Single target recognition: Target strength estimation of tuna on FADS

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Abstract

Fish aggregating devices (FADs) are widely used by purse seiners in the Tropical Tuna fisheries to help in fishing operations often with buoys containing simple echo sounders attached for geolocation and information on species presence and estimate. Many species of fish including juvenile tuna often associate with theses FADS. There are global decline in Tuna catch largely owing tothe mortality of juvenile tuna often caught as by-catch. Therefore a quick and direct method of identifying species and estimate size present under the FADs through target strength measurement is needed to mitigate and reduce morality of non-target species and juvenile tuna species. Target strength is a function of the acoustic reflectivity of the species. Swim bladder accounts for over 90% of the target strength of the fish. There are three principal species of tropical tuna; skipjack, Yellow fin and Big eye tuna. The skipjack tuna has no swim bladder. This study sought to improve on the remote acoustic information from the buoys using target strength to distinguish between sizes and species by comparing split beam and single beam echo sounder data. Acoustic data were collected using the SIMRAD ES10 single beam echo sounder at 200 KHz (single beam) and SIMRAD EK 60 split beam echo sounder. The data analyses were carried out using Craig and Forbes algorithm and a series of algorithm in R statistical software for identifying and estimating target strength from single fish echoes.

Biography

Albert Damptey-Boakye is a Master student at University of Bergen, Norway. He holds Bachelor in Science in Fisheries Biology and Oceanography from University of Ghana. He is currently writing his thesis on “Fisheries acoustics with particular emphasis on using acoustics as a tool in marine ecosystem management”.

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