Catch size composition of splendid alfonsino in the Emperor Seamounts area before and after the implementation of the mesh size regulation

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Abstract

NPFC implemented the new regulation for the mesh size of trawl nets in 2019, in order to conserve small individuals of splendid alfonsino *Beryx splendens*. To evaluate the effectiveness of this measure, we visually compared catch size composition of splendid alfonsino before (2018) and after (2019) the implementation. The direction and extent of yearly changes differed among vessels and seasons, indicating the need of further examination on the determinants of catch size composition in this fishery.

Introduction

Overexploitation of young, small and/or immature fish may hamper the productivity of fish stocks, both in terms of growth and recruitment (Froese 2004). In the Emperor Seamounts area, the catch size composition of splendid alfonsino *Beryx splendens*, especially by trawlers, indicated the exploitation of small, young and immature fish, and the mean size was even decreasing (Sawada et al. 2018). This finding led to the implementation of the new regulation that vessels shall use the trawl nets with mesh size greater than (or equals to) 130 mm in the codend (North Pacific Fisheries Commission 2018), as a part of the adaptive management plan proposed by Japan (Fisheries Agency of Japan 2018). This regulation came into force at the beginning of the 2019 fishing season.

In this Working Paper, we evaluated the effect of this regulation, through the comparison of catch size composition before (i.e. 2018) and after (2019) the implementation of the new mesh size regulation, to contribute to the monitoring process within the adaptive management procedure.

Materials and Methods

Size composition data of splendid alfonsino by Japanese vessels are collected by on-board scientific observers. Observers randomly sample ca. 100 individuals (or all individuals caught if the whole catch is smaller than 100 individuals) from 1 tow per fishing day when alfonsino is caught. Then

they measured the fork length (rounded down to the nearest 0.5 cm) of those individuals, using punch cards designed for fish measurement (see Sawada et al. 2018 Appendix).

Here we focused on three trawlers (denoted by Trawler A, B and C) which operated in both 2018 and 2019 years. Because different vessels may have different selectivity and fish population structure may fluctuate seasonally, we plotted the length composition for each month for each vessel, and then visually examined the difference between the two years. Data was not weighted by the amount of catch.

Result and Discussion

In total, length data is obtained for 32757 and 42482 individuals from 324 and 430 tows in 2018 and in 2019, respectively. The boxplots for each vessel and month are shown in Fig. 1. The direction and extent of yearly changes differed among the vessels and seasons, even though the same regulation was implemented. The causes of this variation are unclear. For example, different vessels may have different gear configurations to the extent allowed by the current Conservation and Management Measures, or may have different operational patterns. Alfonsino population structure and/or local size distribution may fluctuate seasonally, e.g. by seasonal recruitment. The cause of variations in catch size composition needs to be further examined.

Acknowledgements

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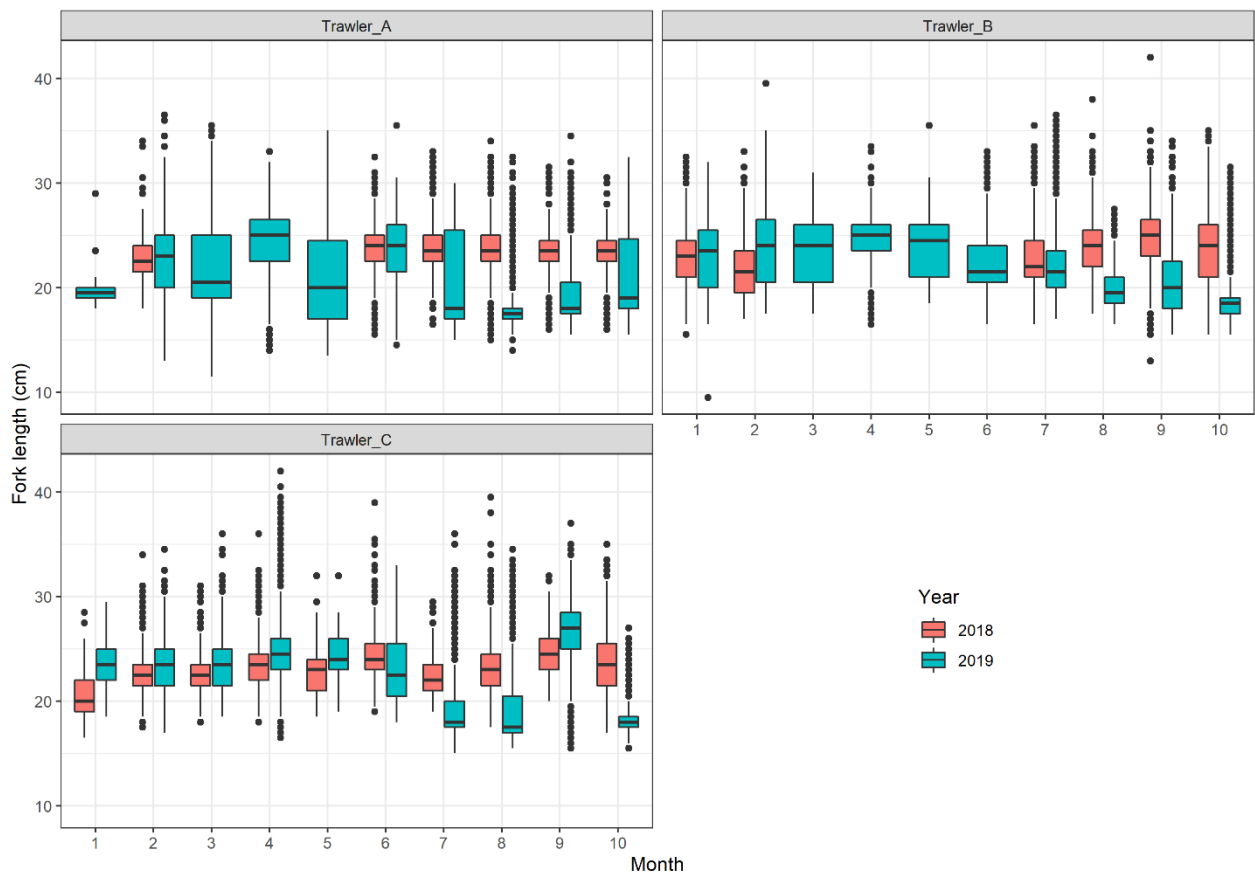
Fig. 1. Boxplots of catch size composition of splendid alfonsino in the Emperor Seamounts area by trawlers.