Pendugaan densitas dan sabaran ikan pelagis dengan hidroakustik serta hubungannya dengan kondisi oseanografi di perairan barat Aceh = The estimation of pelagic fish denstity and distribution using hydroacoustic and its correlation with oceanographic condition in western Aceh seas

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Abstrak

The utilization of fisheries and maritime resources in Indonesia has not been done optimally. Therefore, the information about fisheries and maritime resources still becomes a serious problem. The exploration of fisheries and maritime resources should be supported with science and technology in order to determine the accurate, effective, efficient ways in maintaining the sustainability of the resources. Acoustic method is already wellknown as one of the methods in fisheries technology.

The observation about Pelagic fish density and distribution using hydro acoustic as well as observation of oceanography condition in the western part of aceh waters conducted on August 6-8, 2005. The instruments used are SIMRAD EK 60 with its Split Beam Acoustic System to observe Pelagic fish density and distribution as well as CTD (Conductivity Temperature Depth) Seabird model SBE-119 for climate and salinity observation. The collection of data was performed by K.M. Bawal Putih within covering area approximately 5 mile, the distance from coastal area to the offshore is about 35 mile, and 4.898 area of research width in total.

The horizontal distribution of pelagic fish is mostly influenced by land condition thus more pelagic fish were found at the neurotic area, which encompasses water mass lying down on the surface of the continent. This area contains same nutrient derived from coastal area. Because of the shallow depth, the water temperature remained warm.

The research results show that the highest average density is located on Meulaboh waters (Leg 13, 14, and 15) within the density value about 1752 fish/1000 m3. This condition is predicted due to suitable climate and salinity of waters. The highest temperature was 290 C (temperature average 28,50 C) and the lowest salinity 32,82 PSU, it might be happen because of the runoff from the river (rivers in Meulaboh).

However, vertically, most of the density value tend to decline along with the increase of depth, the highest density occur on level 1 (1 to 10 m) about 1745 fishes /1000 m2, whereas the lowest density found on the thermo cline layer at level 9 to 10 (80 - 100m) nearly 343 fishes/1000m3. Its condition can be happened due to the decrease of fish's tolerant level on physical condition of thermo cline layer such as: temperature effect, salinity, intensity of light and also the decrease of food supplies.

Target Strength data indicated that the different variation of fish sizes depends on its depth. On first layer, strength target frequency about 60 -dB 45 Db dominated the waters, it explains that the first level is dominated by small Pelagic fish or others but it has smaller size than deep water fish. Strength target value which is relatively lower was found on near-shore area, while the higher target is quite far from the coastal area.

The value of temperature and salinity in the western part of Aceh seas vertically show the same method. The warm-thick isothermal layer was observed between 80 to 120 meters. Horizontally the temperature of sea surface is various from 28,65oC to 30,15oC. The sea surface temperature increases gradually form north to

south, and show the decrease from coastal area to Hindia Ocean.

Salinity of sea surface on west Aceh seas doesn't show significant variation, between 32,8 PUS and 33,7 PSU. The salinity of coast area from north to south relatively low and gradually increases to Hindia Ocean. The lowest salinity was found near the Meulaboh waters.

Correlation analysis using Spearman's rho test shows a negative correlation between depth parameter and temperature (-0.691), and density of fish (-0.336). It means that water temperature and fish density will decrease in increasing depth. Positive correlation is shown between depth and salinity parameters within number 0.842 it demonstrates that in western aceh seas, there are a big influence of river discharge to the surrounding area especially in lower salinity parameter on the surface.