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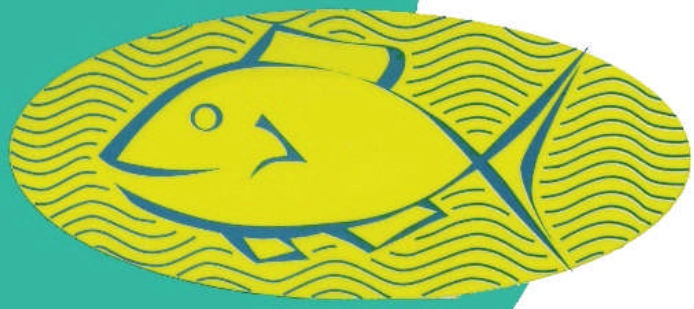

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PREFACE

Indonesian Fisheries Research Journal (IFRJ) in 2017 entered the Volume 23. The process of publishing this journal is funded by Center for Fisheries Research and Development of the fiscal year 2017. All submissions should be published through the process of evaluation by the Editorial Board, Peer-Reviewers and editing by Editorial Office.

The IFRJ Volume 23 Number 2 2017 presented six fisheries research articles. Those six articles are: Composition and Distribution of Dolphin in Savu Sea National Marine Park, East Nusa Tenggara; Fisheries and Environmental Impacts in the Great Jakarta Bay Ecosystem; Factors Influencing the Performance of Trawl Operation in the Waters Area of Tarakan; Genetic Diversity of Mackerel Scads, *Decapterus macarellus* (Cuvier, 1833) in the Indian Ocean; Technical Eficiency of Fish Aggregating Devices Associated With Tuna Fishery in Kendari Fishing Port – Indonesia; Population Parameters and Reproductive Biology of Indian Mackerel *Rastrelliger kanagurta* (Cuvier, 1817) Caught by Lift Net in Kwandang Waters, North Gorontalo.

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

COMPOSITION AND DISTRIBUTION OF DOLPHIN IN SAVU SEA NATIONAL MARINE PARK, EAST NUSA TENGGARA

Mujiyanto
IFRJ, Vol. 23 No. 2, Page: 55-67

ABSTRACT

Dolphins are one of the most interesting cetacean types included in family Delphinidae or known as the oceanic dolphins from genus Stenella sp and Tursiops sp. Migration and abundance of dolphins are affected by the presence of food and waters oceanographic conditions. The purpose of this research is to determine the composition and distribution of dolphins in relation to the water quality parameters. Benefits of this research are expected to provide information on the relationship between distributions of the family Delphinidae cetacean (oceanic dolphins) and oceanographic conditions. The method for this research is descriptive exploratory, with models onboard tracking survey. Field observations were done in November 2015 and period of March-April 2016 outside and inside Savu Sea National Marine Park waters. The sighting of dolphin in November and March-April found as much seven species: bottlenose dolphin, fraser's dolphin, pantropical spotted dolphin, risso's dolphin, rough-toothed dolphin, spinner dolphin and stripped dolphin. The highest species distribution noted in the Savu Sea is spinner dolphin, pantropical spotted dolphin, rough-toothed dolphin and frazer's dolphin. The existence of dolphins in Savu Sea is more related with sea surface temperature than others oceanographic parameters. This condition is suspected due to the influence of sea surface temperature to body temperature of dolphin especially for foraging activities. The habit of dolphin is more active around Sumba Island and Daratan Timor waters while in the evening the animal is usually going to Manggarai and Rote Ndao Islands waters to rest.

Keywords: Composition; distribution; dolphin; oceanography; savu sea

FISHERIES AND ENVIRONMENTAL IMPACTS IN THE GREAT JAKARTA BAY ECOSYSTEM

Hari Eko Irianto
IFRJ, Vol. 23 No. 2, Page: 69-78

ABSTRACT

The Great Jakarta Bay Ecosystem (GJBE) supports the economic growth for the surrounding community, including fisheries sector. This large ecosystem is consisted of two coastal ecosystems, i.e. Jakarta Bay and Thousands islands. There are only traditional fisheries operating either in Jakarta Bay or Thousand islands. Some economically important fisheries include shrimp, demersal and small pelagic fisheries, which are caught using different fishing gears, either active or passive fishing gears. There are some serious concerns related to the fish resources and habitat degradations in the GJBE, which in turn can cause the decrease in fish population and fish species diversity, respectively. CPUE and catch composition of the fixed lift nets, sero and fixed gillnet fisheries were obtained from the observations in 2006 and 2014. In addition, to determine the level of pollution, tissue samples were collected for green mussel (Perna viridis), blue swimming crab (Portunus pelagicus) and white-spotted spinefoot (Siganus canaliculatus) in 2009. The CPUE trend and catch composition showed that over fishing might have been occurring in the Jakarta Bay. The histological study on gill tissues of the three species shows that the Jakarta Bay has been polluted. Several efforts have been done to address the problems, including sea farming, habitat rehabilitation (artificial reef and mangrove restoration), marine conservation area and fish shelter, restocking and sea ranching.

Keywords: Jakarta Bay; Thousand Islands; fisheries

FACTORS INFLUENCING THE PERFORMANCE OF TRAWL OPERATION IN THE WATERS AREA OF TARAKAN

Asep Priatna
IFRJ, Vol. 23 No. 2, Page: 79-87

ABSTRACT

Any fish on swept area of bottom trawl could not be caught due to some technical factors during towing. However, it could be estimated by integrated of bottom trawl and acoustic survey. This paper describes the determination of some factors that affect the performaance of trawl net during the bottom trawl survey in the waters of Tarakan. Surveys were carried out in May, August, and November 2012. A total of 57 stations of simultaneously acoustic-trawl were completed. Data collected from each station include catch composition, and variables of trawling operation (i.e. bottom depth, warp length, trawl door opening, towing speed, towing duration, and acoustic fish density). Principal component analysis was applied to identify variables might impact of trawling performance (i.e. fish density at the waters area, towing speed, towing duration, warp length,

horizontal opening of trawl door, density of non-demersal at cod end, and bottom depth). Both of towing speed and towing duration were not major component for trawl operation. According to test of significance for four variables (i.e. bottom depth, warp length, horizontal opening, biota non-demersal at cod end) which affected to fish density at waters area, that both of variable (i.e. warp length and bottom depth) were significant as the principal components for the performance of bottom trawl.

Keywords: bottom trawl; acoustic; principal components; Tarakan

GENETIC DIVERSITY OF MACKEREL SCADS, *Decapterus macarellus* (Cuvier, 1833) IN THE INDIAN OCEAN

Achmad Zamroni
IFRJ, Vol. 23 No. 2, Page: 89-96

ABSTRACT

Mackerel scads (Decapterus macarellus) is a small widely distributed pelagic species in ocean. In 2013, monthly catch and abundance index of mackerel scads increased in western part of Sumatera waters. High exploitation of mackerel scads may lead to decrease stock due to the over exploitation. Stock information is very useful for calculating of the potential fish. Genetic analysis is one of the powerful tools to estimate fish stock quickly. Genetic diversity of mackerel scads in this study was analyzed using RFLP (Restriction Fragment Length Polymorphism) with AfaI, EcoR I, HapII, HinfI and TaqI restriction enzyme. The results showed that the lowest genetic diversity of mackerel scads was Labuan population. Kinship Labuan was also the furtherest stock compared to other populations. It can be concluded that the population of Labuan is derived from a different sub-species. The closest kinship was between Aceh and Sibolga stock.

Keywords: Mackerel; Decapterus; genetic; DNA; Indian Ocean

TECHNICAL EFICIENCY OF FISH AGGREGATING DEVICES ASSOCIATED WITH TUNA fishery in Kendari FISHING Port – Indonesia

Moh. Natsir
IFRJ, Vol. 23 No. 2, Page: 97-105

ABSTRACT

Kendari fishing port is one of the biggest tuna fisheries landing in Indonesia. It yearly average tuna production was more than 20 thousand tons. The tuna fishing fleet in Kendari use FAD (Fish Aggregating Devices) as an auxiliary fishing gear. FAD management is major issues in Indonesian tuna fisheries. extensive investment on FAD has led to increase of the juvenile and by catch and also social problem because of the competition. Technical efficiency analysis was done during this study, 2015 catch and logistic data from Kendari fishing port was run using stochastic frontier to obtain the model. Mean value technical efficiency was 0.534. Purse seine show the highest mean value compare to other fishing gear. All the variables input show positive relationship to the catch except the days at sea variables, this is a signal that the increasing number of FAD has made the fisherman spend more time at sea it will decrease the technical efficiency. The results support the need of FAD regulation done by the government of Indonesia. Regulation will keep the number of FAD at optimum level and increase the technical effieciency so the fisheries keep gaining the optimum benefit from the resources.

Keywords: Purse seine; Pole and line; Stochastic frontier; Fish aggregating device; Tuna

POPULATION PARAMETERS AND REPRODUCTIVE BIOLOGY OF INDIAN MACKEREL *Rastrelliger kanagurta* (Cuvier, 1817) CAUGHT BY LIFT NET IN KWANDANG WATERS, NORTH GORONTALO

Ria Faizah
IFRJ, Vol. 23 No. 2, Page: 107-115

ABSTRACT

Kwandang waters is one of the main fishing ground for small pelagic fisheries in Sulawesi Sea in which the Indian mackerel (Rastrelliger kanagurta) has been exploited. The objective of the research was to estimate population parameters of indian mackerel, include: growth, mortality, gonad maturity and exploitation rate.of Indian mackerel. Length frequency data were collected from Coastal Fishing Port of Kwandang, from January to November 2012. Estimation of population parameters of Indian mackerel was done using FISAT II software. The results showed that growth rate as follows (K) = 0.80 year^{-1}, L_∞ =27.3 cm. Total mortality rate (Z) = 2.72 year^{-1}, with natural mortality (M) = 1.29 year^{-1} and consequently, fishing mortality (F) = 1.43 year^{-1} and exploitation rate (E) = 0.53. This indicates the exploitation of Indian mackerel in Kwandang waters have reached its optimum level. The sex ratio of Indian mackerel was balance. The most common specimens found at immature stage of I. Based on the results, it is suggested that precautionary approach through responsible

management should be applied through several possibilities such as increasing of the mesh size of the gears, restricting additional lift net, restricting fishing for certain seasons, declaring fish sanctuaries in certain areas, especially in spawning grounds to protect the Indian mackerel.

Keyword: **Indian mackerel; population parameter; biology; Kwandang**