# Growth Parameter of Baung Fish (*Mystus nemurus Cuvier Valenciennes*) in Bingai River, Binjai City, North Sumatera

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#### Abstract

This research was conducted on March to Mei 2013, in Bingai River, Binjai City, North Sumatera. The purpose of this research to assess the growth parameter of Baung fish in Bingai River, Binjai City, North Sumatera, this study used of representative method technique and analytic description from commercial catch. The result of relationship between weight and length fish (Mystus nemurus) males and females are the values of b range 1,9748-2.2011 and 2,7434-3.0425, then the growth pattern of male and female fish showed that allometric negative, and then condition factor of fish (Mystus nemurus) range 0,0654-0,7994. The growth parameters male fish is L $\infty$  383,25 mm; K 0,01/month<sup>-1</sup>; to -2.39/month and a female fish L $\infty$  383,25 mm; K 1,5/month<sup>-1</sup>; to -0,13/month, and than combinate male and female fish L $\infty$  383,25 mm; K 1,5/month . Based on from curve the fish growth for combined female and male fish by plotting age (years) and total length (mm), that is asymptotic length (L $\infty$ ) 383.25 mm growth rate show that the same of result.

Keywords: Baung fish, Mystus nemurus, Bingai River, Binjai City

#### Introduction

Fisheries in Bingai River, Binjai City, Nort Sumatea area that is important for the activity of fishing, especially fishermen in river area. In addition, The based on information from the Department of Agriculture and Fisheries in Binjai City (2013), Bingai river have a types of fish the other is jurung (*Tor tambroides*), Lemeduk (*Puntius schwanefeldi*) and Baung (*Mystus nemurus*). Baung fish is one of typical fish species in the Bingai River which has high economic value. Hendri (2010), in several years, Baung fish has become a concern of researchers and in the future is expected to be one of the commodities that contribute to increasing aquaculture production.

Especially for Baung fish (*Mystus nemurus*) has over time and population has decreased. Given the importance of the function existence of fish, it is necessary to know the information growth parameters of Baung fish in Bingai river.

The purpose of this study was to assess the growth parameter of Baung fish in Bingai River, Binjai City, North Sumatera.

## Materials and Methods

#### The Experimental Design

The study sites are located in Bingai River, Binjai City, North Sumatera. The research was conducted on March to May 2013. This study used of representative method technique and analytic description from commercial catch, and then collected fish were brought to the laboratory and thoroughly cleaned in Laboratory of Aqutic Resources Management, Agriculture Faculty, Universitas Sumatera Utara.

#### Analysis of Data

#### Relationship of weight and length

Relationship of weight and length fish almost follow the law cubic such as the weight of fish as the cube of its length. But, the relationship on the fish was not the case because of the lengh form of different fish Raharjo *et al*, 2011

$$W = aL^b$$

Description: W = weight (g) L = length (mm), a and b = constants.

#### Estimation of Growth Parameter

Walford (1946) plot is one of the simplest methods of predicting the growth parameters  $L\infty$  and K of the von *Bertalanffy* equation with interval sampling (King, 1995).

$$Lt = L\infty (1 - e^{[-K(t-t0)])}$$

Description :

Lt = length of the fish at the age t

 $L\infty$  = theoretical maximum length (*length asymptotic*)

K = coefficient of growth (*per unit time*)

t0 = theoretical age at the time of a length equal to zero

The results of calculations using the method of ELEFAN I (*Electronic Length Frequencys Analysis*) contained in FISAT II program.

#### **Result And Discussion**

Analysis of relationship between weight and length fish (Mystus nemurus)

Analysis of relationship between weight and length fish (*Mystus nemurus*) obtained through is 29 fish, with details of 26 female fish and 3 male fish, base on (Figure 1).



**Figure 1.** Correlation between weight and length fish (*S. fimbriata*) female (a), male (b) and combinate fish

 Table 1. Relationship between weight and lenght fish (Mystus nemurus)

Gender	Persamaan Hubungan Panjang dan Berat	<b>R</b> <sup>2</sup>	Value prediction b(α=0.05)	Growth after T test (α=0.05)
Female	$W = 1E-05L^{2.893}$	0.97	2.7434-3.0425	Allometrik negative
Male	$W = 0.001 L^{2.088}$	0.99	1.9748-2.2011	Allometrik negative
Combinate fish	$W = 3E-05L^{2.785}$	0.95	2.6432-2.9267	Allometrik negative

So that, relationship between weight and length fish 1,9748-2,2011 a value b range for males and females value of b is 2,7434-3,0425 then the growth patterns of male and female fish show that

negative allometric growth pattern that the length (mm) of fish faster compared to the increase of weight (gr) (Table 1). Heltonika (2009) relationship between total length and body weight of negative allometric fish, sot that length growth is more dominant than weight, it is suspected that fish has a reduced composition of body material used for reproduction so that it affects the value of obesity. The difference in value of b is significant, it is thought that the number of male fish is too small compared to female fish. Statement Sulistiono *et al* (2001) that the relation

#### **Estimation of Growth Parameter**

The results of the analysis of growth parameter male fish is  $L\infty$  383,25 mm; K0,01/month<sup>-1</sup>; t<sub>0</sub> - 2,39/month and a female fish  $L\infty$  383,25 mm; K 1,5/month<sup>-1</sup>; t<sub>0</sub> -0,13/month. Analysis of fish growth parameter show that female and male fish, growth rate show that the same of result. When the lower the coefficient of growth of a species then the longer time required by the species for long approach asimptotic (Venema and Sparre 1999).

Statement Siswanto (2000) Lundu fish (*Macrones gulio*) parameters of growth in length and age of male fish were 190.00 mm at 5 years

of long weight is relative in nature which means it can change with time. There is a change in the environment and food availability it is estimated that this value will also change. Food factors most important role, the more food wa taken a lot amount of food, the higher the weight growth (Kordi, 2008).

old, while in female fish it was estimated at 200.00 mm at 7.5 years of age. Stewart *et al* (2009) blue catfish (*Ictalurus furcatus*) in Lake Barkley estimated asymptotic fish length reached 111.50 mm, predicted to spend about 11 years in the waters of Lake Barkley, entering the age of 1.5 years and reaching the maximum limit at the age of 12.5 years. Fish growth at different ages, young fish have fast growth, while it will stop when it to reach the length of the asymptote (Nikolsky, 1963).

Tuber 2. Growth Coefficient of Buding Tish (Hystus hemarus)					
Parameter	Female	Male	Combinate		
K	1.5	0.01	1.5		
$L\infty$ (mm)	383.25	383.25	383.25		
t0	-0.13	-2.39	-0.13		

## Conclusions

The growth pattern of male and female fish show that the pattern of negative allometric growth, sot that length growth is more dominant than weight, it is suspected that fish has a reduced composition of body material used for reproduction so that it affects the value of obesity. The value of the growth parameters male fish is  $L\infty$  383,25 mm; K0,01/month<sup>-1</sup>; t<sub>0</sub> -2,39/month and a female fish  $L\infty$  383,25 mm; K 1,5/month<sup>-1</sup>; t<sub>0</sub> -0,13/month, and analysis of fish growth parameter show that female and male fish , growth rate show that the same of result

## Sugesstions

Need further research on the growth aspects of Baung (*Mystus nemurus*) fish represent all seasons to represent the time series data, so it can see the trend of each year and study of Baung (*Mystus nemurus*) in aquaculture system.

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