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Geographic Distribution and Area Demarcation on the Fisheries Resource of South Atlantic Albacore

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ABSTRACT

Catch rates distribution by gear type in terms of number of hooks deployed between floats were compared based on logbook returns of 1995-1998 Taiwanese long liners fished in the South Atlantic. The results indicate that (1) traditional regular long liners (RLL) targeting albacore mainly fishing in the area southward of 10~15° S are using less than or equal to 9 hooks between floats deployment; (2) newly emerged since mid 1980s deep long liners (DLL) targeting big eye tuna mainly fishing in the tropical waters are deploying greater than or equal to 12 hooks between floats; (3) those opportunistic long liners deploying 10 or 11 hooks between floats are widely distributed all over the South Atlantic yet the main catch appeared to be big eye tuna when fishing in tropical region and to be albacore when fishing in traditional RLL fishing areas.

Based on 1968-1998 catch and effort statistics of Taiwanese long liners fishing in the South Atlantic, clustering analyses on 121 five-degree-square blocks each with a characteristic catch composition of 12 species or species group were performed. Results obtained indicate that (1) three main sub-areas, namely: Subarea 1, 2 and 3 are identified in the South Atlantic; (2) Subarea 1, which locates from 10° ~15° S and northward to the northern boundary of 5° N, is characterized by its major activities were composed of DLL fishing targeting mainly for big eye tuna; (3) Subarea 2 and Subarea 3, both located southward to Subarea 1, are characterized by its major activities were composed of RLL fishing targeting mainly for albacore; and (4) contrasts in albacore's catch rates by sub-areas are significant.

Further, a MRAR (Marginal Rate of Areal Regrouping) index is introduced to compare the appropriateness of area demarcation. Results of the analysis indicate that any shift of boundary between Subarea 1 and Subarea 2 will systematically and significantly decrease the MRAR index, particularly after mid-1980s when the emergence of the DLL vessels in the South Atlantic commenced.

(Key words: South Atlantic, Albacore, Fishing area, Hooks between floats)

INTRODUCTION

Based on best available knowledge, there are two independent stocks, separated by 5 °N latitude, of albacore fisheries resource in the Atlantic Ocean. And both stocks have been closely monitoring and managed since early 1970s by the ICCAT (International Commission for Conservation of Atlantic Tunas). The practice of Taiwanese distant water longline fisheries commences around 1960s, and begins to operate in the Atlantic in the mid-1960s. Traditionally, albacore is the main target species

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