

ABSTRACT

IRAWAN MURIPTO, 2000. Analyses of the Spatial and Temporal Changes of Oceanographic Factors in Relation to Distribution of Fish Resources in the Sunda Strait. (Under supervision of DJISMAN MANURUNG as chairman and DANIEL R. MONINTJA, BONAR P. PASARIBU, ROKHMIN DAHURI and INDROYONO SOESILO as members)

The monsoonal wind system that governs the air circulation over the most part of Indonesia archipelago also influences the general condition of Sunda Strait sea water. There are four seasonal characteristics in Sunda Strait as : 1) Inter-Monsoon-1, 2) East Monsoon, 3) Inter-Monsoon-2 and 4) West Monsoon.

The recent available information of oceanographic and fish resources in Sunda Strait sea water are very limited, hence the analysis of influence of the change in oceanographic factors cannot be related to fish distribution change neither spatially nor temporally.

Based on oceanographic survey in October 1997, the information about the existence of two water masses, i.e. the shallow water mass of Java Sea and the oceanic water mass of Indian Ocean in the strait were clearly understood. A band of front between two water masses, where its position and sharpness are assumed to be altered due to seasonal shifting. Therefore, it is necessary to conduct research in many aspect covering distinctive monsoonal season that prevails in the Strait.

A research was designed by conducting four research cruises. The Research vessel used occupied in cruises was mainly RTV. Madidihang (300 GT), equipped with oceanographic instrumentation's (CTD SBE-19) and scientific echosounder (Simrad EK 500).

The oceanographic condition and fish density information at each season were collected simultaneously each cruise of 5 to 7 days. Secondary data also were also collected from Fisheries Agency Branch of Pandeglang Residency for ten-year period, i.e. from 1989 to 1998.

The research objectives are, (1) to describe the spatial and temporal features of oceanographic factors and fish density distributions; (2) to analyze the spatial and temporal changes of fish densities due to the changes of oceanographic factors; (3) to analyze the agreement on the spatial and temporal changes fishing area with fish density distributions in the Strait.

The vertical structure of temperature and salinity were described both in vertical cross section during vessel transects and their profiles. The horizontal distributions of temperature and salinity were described the form of contour maps for 0, 20, 50 and 100 m respectively, where as the horizontal distribution of fish distribution, stratified in 11 layers interval, depend upon sea detection performance.

The analysis indicates that the Java Sea's water masses, characterized by temperature and salinity as follows: 30.5°-31.0°C; 33.3-33.5‰ on Inter-Monsoon-1, 30.5°C; 32.3-33.5‰ on East Monsoon, 29.0°-29.5°C; 31.5-32.0‰ on Inter-Monsoon-2; and 28.5°-29.0°C; 33.3-33.6‰ on West Monsoon.

There is west to southwestward flow through the strait passing West Coast of West Java, which was probably a part of the beginning of the Sunda Straits current.

Fish were mostly in abundance in East Monsoon and fish distributed vertically in every layer. The average density values were ranges 52.9 to 566.1 fish/1000 m³. The lowest density was in Inter-Monsoon-2.

The seasonal and spatial fish density distribution were not homogen, but tended to clumped. The highest density value as : 1) Inter-Monsoon-1 34.4 fish/1000m³ at 70 m depth, the temperature ranging 20.1-21.0°C and salinity 35.2-35.3‰; 2) East Monsoon, 566.1 fish/1000 m³, at 100 m, the temperature ranging 29.1-30.0°C and salinity 32.5‰; 3) Inter-Monsoon-2 24.9 fish/1000m³ at 54 m, the temperature ranging 27.0-30.0°C and salinity 33.8-34.0‰; and 4) West Monsoon 50.6 fish/1000m³ at 44 m, the temperature ranging 28.5-28.6°C and salinity 33.5-33.8‰, respectively.

Based on identification of fish species in Labuan fishing base, tongkol (*Euthynnus spp.*) and tenggiri (*Scomberomorus spp.*) were the fishes with shape that suitable for Foote conversion formula from TS to fish length.

The application of that formula showed that : 1) in Inter-Monsoon-1 there were two groups of fishes which characterized by fish length interval of (37.0 ± 1.57 cm) and (18.2 ± 1.26 cm); 2) in East Monsoon there were three groups of fishes by length interval of (49.1 ± 1.69 cm), (40.5 ± 1.61 cm), and (21.5 ± 1.33 cm); 3) in Inter-Monsoon-2 there were two groups of fishes length interval of (48.5 ± 1.69 cm) and (20.0 ± 1.30 cm); and 4) in West Monsoon the group of fishes which characterized by fish length interval of (32.5 ± 1.51 cm).

The analysis of horizontal distribution of fish density and number of fishing in 10 x 10 mil² in every monsoonal season, shows that fishing boat were not operated in the area of high fish distribution. This situation were due to unavailable information about fish density distribution for fishermen to apply.

The result of these research to practical fishing is not appropriate yet. To make it possible for practical use, the continuation of such study in at least five years successively with the cooperation of fishing enterprises, is very needed.