcarifer* Block) in because barramundi (*Lates calcarifer* Block) belong to the carnivorous fish that has bowel is shorter than the length of the body (Appendix 4) so that the food fleshy can be more easily digested. Where according Lagler *et al* (1962) in Anggraini (2008: 19) states that the predatory fish is a fish that eat large animals in the waters, therefore fish predators have strong teeth.

While the discovery of intestinal worms barramundi (*Lates calcarifer* Block) allows that the worm is a feed supplement or a parasite that lives in the body of barramundi (*Lates calcarifer* Block). According Sarjito & Desrina (2005: 5) the entry into the body caing barramundi (*Lates calcarifer* Block) is through food such as shrimp, snails, small fish all of which are intermediate host in the life cycle of worms. Therefore, the fish are carnivores and omnivores have purportedly infected with a worm which is much larger in compare herbivorous fish.

**How Eating Habits**

Determining how eating habits barramundi (*Lates calcarifer* Block) can be seen in Table 1 and Figure 2.

Table 1. Determination habitual way of eating fish *Lates calcarifer* Block

Tooth shape	shape mouth	shape intestine	shape Stomach	entrails	Information
Viliform, found no canine teeth.	Mouth large, upper jaw length to reach behind the eyes	Short, sometimes shorter than the length of the body	Hull with varied shapes	1. shrimp 2. fish 3.The worm	Is a hallmark of carnivorous fish.



**Figure 2.** The shape of the teeth barramundi (*Lates calcarifer* Block)

As is known the digestive process is said to be the maximum starting amount of food eaten by the fish going into the stomach. While digested by the enzyme, these foods will slowly move to the rear segment. In the intestine starts to happen absorption of nutrients products of digestion, and food scraps that can not be digested, then be excreted through the intestines. Judging from the digestive process is therefore there are foods that are digested more and not yet fully digested the sample contents of the intestine and stomach barramundi (*Lates calcarifer* Block) which is characterized by the presence of the body pieces of shrimp and fish were found in the stomach of the fish (Fujaya 2002: 130).

Length of the colon describe specialization adjustments in food habits. Based on observations that have been made based on the contents of the intestines and stomach known that barramundi (*Lates calcarifer* Block) belong to the group of fish *stenophagic*, which means eating fish food that stuff just a little or narrow. According to Nikolsky (1963) in Ramadan (2008: 5), based on the amount of a wide variety of food consumed, the fish are grouped into: (1) *euryphagic*, that eating fish a variety of foods; (2) *stenophagic*, fish-eating foods that stuff bit or narrow; and (3) *monophagic*, namely fish whose diet consists of one kind of food alone.

## CONCLUSION

Based on the research that has been carried out, got some conclusions as follows:

1. Intestinal contents and stomach fish for barramundi (*Lates calcarifer* Block) consists of natural food shrimp and fish.
2. The main feed barramundi (*Lates calcarifer* Block) is shrimp with important values Relative Index (IRP) ranged from 72.37 to 99.51%, while the supplementary feed is fish with important Relative Index (IRP) range 11.33 to 27.63%.
3. Feature barramundi (*Lates calcarifer* Block) is having viliform teeth, mouth shapes were big and had a gut shorter than the total length of the body and has a hull shape that varies.

Based on these results, it is advisable to use the size of the barramundi (*Lates calcarifer* Block) is more than 50 cm for further research and on a regular time period for one year.

## ACKNOWLEDGEMENTS

Thanks are due to Nurfadilah F for the field assistances and suggestions in the research activities.

## REFERENCES

- Affandi, R.; Djaja Subandja Sjafei, M.F. Sulistiono. 2005. *Fish Physiology*. IPB. Bogor. i-154 pp.
- Alfiansyah, M. 2012. Effect of Water Temperature on Organism. Articles. <http://www.sentraedukasi.com>
- Anonymous<sup>a</sup>. 2008. *Long-Term Management of Sembilang National Park, Period 2009-2028*. The Sembilang National Park Authority. South Sumatera.
- Anonymous<sup>b</sup>. 2008. *Profile of Tanah Pilih Village of Terusan Dalam River*. The Sembilang National Park Authority. South Sumatera.
- Anonymous<sup>c</sup>. 2010. *The Inventory/Monitoring of Fisheries Natural Resources of Sembilang National Park*. The Sembilang National Park Authority. South Sumatera.
- Anonymous<sup>d</sup>. 2012. White Snapper Fish. [http://www.google.co.id=ikan+kakap&sourceid=opera\\_suggest](http://www.google.co.id=ikan+kakap&sourceid=opera_suggest). Accessed 03-01-2012
- Anonymous<sup>e</sup>. 2012. Sembilang National Park. <http://www.tnsembilang.com/index.php/park-blog>. Accessed 03-01-2012
- Djamali, Asikin; Sumadhiharga, Ono Kurnaen; Sutomo. 1997. Potential and Distribution of Fish Resources of Indonesian Sea Waters. Indonesian Institute of Sciences. *Journal*. 142-160 pp.
- Effendie, M.I. 1979. *Method of Fisheries Biology*. Yayasan Dewi Sri. Bogor. ix + 112 pp.
- Effendie, M.I. 1995. *Fisheries Biology*. Nusatama Library Foundation. Yogyakarta. xii + 157 pp.
- Fujaya, Yushinta. 2002. *Fish Physiology, Basic of Fisheries Technology Development*. Depdiknas. Jakarta. i-204 pp.
- Gaffar, A.K.; Rupawan; K. Fatah 2006. *Research of Fisheries Characteristics in the Sembilang River Estuary of Banyuasin Regency*. Technical Report of BRPPU Palembang. ii-14 pp.
- Kottelat, M; A.J. Whitten; S.N. Kartikasari; S. Wirjoatmojo. 1993. *Freshwater of Western Indonesia and Sulawesi*. Periplus Edition. London.
- Mintardjo, K.; H. Santoso; Holy Antoro, 1995. *Hatchery Technology of White Snapper (Lates calcarifer, Block)*, BBL - Lampung. *Journal of Research and Technology Minister*. 1-13 pp.
- Pratiwi, Rianta. 2008. Biological Aspects of Shrimp with Important Economic Value. *Journal of Oceanography*. Indonesian Institute of Sciences. Bogor. 15-24hlm.
- Rahardjo, M.T.; Djodjas Sijafei; Ridwan Afandi; Subistiono. 1989. *Fish Biology*. IPB. Bogor.
- Ridho, M.R.; M.F. Rahardjo; A.Y. Franata. 2010. Food Habits and Weight Length Relationship of Senangin (*Eleutheronema tetradactylum* (Shaw) at the Beach Water, South Sumatra. *Proceedings of the International Seminar-Workshop on "Lowland Integrated Development and Management"*. Theme: The Role of Agro-Eco-Edu Program Through a Multi-stakeholders Participation on the Sustainability of Lowland Development and Management, South Sumatra, Indonesia. 1-4 pp.

- Sarjito, M and Desrina. 2005. Analysis of Endoparasitic Worm Infection in the Body of White Snapper Fish (*Lates calcarifer* Block) from Coastal Waters of Demak. *Journal. Faculty of Fisheries and Marine Sciences. Diponegoro University.* 1-8 pp.
- Walpole, R.V.E. 1993. *Introduction to Statistics. Translation Bambang Sumantri. (Third edition).* PT. Gramedia. Jakarta.
- Weber, M and De Beufort. 1929. *The Fishes of the Indo-Australian Archipelago.* E.J. Brill Ltd. Leiden. Volume V. 396-397 pp.