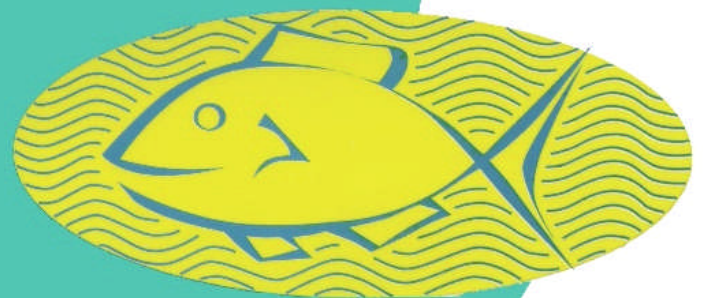


INDONESIAN FISHERIES RESEARCH JOURNAL



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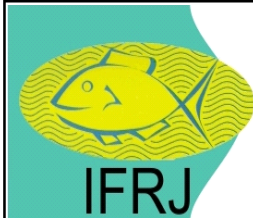
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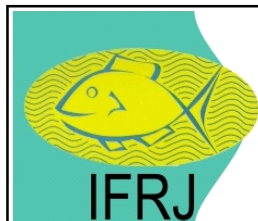
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1. Dr. Antony Lewis. (Fisheries Consultant- Australia)
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PREFACE

Indonesian Fisheries Research Journal (IFRJ) in 2022 entered the Volume 28. The process of publishing this journal is funded by Research Center for Fisheries of the fiscal year 2022. All submissions should be published through the process of evaluation by the Editorial Board, Peer-Reviewers and editing by Editorial Office.

The IFRJ Volume 28 Number 1 2022 presented Five fisheries research articles: Relationship Between The Existence Of Tuna To Upper And Lower Thermocline AT FADs In Pelabuhanratu Waters, West Java; CPUE, Biological and Condition Factor of KAWAKAWA (*Euthynnus affinis*) Caught by Purse Seine in West Sumatra; Stock Status, Biological Reference Point and Management Implications of Painted Spiny Lobster (*Panulirus versicolor* Latreille, 1804) in West Papua Waters; Some Fish Species Showing Commensalism Traits With Long-Spined Sea Urchin (*Diadema setosum* Leske, 1778) in Gulf Of Antalya; A Marine Protected Area Design to Protect the Blue Swimming Crab Population in Salemo Island, Spermonde Archipelago.

Those scientific papers are expected to contribute to policy makers and managers of fisheries resources in Indonesia. Editor would deliver sincere thanks to reseachers from the Resarch Center for Fisheries and outside for their active participation in this edition.

Editor in Chief

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ABSTRACT

RELATIONSHIP BETWEEN THE EXISTENCE OF TUNA TO UPPER AND LOWER THERMOCLINE AT FADs IN PELABUHANRATU WATERS, WEST JAVA

Asep Ma'mun

IFRJ, Vol. 28 No. 1, Page: 1-13

ABSTRACT

Knowledge of fish behavior and its relationship to environmental factors is needed so that the development of fishing gear operating methods can be more effective. The target fish is no longer seen from the quantity of catch but rather the quality of the catch. This is done to maintain the sustainable use of fish resources. Data collection was conducted from November 24 to December 3, 2015 at Pelabuhanratu. This study aimed to determine the relationship between fish behavior and environmental factors in the upper thermocline (Zona-Up), thermocline and lower thermocline layer (Zona-Un). Observations were carried out at intervals of 6 hours: morning (6:00 - 08:00 WIB), daytime (12:00 - 14:00 WIB), afternoon (18:00 - 20:00 WIB) and evening (00:00 - 02:00 WIB) using echosounder in FADs. Acoustic recording tracks form stars around the FADs. Environmental factors were measured using the CTD Sea bird SBE 19 plus V2. The measured environmental parameters were temperature (°C), salinity (PSU), dissolved oxygen (mg / l), chlorophyll (mg / m³), conductivity (S / m) and seawater density (kg / m³). The results showed that the factors that had a significant relationship between fish abundance and environmental factors in the zone-up were temperature and salinity, while the key factor in thermocline and un-zone layers was temperature.

Keywords: Underwater acoustic; yellowfin tuna; FADs; Pelabuhanratu

CPUE, BIOLOGICAL AND CONDITION FACTOR OF KAWAKAWA (*EUTHYNNUS AFFINIS*) CAUGHT BY PURSE SEINE IN WEST SUMATRA

Maya Agustina

IFRJ, Vol. 28 No. 1, Page: 15-22

ABSTRACT

Kawakawa (*Euthynnus affinis*) is one of the important catch of small-scale fisheries in Indonesia. This species is included in the neritic tuna group that mostly utilized by using purse seine and gillnet. This research aims to investigate the Nominal CPUE, Length distribution, and condition factor of kawakawa. Data collection was conducted for 11 months from February to December

2019 in Aceh, Sibolga, and Bengkulu (FMA572). A total of 1,622 specimens was collected, measured (cm FL) and weighted (kg). CPUE analysis shows the fluctuations in each month, with the highest CPUE value in August and the lowest in May. The measurements showed that the length ranged from 20 – 55 cm FL and weight ranged from 0,13 – 3,06 kg. Analysis of length-weight relationships was $W=0,00001FL^{3,1079}$ with a determination coefficient (R^2) 0.967. The growth pattern of positive allometric. The highest relative condition factor (K_n) occurred at the upper limit of length class 21 cm FL with a value of 1.25 and the lowest at 57 cm FL with 1.06. The monthly relative condition factor tends to stabilise, with the highest value in December at 1.265 and the lowest in April at 1.081 and tended to fluctuated for the small-sized group. At the same time, adult fish tends to decrease along with the length increase.

Keywords: Condition Factor; CPUE; Kawakawa; Length Distribution

STOCK STATUS, BIOLOGICAL REFERENCE POINT AND MANAGEMENT IMPLICATIONS OF PAINTED SPINY LOBSTER (*Panulirus versicolor* Latreille, 1804) IN WEST PAPUA WATERS

Tirtadanu

IFRJ, Vol. 28 No. 1, Page: 23-31

ABSTRACT

As the main target species with high economic value, painted spiny lobster (*P. versicolor*) is highly vulnerable to fishing impacts. The study on stock status and biological reference points are needed to develop management strategies for sustainable lobster fisheries in West Papua. This research aimed to understand the stock status, obtain the biological reference points, and set the management tools for *P. versicolor* fisheries in West Papua. The length-based assessment of *P. versicolor* stock has been conducted to obtain the life history parameters and analyze the yield per recruit and spawning potential ratio. The growth overfishing has occurred based on the current length at selectivity of *P. versicolor*, which is lower than the optimal selectivity. The indication of recruitment overfishing has been found based on the current fishing mortality, which exceeds 24% of reference point $F_{40\%}$. A reduction of 24% from current fishing mortality and the minimum legal size of 83 mm are needed to obtain the optimal yield in sustainable conditions.

Keywords: Growth overfishing; length-based assessment; recruitment overfishing

SOME FISH SPECIES SHOWING COMMENSALISM TRAITS WITH LONG-SPINED SEA URCHIN (*Diadema setosum* Leske, 1778) IN GULF OF ANTALYA

Ferhat Cagiltay

IFRJ, Vol. 28 No. 1, Page: 33-39

ABSTRACT

This research was carried out with a rocky (Cliffs: 36°53'3.13"N; 30°41'49.78"E) stony and gravelly bottom (Konyaaltı beach: 36°53'0.07"N; 30°40'43.36"E) in two different regions of Gulf of Antalya. This study intended to determine the fish species that use the long-spined sea urchin (*Diadema setosum* Leske, 1778) as a shelter. In this study, the fish that use the sea urchin in the rocky area as a sheltered area was *Chromis chromis*, *Cheilodipterus novemstriatus*, *Thalassoma pavo*, *Coris julis*, *Tripterygion melanurum*, *Gobius bucchichi*. Of these species, only *C. novemstriatus* is exotic. Others are native species of the Mediterranean. *C. chromis* juveniles were the most dense among the sea urchin spines in the rocky region, while *C. novemstriatus* formed the second crowded species. The study that carried out in the second area, which has a stony and gravelly bottom structure, represents fish species that use sea urchins as shelter are *C. novemstriatus*, *Siganus rivulatus*, *Apogonichthyoides pharaonis*, *Pteragogus pelycus*, *Parupeneus forsskali*, *Pterois miles*, *Sargocentron rubrum*, *Epinephelus aeneus* and *C. julis*. Of these species, only *E. aeneus* and *C. julis* were determined to be native species of the Mediterranean. All of the other species are Red Sea species, with Rabbitfish (*S. rivulatus*) fry as the most dense species, *C. novemstriatus* in the second place and *A. pharaonis* in the third place. It was determined that adult and juvenile individuals of *C. novemstriatus*, *A. pharaonis* and *P. pelycus* used sea urchin as shelter, and only juveniles of other species. In addition, among the sea urchin spines, most of the *C. novemstriatus*, *A. pharaonis* individuals were found to carry eggs in their mouths. The results show that the long-spined sea urchin rapidly increases its population in the Mediterranean by creating a shelter for some fish of

Abstract

origin Red Sea that cannot be economically evaluated and invaded.

Keywords: Long-spined Sea Urchin; *Diadema setosum*; Commensalism; Gulf of Antalya

A MARINE PROTECTED AREA DESIGN TO PROTECT THE BLUE SWIMMING CRAB POPULATION IN SALEMO ISLAND, SPERMONDE ARCHIPELAGO

Muh. Saleh Nurdin

IFRJ, Vol. 28 No. 1, Page: 41-51

ABSTRACT

Blue swimming crab fishery in Salemo Island, Spermonde Archipelago, indicates overfishing. To ensure the sustainability of the blue swimming crab fishery, conservation effort through fishing prohibition needs to enforce. This research aimed to design a reservation area to protect the blue swimming crab resources. The study was conducted from May to July 2015. Creating a reserved area requires information on female berried crabs and larval abundance as the basic assumption that places containing the two information are the spawning ground. Information on female berried crabs in Salemo Island is readily available in the literature, while information on larval abundance must be obtained through this study before designing the reservation. Larvae of the blue swimming crabs were sampled using larval nets. Sampling was performed in three habitats: seagrass beds, coral reefs, and mangroves (estuaries). Differences between habitat's larval abundance were analyzed using a Student T-test, while the reservation area was designed using Marxan Software. Total larvae captured during samplings were 236 individuals. Larvae were abundant in seagrass beds and coral reefs, making the two habitats suitable for the reserved area. The "no-take zone" area obtained from the analysis protects the biological parameters, less conflict with human activities, and provides minimum cost, which is fulfilled by Scenario 3.

Keywords: Blue swimming crabs; larvae; no-take zone; Spermonde Archipelago