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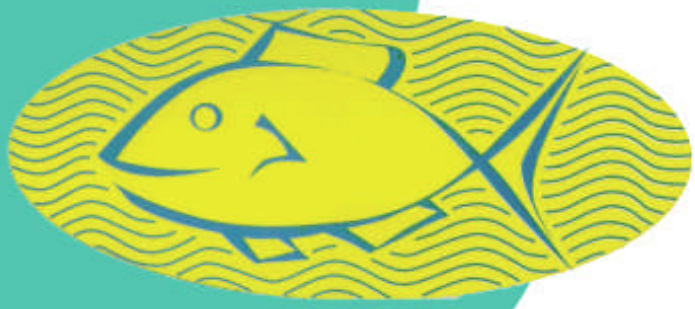

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Manuscript is entering to Indonesian Fisheries Research Journal will be checked on the guidelines writing by Editorial Office. If it is in compliance will be reviewed by two (2) person Editorial Board and one (1) person peer-reviewer based on the appointment of Editor in Chief. The decision whether or not a manuscript accepted the rights of Editor in Chief based on the recommendations of Editorial Board and peer-reviewer.

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PREFACE

Indonesian Fisheries Research Journal (IFRJ) in 2016 entered the Volume 22. The process of publishing this journal is funded by Center for Fisheries Research and Development of the fiscal year 2016. All submissions should be published through the process of evaluation by the Editorial Board, Peer-Reviewers and editing by Editorial Office.

Management of Indonesian Fisheries Research Journal (IFRJ) in 2016 began referring to the Open Journal Systems (OJS). In terms of appearance there were some minor changes, namely:

1. Inclusion of p-ISSN and e-ISSN in the upper right corner on the face skin page, title page and table of contents page of issue, without colons
2. Inclusion of numbered lists or ISSN barcode in the lower right corner on the back cover
3. Special Sheets for Peer-Reviewers
4. Sheet gratitude for Peer-Reviewers involved in the review of each number
5. Each title sheet no additional information on the website, email address and information about the IFRJ, as well as the logo and the cover on the left and right. This change information is displayed on each foreword for 2 (two) publications.

The IFRJ Volume 22 Number 2 2016 presented seven fisheries research articles. Those seven articles are: The effect of depht of hooks, set and soak time to the catch per unit of effort of tuna in The Eastern Indian Ocean; The influence of swimming layer and sub-surface oceanographic variables on catch of albacore *(Thunnus alalunga) in Eastern Indian Ocean;* Estimation of yellowfin tuna production landed in Benoa Port with weigh-weight, lenght-weight relationship and condition factor approaches*;* Inter-specific competition and fishing effect to population dynamic of Bali Sardine *(Sardinella Lemuru);* The distribution and abundance of decapod and fish communities in Cleveland Bay, Australia; Catch composition and some biological aspects of sharks in Western Sumatera Waters of Indonesia; Diversity of reef fish fungsional groups in terms of coral reef resiliences.

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 Center for Fisheries Research and Development and outside for their active participation in this edition.

Editor in Chief

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INDONESIAN FISHERIES RESEARCH JOURNAL
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ABSTRACT

THE EFFECT OF DEPTH OF HOOKS, SET AND SOAK TIME TO THE CATCH PER UNIT OF EFFORT OF TUNA IN THE EASTERN INDIAN OCEAN

Bram Setyadji
IFRJ, Vol. 22 No. 2, Page: 61-68

ABSTRACT

Yellowfin (*Thunnus albacares*) and bigeye (*T. obesus*) tuna have been intensively exploited by longline fleets since 1980's, however, a large proportion of zero catch per set of target species still accurred. Zero catch data contributed significantly to the low catch per unit of effort (CPUE) compared to other countries at the same fishing area. Therefore, understanding the factors contributed to the CPUE of tuna is essential, in order to improve longline fishing efficiency. A total of 2.115 set-by-set data were obtained from Indonesian Scientific Observer Program. The onboard observations were carried out at commercial tuna longline operated in Eastern Indian Ocean from August 2005 to December 2014. Several analytical approaches were conducted in this paper. First, General Linear Model (GLM) was applied in order to model the relationship between CPUE with all the variables involved. Second, boxplot diagram, polynomial and linear regression were applied to fit the relationship between CPUE with set time, soak time and depth (represented by hook position) respectively. The result showed that, there was no significant relationship between set time and CPUE of bigeye and yellowfin tuna. Soak time was positively related with CPUE of yellowfin and affect adversely on bigeye. Depth also have significant relationship with CPUE of tuna, where catch of yellowfin decreased linearly with hook depth, whereas catch of bigeye was performed the opposite. Improvement in tuna longline fishery in eastern Indian Ocean can be achieved through implementation of the specific soak time and hook depth for each target species, i.e. yellowfin and bigeye tuna.

Keywords: Yellowfin tuna; bigeye tuna; set time; soak time; hook depth; Indian Ocean

THE INFLUENCE OF SWIMMING LAYER AND SUB-SURFACE OCEANOGRAPHIC VARIABLES ON CATCH OF ALBACORE (*Thunnus alalunga*) IN EASTERN INDIAN OCEAN

Fathur Rochman
IFRJ, Vol. 22 No. 2, Page: 69-76

ABSTRACT

This study was highlighted the contenxt of albacore's number catch, swimming layer and sub-surface oceanographic variables (SSOV) at Eastern Indian Ocean include temperature, dissolved oxygen, salinity, nitrate, phosphate and silicate. Hopefully the information would be useful for the longliners to understand the ALB behaviour, environment and the best techniques on how to catch this fish. Data in this study were based on the Research Institute for Tuna Fisheries (RITF) observer program in Benoa from 2010-2013. Data analysis was base on primary data and secondary data. Primary data are albacore's (ALB) swimming layer data which are measured by minilogger. Secondary data is SSOV data which extracted from World Ocean Atlas 2009 (WOA09). The results show that the optimum catch of albacore occurred at depth of 118 to 291 m with the average temperature between 12.41-20.47 °C, dissolved oxygen 3.24-4.68 ml/l , salinity 34.78-35.01 psu, nitrate 6.78-17.50 µ mol/l, phosphate 0.62-1.27 µ mol/l and silicate 10.06-24.77 µ mol/l. The highest catch of ALB was mostly at depth of 156 m (hook number 2 and 11) with the average temperature 18.71°C, dissolved oxygen 4.68 ml/l, salinity 34.78 psu, nitrate 10.71 µ mol/l, phosphate 0.86 µ mol/l and silicate 15.95 µ mol/l. The highest influence of swimming layer and sub-surface oceanographic variable to the number of ALB catch happened at depth of 291 m of ALB swimming layer with coefficient correlation (r) of 0.934 and determination coefficient (R^2) of 0.872. The lowest influence of swimming layer and sub-surface oceanographic variable to the number of ALB catch happened at depth of 156 m of albacore swimming layer with coefficient correlation (r) of 0.528 and determination coefficient (R^2) of 0.279.The relationship between swimming layer and sub-surface oceanographic variable on catch of ALB tuna was low (<0.500).

***K*eywords*:* Swimming layer; sub surface oceanographic variable; albacore; Eastern Indian Ocean**

ESTIMATION OF YELLOWFIN TUNA PRODUCTION LANDED IN BENOA PORT WITH WEIGHT-WEIGHT, LENGTH-WEIGHT RELATIONSHIPS AND CONDITION FACTOR APPROACHES

Irwan Jatmiko
IFRJ, Vol. 22 No.2, Page: 77-84

ABSTRACT

Yellowfin tuna (*Thunnus albacares*) is one of the important catch for the fishing industry in Indonesia. Length-weight relationship study is one of important tools to support fisheries management. However it could not be done to yellowfin tuna landed in Benoa port since they are in the form of gilled-gutted condition. The objectives of this study are to determine the relationship between gilled-gutted weight (*GW*) and whole weight (*WW*), to calculate length weight relationship between fork length (*FL*) and estimated whole weight (*WW*) and to assess the relative condition factor (K_n) of yellowfin tuna in Eastern Indian Ocean. Data were collected from three landing sites *i.e.* Malang, East Java; Benoa, Bali and Kupang, East Nusa Tenggara from January 2013 to February 2014. Linear regression analysis applied to test the significance baseline between weight-weight relationships and log transformed length weight relationship. Relative condition factor (K_n) used to identify fish condition among length groups and months. The results showed a significant positive linear relationships between whole weight (*WW*) and gilled-gutted weight (*GW*) of *T. albacares* ($p<0.001$). There was a significant positive linier relationships between log transformed fork length and log transformed whole weight of *T. albacares* ($p<0.001$). Relative condition factor (K_n) showed declining pattern along with length increase and varied among months. The findings from this study provide data for management of yellowfin tuna stock and population.

Keywords: Weight-weight relationships; length-weight relationships; condition factor; yellowfin tuna; Eastern Indian Ocean

INTER-SPECIFIC COMPETITION AND FISHING EFFECT TO POPULATION DYNAMIC OF BALI SARDINE (*SARDINELLA LEMURU*)

Andhika Prima Prasetyo
IFRJ, Vol. 22 No.2, Page: 85-90

ABSTRACT

Stock-recruitment relationship of Bali sardine was investigated based on Beverton-Holt model by assuming inter-specific competition. Model is modified to incorporate the effect of fishing pressure that is density-independent to population dynamic by developing scenario fishing on adult and/or juvenile population. The results show that harvested adult the dramatic decline of recruitment supply. However, harvested juvenile is led to the positive response to population size, as an increase in fishing mortality rate will reduce competition mortality rate. Precautionary approach required by considering bipartite life cycle.

Keywords: Stock-recruitment relationship; fishing pressure; Bali sardine

THE DISTRIBUTION AND ABUNDANCE OF DECAPOD AND FISH COMMUNITIES IN CLEVELAND BAY, AUSTRALIA

Andhika Prima Prasetyo
IFRJ, Vol. 22 No.2, Page: 91-98

ABSTRACT

Spatial and temporal variations in the fish and decapod communities were investigated at three stations in Cleveland Bay along with other zooplankton and phytoplankton communities. The linkage between biological assemblages and physical properties of the ocean was explained to develop better understanding of population dynamic of planktonic communities. Biological and physical properties data were gathered in 3 stations by 6 different trips. The results show that there is a significant association between daytime and tidal period to the abundance of planktonic communities ($P < 0.05$). Spatial distribution of fish and decapod communities are likely explained by “predator pit” and “match/mismatch” concepts to increase the survival probability along with physical properties of the ocean.

Keywords: Biological oceanography; decapod and fish communities; Cleveland bay

CATCH COMPOSITION AND SOME BIOLOGICAL ASPECTS OF SHARKS IN WESTERN SUMATERA WATERS OF INDONESIA

Dharmadi
IFRJ, Vol. 22 No.2, Page: 99-108

ABTRACT

This study was conducted in western Sumatera and since October 2013 to June 2014. The sampling locations in Banda Aceh and Sibolga-North Sumatera which were the largest base of fisheries in western Sumatera region. Shark landing recorded by enumerators was used as sampling data daily . This research aim to describ sex ratio, size composition, catch composition of sharks, and length at first maturity. In Banda Aceh, the sharks as target fish collected by sorting the bycatch from tuna longlines and tuna handlines. In Sibolga, sharks is bycatch from fish net, bottom gillnet and purse seine. Overall, there were 20 species of shark caught in west Indian Ocean and landed at those fish landing sites, dominated by Spot tail shark (23%) and Silky shark (13%),

whereas Hammerhead shark contributed about 10% and Oceanic whitetip shark was only less than 1 %. Almost of Spot tail shark, Silky shark, and Scalloped hammerhead that caught in that area were immature, while for the almost part of Tiger shark and Pelagic thresher were matured. The sex ratios for Spot tail shark, Silky shark, Tiger shark, Pelagic thresher, and Scalloped hammerhead caught and landed at Lampulo and Sibolga fish landing sites were not balance. The length at first maturity for Spot tail shark was Lm=87,1 cm and Lm = 213,2 cm total length for Tiger shark.

Keywords : Sharks; biology; fisheries; western sumatera

DIVERSITY OF REEF FISH FUNGSIONAL GROUPS IN TERMS OF CORAL REEF RESILIENCES

Isa Nagib Edrus
IFRJ, Vol. 22 No.2, Page: 109-122

ABSTARCT

Infrastructure development in the particular sites of Seribu Islands as well as those in main land of Jakarta City increased with coastal population this phenomenon is likely to increase the effects to the adjacent coral waters of Seribu Islands. Chemical pollutants, sedimentation, and domestic wastes are the common impact and threatening, the survival of coral reef ecosystem. Coral reef resiliences naturaly remained on their processes under many influences of supporting factors. One of the major factor is the role of reef fish functional groups on controling algae growth to recolonize coral juveniles. The aim of this study to obtain data of a herbivory and other fish functional groups of reef fishes in the Pari Islands that are resilience indicators, or that may indicate the effectiveness of management actions. A conventional scientific approach on fish diversity and abundance data gathering was conducted by the underwater visual cencus. Diversity values of the reef fish functional groups, such as the abundance of individual fish including species, were collected and tabulated by classes and weighted as a baseline to understand the resilience of coral reed based on Obura and Grimsditch (2009) techniques. The results succesfully identified several fish functional groups such as harbivores (21 species), carnivores (13 species) and fish indicator (5 species) occurred in the area. Regarding the aspects of fish density and its diversity, especially herbivorous fish functional group, were presumably in the state of rarely available to support the coral reef resiliences. Resilience indices ranged from 1 (low level) to 3 (moderate level) and averages of the quality levels ranged from 227 to 674. These levels were inadequate to support coral reef recolonization.

Keywords: Resiliences; reef fishes; Pari Islands