Additional Works of the Preliminary Analysis on Possible Stock Boundary of Striped Marlin in the North Pacific Using Fishery Data of Japanese Longliners
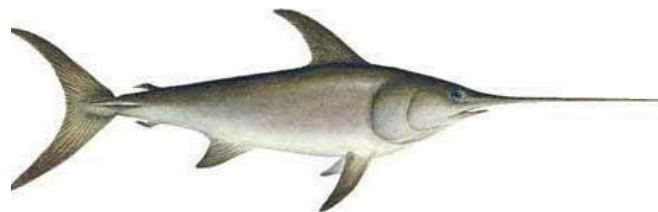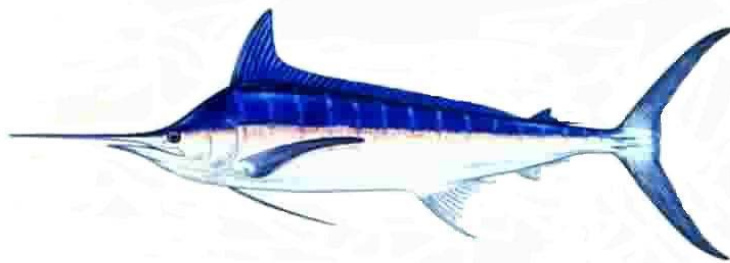
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Introduction

In the ISC billfish working group meeting held in 30th November – 4th December 2009 in Honolulu, the WG requested the cluster analysis study of the north Pacific striped marlin data of Japanese offshore and distant-water longliners to conduct additional study using the whole Pacific data. This document briefly describes the results of the additional study.

Materials and Methods

Exactly same method as Ichinokawa and Yokawa (2009) was used in this study but the period of data used was different, primarily due to that the data of the year with missing cell were deleted. The analysis by Ichinokawa and Yokawa (2009) was comprised by two parts in the single process, one is the cluster analysis of the longline data and the other is the standardization of CPUE of striped marlin using area stratification designated by the result of the cluster analysis. Because the later part did not allow the missing cell, data of years with blank areas were omitted from the analysis. As a result of this, only data of year in 1970-1975 and 1986-1989 was used. The coverage of data in the south Pacific, whose data was newly added in the analysis, was lower than the north Pacific. Though the complicated gear configurations, represented by the number of hooks per basket, was occurred in the late 1990s for Japanese longliners, effect of gear configuration was not introduced into the model primary due to the problem of further missing cells.

Results and Discussions

Cluster analysis could divide the whole Pacific down to seven areas (Fig. 1, left panels). Further division produced additional missing cells. In the north Pacific area, positions

of estimated boundary lines becomes rather similar to those reported by former study by Ichinokawa and Yokawa (2009). And the results of this study seem to characterize the uniqueness of the eastern part of the Pacific, especially the northern part of the northeastern Pacific. But as indicated by Ichinokawa and Yokawa (2009), General trend of standardized CPUE shows similar ones among estimated area within the period analyzed (Fig.1, right panels). This indicates the possibility that the result of cluster analysis more reflecting the operational pattern of Japanese longliners and the general characters of oceanographic conditions than the stock structure of striped marlin. Absence of clear north-south boundary in the western-central Pacific would support this. Also, same problem of the effect of directed fishery in off Mexico waters still remained in this study. Someone may say the trends of standardized CPUEs are different among areas, and someone may say not. That is the issue of subject. Though the authors reiterated same conclusion as the former study that the result of the analysis cannot be strong enough to change the current condition of stock assessment of the north Pacific striped marlin, further study, such as more detailed analysis of Japanese longline data or other biological studies like tagging and genetics of striped marlin, would be necessary.

Reference

Ichinokawa and Yokawa (2009) Preliminary analysis on possible stock boundary of striped marlin in the north Pacific using fisheries data of Japanese longliners. ISC/09/BILLWG-3/03
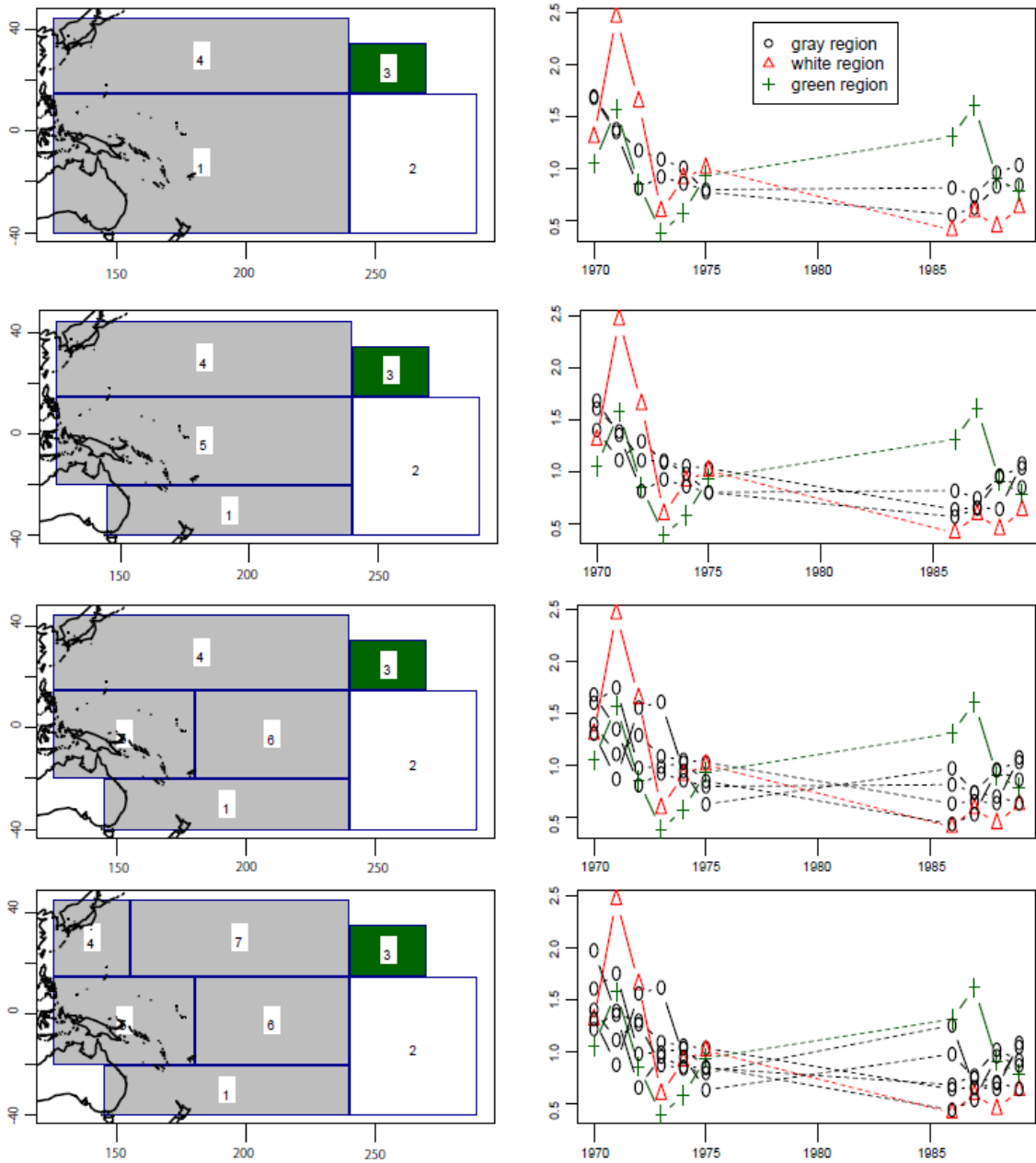
Fig. 1. Results of the cluster analysis.