FEEDING HABITS AND LENGTH -WEIGHT RELATION OF SENANGIN FISH (Eleutheronema tetradactylum (Shaw)) CAUGHT IN SUNGSANG WATERS, SOUTH SUMATERA

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ABSTRACT

The research about "Feeding Habits and Length-Weight Relation Of Senangin (*Eleutheronema tetradactylum* (Shaw)) which Caught In Sungsang Waters, South Sumatera" had been done during Juli 2007 which divides into two parts: TPI Sungsang (the place for selling fish with negotiation), South Sumatera for sampling, and identification at Zoology Laboratory, Biology Department, Faculty of Mathematics and Natural Sciences, Sriwijaya University, Indralaya. The aims of the research were to analyze feeding habits and relation between length - weight of Senangin (*Eleutheronema tetradactylum* (Shaw) which caught in Sungsang Waters, South Sumatera. The results of the research showed that the length-weight relation with formula W = 3,563. 10⁻⁴ L ^{3,9651} with r = 0,9327 which mean that Senangin fish in Sungsang waters had Allometric growth. Senangin fish has the prawn as their primary feeding habits.

Keywords: Feeding habits, length-weight relation, Eleutheronema tetradactylum, Sungsang waters-South Sumatera.

INTRODUCTION

The waters of river downstream usually is the area which is rich of nutrient because of much nutrient in river water currence to that area. An river downstream area i8n Indonesia which enough potensial for fishery is Sungsang waters. Based on Fishery Office of Banyuasin Regency (2004), Sungsang waters is included in Banyuasin II District, Banyuasin Regency, South Sumatera Province. The Marine waters of Banyuasin has marine area 1.765,4 kms² with length of beach line 275 kms. Marine condition which is enough wide imply this area is potential for fisher activity.

Senangin fish was caught by fishers only in any season with using drift gillnet, "jala", beach seine (Burhanuddin *et al* 1980). Senangin fish is the fish which has high economic value, which is usually sold in fresh condition and salty. Based on Amrizal (2006), the result of fisher's Senangin fish catching in Rohil Regency, South Sumatera reach the value up to 36 tons each year. Many quantity of that fish was sold to overseas market, such as Malaysia and Singapore. Based on Marine and Fishery Office of South Sumatera Province (2007), production of Senangin fish in 2006 was 296.4 tons.

Based on Effendie (1979), one of the factor which is determines for fish growth and population is the food. The food is the factor which determines for the fish population, growth, and condition, where as the food kind of any fish species is usually based on fish age, place and time. On any waters, if any environmental changes which imply the change of food stock, the fish will change it's feeding habits. Fundamental of fish feeding habits is by study of digestive contents of fish. Lenght-weight fish body relation is used to know whether that fish change the feeding habits continously in fish body proportinally (isometric growth) or that fish change with not proportional between fish length growth and it's weight (allometric growth). Proceeding of an International Seminar-Workshop on Integrated Lowland Development And Management 2010 Palembang March 18 - 20, 2010

The fish feeding habits is one of fundamental in fish domestication before the fish is cultured. For that reason, this research had been done to analyzing the feeding habits of Senangin fish (*Eleutheronema tetradactylum* (Shaw) and lengthweight body relation of Senangin fish (*Eleutheronema tetradactylum* (Shaw) in Sungsang waters, South Sumatera.

RESEARCH METHODOLOGY

Time and Place

The research had been done during July to September 2007, which was divided into 2 steps, that was fish sampling at TPI (place of fish selling by negotiation). Sungsang, South Sumatera, where as identification of fish food species in gastric of Senangin fish was done in Zoology Laboratory, Biology Department, Mathematics and Natural Sciences Faculty, Sriwijaya University Indralaya.

Equipment and Material

The equipments used in this research were writing tools, disecting set, ice box, yellow cloth, digital camera 6 megapixel, transparent plastic bag, ruler, analytic beam and 1 kg beam. The materials used in this research were alcohol 70%, aquadest, and formalin 4%, Senangin fish (*Eleutheronema tetradactylum*).

Procedure

Field Work

Senangin fish (*Eleutheronema tetradactylum*) were collected from fishers caching of Sembilang, South Sumatera. Senangin fish were cached by fihers at around Alang Enteng Sea and Palu Sungsang Sea. After collecting, the fish were measured on length-weight body, and then the fish were dissected to get the gastric, and then be stored in formalin 4%.

Laboratory Work

The gastric samples which were stored in formalin 4%, and then be stored for 10 minutes by using running water and be replaced twice to reduce formalin odor. The gastric samples which were cleaned, and then they were stored in alcohol 70% so that can be stored along time and can be identified in laboratory. Each gastric sample was dissected to know food kind which was there in the gastric.

Data analyzes

Composition and Feeding Habits Analyzes

Food composition was included for everything in Senangin fish gastric, where as. Senangin fish food were analyzed as follows: the gastric was opened, the contents was measured for the weight, and then the kind of food was grouped. Each kind of food was measured for the weight and be writed for the frequency in the gastric. To know the kind/species eated by Senangin fish was used Important Relative Index (IRI) by Pinkas *et al.* (1977) in Ridho *et al.* (2005).

IRI = (N + V) F

Where N = Persentage of total of one food kind

V = Persentage of volume of one food kind

F = Frekuency of one food kind in the gastric

Length-Weigth Relation of Fish

Based on Effendie (1979), the relation of length-weight was analyzed by Hile formula, as follow:

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 $W = a L^{b}$ Where W = Fish weight (gram) L = Fish total length (cm)

a and b = Regression constanta of total lenght-weight of fish

Based on Ricker (1973) in Effendie (1979), there are 3 criteria of fish growth, that is:

- a) If score b < 3, the fish weight growth is slower than the lenght growth (allometric growth, thin),
- b) If score b = 3, the fish lenght growth and the fish weight growth are ballance (isometric growth, ideal),
- c) If score b > 3, fish lenght growth is slower than fish weight growth (allometric growth, fatty).

RESULTS AND DISCUSSION

During the research, 44 specimens of Senangin fish had been collected with total length about 19.0 - 28 cm and weight about 40 - 200 gr. The dominant total length was 25.0 - 27.9 cm with 25 specimens or 56.81% (Table 1). This respect was different with the results of research by Djamali *et al.* (1985) which got Senangin fish specimens with total lenght about 12.6 - 15 cm in downstream of Musi river and research results by Burhanuddin (1980 b) which report Senangin fish coughed by "tuguk" in downstream of Banyuasin river up to 200 mm. FAO (1974), Weber & Beaufort (1922) which report Senangin fish with total lenght up to 2000 mm. Patnaik (1970) got Senangin fish with total lenght 1000 mm in Danau Chilka, India, and Ginarhayu (1983) got Senangin fish in Jakarta bay with total lenght 216.23 mm.

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Total length (cm)	Frequency	Percentage
19.0 - 21.9	1	2.27 %
22.0 - 24.9	14	31.8 %
25.0 - 27.9	25	56.81 %
28.0 - 30.9	4	9.09 %
TOTAL	44	100 %

Table 1. Total length of Senangin fish

Feeding Habits of Senangin Fish

There were 27 fish gastric specimens which content the food from 44 samples dissected. The observation results to 44 gastric samples of Senangin fish showed that the food composition of Senangin fish which was coughed by fishers in Sungsang waters was prawn (78.28 %), fish (17,26 %) and materilas which can not be determined (4.35 %). The undetermined materilas were exist because of the content of fish gastrict had been broken by digestive process and time catching which was not on enough good time. Based on Laevastu & Hayes (1981), the catching results in the night were bigger than in the noon because of feeding habits of Senangin fish and there was the food in the night.

The food kinds which were gotten in gastric of Senangin fish were prawn, fish and undetermined materials. The research by Djamali *et al* (1985) also got the prawn, Cumi-cumi fish, warm, Brachyopoda larvae in gastric of Seanangin fish.

The result of calculation to IRI showed that IRI for prawn was 103.92, fish 10.10 and undetermined materials 0.549 (Table 2). Based on IRI value, the prawn was main of feeding habits of Senangin fish, that was 103.92. This respect was suited with statement of Kottelat *et al* (1993), that the fish which has an oral at inferior, it

is maybe the detritus feeder or small invertebrate which live in benthic waters or algae which is lost from corral, prawn and crab.

Food	N		V		F		
	Sum	%	Weight	%	Existing	%	IRI
Prawn	36	78.26	8.67	70.20	21	70.00	103.92
Fish	8	17.39	3.20	25.91	7	23.33	10.10
Undetermined	2	4.35	0.48	3.89	2	6.67	0.549
Total	46	100	12.35	100	30	100	

Table 2	Feeding	habits of	Senangin	fish
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The prawn and fish dominated gastric content of Senangin fish. This respect because the habitat of Senangin fish in Sungsang waters is estuaria. Based on Knox and Myabara (1984) *in* Nugroho *et al* (2001), estuaria area is a habitat which is important for big number of fish and prawn species to hatching and nursing the juvenile. Some fish larvae which is hatched in offshore sea also migrates to an estuaria area on larval phase.

Based on food composition which was gotten in fish Senangin gastric and the intestine which is shorter than the total lenght, so this fish is grouped as the carnivor fish. This respect is also supported by research result of Chacko & Krisnamoorty (1949) who researched Senangin fish in Manaar lake, India; Patnaik (1970) in Chilka lake, India and Kurokuma & Abe (1972) in Kuwait, who state that Senangin fish is grouped in carnivore fish.

Length-Weight Relation of Fish

The result of calculation from 44 samples collected and this was calculated for lenght-weight relation, this got the formula as follow:

W = 3,563. 10^{-4} L^{3,9651} with value of r = 0,9327

If r value with average more than 90% in correlation grade, so lenght-weight relation of Senangin fish is very closed.

Based on the formula above, so it can be known that b value is 3.9651 which means that the fish grow as allometric-fatty criteria (fish lenght growth is slower than fish weight growth). Djamali *et al* (1985) also stated that Senangin fish in downstream of Musi river grew with allometric growth with formula W = 1,253. ¹⁰⁻⁴ L ^{3,0382} value of r = 0,9942. But, that was different with research result of Martosewojo *et al* (1987), that Senangin fish in Tanjung Balai Asahan waters, North Sumatera grew with allometric-thin growth in May, August, November, February 1984.

Allometrik-Fatty growth of Senangin fish in Sungsang waters becaused of high abundance of the food in Sungsang waters. The prawn was the main food of Senangin fish which had high potencial in this waters. Based on Martosewojo *et* al (1987), and Djamali *et al* (1985), the prawn dominated the gastric content of Senangin fish.

CONCLUTION AND SUGESTION

Conclution

Based on the research results, it was concluded as follows:

- 1. Feeding habits of Senangin fish coughed by fishers of Sungsang waters were prawn (78.26 %), fish (17.39 %) and materials which can not be identified (4.35 %). The prawn was major food of Senangin fish with IRI 103.922.
- 2. Pertumbuhan ikan Senangin adalah Allometrik dengan nilai b sebesar 3,9651.

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Sugestion

For Senangin domestication, the food needed for Senangin fish is small prawn.

REFERENCES

- Amrizal. 2006. Hasil Tangkapan di Rohil Capai 60 Ribu Ton Pertahun. http://64.233.167.104/search?q=cache:lxHrHunA3EJ:beta.bagansiapiapi.net/ id/newsdetail.php%3Fid%3D72+ikan+senangin&hl=id&ct=clnk&cd=5&gl=id didownload 15 Februari 2008.
- Burhanuddin. 1980 b. Fauna Ikan Yang Ditangkap Dengan Tuguk di Muara Sungai Banyuasin. Sumber Daya Hayati Bahari. (Burhanuddin, M.K. Moosa & H. Razak eds.): 125 - 135.
- Burhanuddin, S. Martosewojo dan A. Djamali. 1980. Ikan-Ikan Demersal di Perairan Teluk Jakarta. *Buletin Penelitian*. Teluk Jakarta Pengkajian Fisika, Kimia, Biologi dan Geologi Tahun 1975 - 1979. Lembaga Oseanologi Nasional. Lembaga Ilmu Pengetahuan Indonesia. Jakarta : 337 - 360.
- Chacko, P.I. & B. Krisnamoorty. 1949. Food and Feeding Habits of The Gulf Manaar. Proc. Indian Sci. Congr. 36 (3): 167
- Djamali, A., Burhanuddin, dan Martosewojo, S. 1985. Telaah Biologi Ikan Kuro (*Eleutheronema tetradactylum*) Polynemidae Di Muara Sungai Musi Sumatera Selatan. *Makalah pada Kongres Nasional Biologi VII*, 29 - 31 Juli 1985 : 83 - 86.
- Dinas Perikanan Banyuasin. 2004. Laporan Tahunan Dinas Perikanan dan Kelautan Kabupaten Banyuasin. Kabupaten Banyuasin. Provinsi Sumatera-Selatan.
- Dinas Kelautan dan Perikanan Provinsi Sumatera Selatan. 2007. Buku Tahunan Statistik Perikanan Tangkap Tahun 2006. Provinsi Sumatera-Selatan.
- Effendie, M.I. 1979. Metode Biologi Perikanan. Yayasan Dewi Sri. Bogor
- FAO. 1974. Eastern Indian Ocean and Western Coastal Pacific. Species Identification Sheet For Fisheries Purpose. FAO UN. Rome, III.
- Ginarhayu. 1983. Beberapa Aspek Biologi Ikan Kuro (*Eleutheronema tetradactylum*, SHAW) di Perairan Teluk Jakarta. *Skripsi*. Universitas Nasional. Jakarta (tidak dipublikasikan).
- Kurokuma, K. and Y. Abe. 1972. Eleutheronema tetradactylum (Shaw) Fishes of Kuwait. Kuwait Institute for Scientific Research. State of Kuwait : 356 pp.
- Laevastu, T and Hayes, ML. Fisheries Oceanography and Ecology Northwet and Alaska Fisheries Center. National Marine Fisheries Service, NOAA, Seatlle. Washington, USA. Fishing News Books Ltd. England.
- Martosewojo, S., A. Djamali., dan Burhanuddin. 1987. Telaah Aspek Biologi Ikan Kuro (Eleutheronema tetradactylum) Dari Perairan Tanjung Balai Asahan Sumatera Utara. Makalah Kongres Biologi Nasional VIII Purwokerto 8 - 10 Oktober 1987.
- Nugroho, B. F.D.J. Priyono, J. Tetalepta, N.L. Nurida, R. Hidayati, Rustamsjah, Wawan. 2001. Pengelolaan Wilayah Pesisir Untuk Pemanfaatan Sumber Daya Alam Yang Berkualitas. *Makalah Kelompok IV Falsafah Sains*. Program Pasca Sarjana. Institut Pertanian Bogor. Bogor
- Patnaik, S. 1970. A Contributions to The Fishery and Biology of Chilka Sahal, Eleutheronema tetradactylum (Shaw). Proc. Indian Nat. Sci. Acad. 8 (1): 33 -36.

A9-5

Proceeding of an International Seminar-Workshop on Integrated Lowland Development And Management 2010 Palembang March 18 - 20, 2010

- Ridho, M. R., Kaswadji, R.F., Jaya, I., dan Nurhakim, S. 2005. Kebiasaan Makanan Ikan Beloso (*Saurida undosquamis*) di perairan Laut Cina Selatan Bagian Selatan (LCS). *Biosfera* 22 (1): 1-4.
- Weber, & L.E. De Beaufort. 1922. The Fishes Of The Indo-Australian Archipelago. E.J. Brill: 196-218.

Ridho, Raharjo, Franata. Feeding Habits and