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Some Reproductive Biology Studies of Rabbit fish *Siganus canaliculatus* (Park,1797) from the Southern Coastal Waters of Jeneponto, South Sulawesi, Indonesia

Suwarni[1], Joeharnani Tresnati[1], Sharifuddin Bin Andy Omar[1] and Ambo Tuwo[2]

[1]Department of Fisheries, Faculty of Marine Sciences and Fisheries, Hasanuddin University, Makassar, Indonesia.
[2]Department of Marine Sciences, Faculty of Marine Sciences and Fisheries, Hasanuddin University, Makassar, Indonesia.

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The rabbitfish *Siganus canaliculatus* population has been exploited intensively in the Jeneponto Regency South Sulawesi by fishermen used non selective fishing gear, throughout the year even the spawning season. The intensive fishing without management policy can caused decreasing of the rabbit fish population, and if it continues population will be collapse. This study was conducted to investigate some of the reproductive biological study of this species. A total of 1821 specimens of *S. canaliculatus* consisting of 1436 males and 385 females were randomly collected on a monthly from fishers in the coastal waters of the Jeneponto, South Sulawesi. The fecundity and gonad stage were studied for 39 female individuals varied between 85 and 284 mm total length (TL). Egg diameters were determined using the microscope. The overall sex ratio (Males: Females) ranged from 1.7: 1 to 8.2:1 The estimation of fecundity was between 5416 and 130760 eggs.ind^{-1}, and increased with fish length, body weight and gonad weight. Egg diameter of *S. canaliculatus* in this study ranged from 0.1-0.5 of stage III. 0.35-0.45 of stage IV, 0.1-0.55 of stage V, and 0.35-0.55 of stage VI. Egg diameters increased with increased fish length. Egg diameters increased with increased fish length.

Keyword: *Rabbitfish, sex ratio, fecundity, egg diameter.*

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Morphometrical characteristics of rabbit fish (*Siganus canaliculatus* Park, 1797) in Makassar Strait, Flores Sea, and Bone Gulf

Abstract. Rabit fish (*Siganus canaliculatus)* is one of the fishery commodities in Indonesian coastal area. Those fishes have an economical value, could support coastal community and fulfill a protein requirement. This study aimed to examine and compared morphometrical and meristical characteristic of white-spotted spinefoot that cought from Makassar Strait, Flores Sea, and Bone Gulf waters. There was 29 morphometric characteristics and 13 meristic characteristics of white-spotted spinedfood fish were measured and calculated from 300 fish samples, which were 50 male and 50 female fish from each location. Results showed that for three location male fish was longer body length than female fish. In general there were five morphometrical differences of male white-spotted spinefish in three locations, namely interorbital length, the longest anal soft ray length, orbital width, standard length, and maxilla length, while seven morphometrical differences of female white-spotted spinefoot fish found in the three locations were interorbital length, the longest dorsal spine length, the longest anal spine length, mouth-opening width, and pre-dorsal fin length. We also found that there were seven morphometric characteristic different of female fish from three locations, such as interorbital length, the longest dorsal spine length, the longest anal spine length, eye width, mouth opening width, and pre-dorsal fin length. In conclusions, there were a significant difference of morphometrical characteristics of white-spotted spinefood fish from Makassar Strait, Flores Sea and Bone Gulf however, the discriminant test showed that there was a high similarity of morphometrical characteristics between white-spotted spinefoot fish from Makassar Strait and Flores Sea.

Key Words: *Siganus canaliculatus*, morphometrical and meristrical characteristic, Makassar Strait, Flores Sea and Bone Gulf.

Population dynamics of the white spotted rabbitfish (Siganus canaliculatus Park, 1797) in Makassar Strait and Gulf of Bone, Indonesia

Suwarni [1], J Tresnati [2], S B A Omar [2] and A Tuwo[2]

[1]Student, Postgraduate Program, Universitas Hasanuddin, Makassar, South Sulawesi, Indonesia.
[2]Faculty of Fisheries and Marine Science, Universitas Hasanuddin, Makassar, South Sulawesi, Indonesia.

E-mail: suwarniliger17@gmail.com

Abstract. The white spotted rabbitfish (Siganus canaliculatus Park, 1797) is a locally important foodfish across much of Indonesia. This study aimed to support population dynamics-based fisheries management of white spotted rabbitfish stocks in the Makassar Strait and Gulf of Bone through providing data on age classes (cohorts), growth, mortality, and exploitation rate. Field data were collected over the year from February 2017 to January 2018. A total of 2248 white spotted rabbitfish (1810 males and 438 females) were collected from the Makassar Strait and 1686 (1277 males and 409 females) from the Gulf of Bone. The fish were measured (L = total length in mm), and all analyses were implemented in FISAT II. Cohorts were determined by sex based on monthly length-frequency data using the Bhattacharya method. The growth factor K and asymptotic length $L\infty$ of white spotted rabbitfish in the Makassar Strait were K = 0.42/yr and $L\infty$ = 211.98 mm with t0 = -0.250 yr for males and K = 0.43/yr, $L\infty$ = 215.00 mm and t0 = -0.386 yr for females. In the Gulf of Bone the values were K = 0.42/yr, $L\infty$ = 211.98 cm and t0 = -0.250 yr for males and K = 0.43 /yr, $L\infty$ = 215.00 mm and t0 = -0.386 yr for females. Mortality parameters of white spotted rabbitfish in the Makassar Strait were total mortality Z = 1.70/yr, natural mortality M = 0.76/yr, F = 0.94/yr giving an exploitation rate of E = 0.55 for males, while for females Z = 1.77/yr, M = 0.84/yr, F = 0.93/yr and E = 0.53. In the Gulf of Bone, for male white spotted rabbitfish Z = 1.78/yr, M = 0.60/yr, F = 1.18 /yr and E = 0.67, while for females Z = 2.42/yr, M = 0.60/yr, F = 1.82/yr and E = 0.75/yr. These data indicate heavy fishing of both stocks, most likely at unsustainable levels.

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GROWTH PATTERN AND CONDITION FACTOR OF THE WHITE-SPOTTED RABBITFISH, *SIGANUS CANALICULATUS* (PARK, 1797) IN MARINE COASTAL WATERS OF LUWU, BONE BAY, SOUTH SULAWESI,INDONESIA

Suwarni[1], Joeharnani Tresnati[1], Sharifuddin Bin Andy Omar[1], and Ambo Tuwo[2]

[1]Department of Fisheries, Faculty of Marine Sciences and Fisheries, Hasanuddin University, Makassar, Indonesia.

[2]Department of Marine Sciences, Faculty of Marine Sciences and Fisheries, Hasanuddin University, Makassar, Indonesia.

Corresponding Authors : suwarniliger17@gmail.com

Abstract

Rabbit fish (*Siganus canaliculatus*) is very common in the marine coastal waters of Luwu, Bone Bay, South Sulawesi. The aim of the study is to assess the Length-Weight Relationship and Condition Factor of this species. A total of 1686 specimens consisting of 1277 males and 409 females were randomly collected on a monthly basis between February 2017 and January 2018 from fishers in the marine coastal waters of Luwu. The total length (TL) of fishes were measured to the nearest 1 mm using a fish measuring board and the total wet weight (TW) was recorded to the nearest 0.01 g using an electronic balance. The parameters a and b of the LWR were estimated using the logarithmic transformation of the equation. Condition Factor (CF) of the individuals was calculated. The results of study showed that the growth type of *S. canaliculatus*) was isometric growth for female and negative allometric growth for male. The values of condition factor varied between 0,816 and 1,938. The result of study can be useful to fishery management practices for helping sustain the siganid fisheries and improving fisher livelihoods.

***Keywords*:** Growth pattern, Condition factor, Siganus canaliculatus Bone Bay.