Seabird bycatch of Japanese longliners in the Southwest Pacific during 2010 – 2015

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Summary

Observer and log-book data of Japanese longliners operated in the southwest during 2010 – 2015 in the southwest Pacific were analyzed to provide basic information in seabird data analysis in this region. In the southwest Pacific, Japanese longliners by-caught seabirds in Tasman Sea (areas 2 and 3) where they mainly targeted southern bluefin tuna. Apparent reverse trend of seasonal CPUE patterns were observed between seabirds and southern bluefin tunas, i.e., seabirds CPUE was higher in 1st quarter than 2nd quarter while southern bluefin tuna CPUE was higher in 2nd quarter. Japanese longliners also actively operated in the region north of New Zealand (areas 4 and 5) where they seem to target on bigeye tuna, and some seabirds were bycaught in area 5. In the waters of the west of the date line (areas 1 – 6), seabird bycatch mainly occurred in the area south of 30S. On-board observers reported high seabird bycatch ratio in the eastern area of the New Zealand (areas 7 and 8) in 2014 and 2015, while the amounts of effort deployed in this area in 2014 and 2015 were rather limited. These results should be considered in further analysis of seabird data.

南西太平洋域における海鳥データ解析に資する目的で、同水域で 2010～2015 年に操業した日本のはえ縄船のオブザーバーデータと漁獲成績報告書データを解析した。この水域で日本漁船は、主にタスマン海（エリア２・３）でミナミマグロ狙いの操業を行っている際に海鳥を混獲している。タスマン海に於いて日本漁船は第１・２四半期に操業しているが、四半期別 CPUE パターンはミナミマグロと海鳥で逆転しており、前者は第 2 四半期に CPUE が高くなるのに対して、後者は第１四半期の方が高い。日本のはえ縄漁船は NZ 北部水域（エリア４・５）でも多く操業しており、この水域では主にメバチを狙っていると思われる。タスマン海及び NZ 北部水域（エリア１－６））では、主に南緯３０度以南で海鳥混獲が発生している。オブザーバーは、２０１４・２０１５年に NZ 東方水域（エリア７・８）でもまとまった数の海鳥混獲があったことを報告しているが、漁獲成績報告書のデータからは、これらの年に当該水域で行われた操業がごく僅かであったことを示している。これらの解析結果は、今後同水域の海鳥データを解析していく上で参照されるべきで

ある。

Introduction

High latitudinal area of the south Atlantic and the south Indian Oceans are one of important regions for Japanese far seas longliners to catch high quality tunas like southern bluefin tuna. At the same time, longline operations in this region is known to have bycatch of seabirds, many of them need to be conserved due to their low stock condition. Katusmata et al. (2016) summarized the basic seabird bycatch information collected by the observers on-boarded to Japanese longliners in the high latitudinal area of the Atlantic and Indian Oceans during 2010 – 2015. The present study is the same data summarization in the western central Pacific region, which is done for the benefit of the evaluation of the impact of operations of Japanese longliners on seabird stocks.

Materials and Methods

Same observer data used in the analysis of positive catch ratio of seabird (Inoue et. al., 2016). Those are mainly composed by CCSBT observers, and data collected by ICCAT and IOTC observers are also included. The data used in this analysis is limited to the one collect in the area south of 20S in the Western Central Pacific.

Species identification of bycaught seabirds were conducted by National Research Institute of Far Seas fisheries Japan and Birdlife International using photos taken by observers in the manner designated in the observer manual. For the simplification of the analysis, bycaught seabird species are classified into 13 groups shown in Table 1. In general, Japanese on-board observers to the longline boats cannot monitor whole gear retrieving process but only cover 80 – 90 % of it. Thus, the number of hooks whose gear retrieving is covered by observer in each set is used as the amount of effort for the analysis of catch and effort data of seabirds in this study. To analyze spatial pattern of bycatch, subareas are developed as shown in Figure 1, and quarter of the year is used for the analysis of seasonal pattern of bycatch.

Japanese observers are requested to report target species in each set through the questionnaire to the skipper, and this data is used for the target species determination. When multiple species are reported as target in single set, species having higher market value is adopted as the target species in this study. In the high latitudinal area of southern hemisphere in the Atlantic and Indian Oceans, southern bluefin tuna has highest market values for Japanese longliners, and second highest is bigeye tuna, 3rd

is yellowfin tuna, 4th is albacore and values of other fishes are generally lower than these four tuna species.

For the analysis of catch and effort of the Japanese longliners, the logbook data raised and aggregated by 5x5 block and by month, which has been compiled at the National Research Institute of Far Seas Fisheries (NRIFSF) from 2010 to 2015, was used. Fisherman engaged in the distant water longline mandatorily submits the logbook to NRIFSF through Fishery Agency of Japan. Generally, the coverage of the log-book of offshore and distant water longliners is quite close to 100%, and aggregated logbook data used in this study was raised to 100%.

Results and Discussions

In the southwest Pacific, majority of seabird bycatch were observed in areas 2 and 3, and bycatches in area 3 occupied more than 65% of the total in the period between 2011 and 2015 (Figure 2). On-board observers watched large amount of efforts (number of hooks) in areas 2 and 3, while they also observed large number of hooks in areas 1, 4, and 5.

Largest number of seabird bycatch occurred in area 3 where number of hooks observed is also largest, and seems to be one of main fishing area of Japanese longliners in the region analyzed (Figures 1 and 2). The second largest number of seabird bycatch obtained in area 2 while the reported bycatch number of seabird in the area 2 is much smaller than the area 3.

Different from the Off Cape and the southwest Indian regions, Shy albatross group, Bullers albatross group, Wandering albatross group were main species groups reported by observers in the period analyzed (Figure 2). Bullers albatross groups were most dominant in areas south of 40S, but the ratio of Bullers group decreased in areas north of 30S. Instead of this, the ratio of Wandering albatross group increased in areas north of 30S.

Sudden increases of seabird bycatch number were observed in 2014 and 2015 in more or less in all areas analyzed (Figure 2). Quarterly CPUE analysis of total seabirds in the area 3 indicates the CPUE value in 1st quarter is more than three times higher than that in 2nd quarter, and observer data in the 1st quarter in the area 3 are only collected in 2014 and 2015 (Figures 3 and 4). Similar tendency is also observed in the

area 2 (Figures 5 and 6). Annual CPUE by area indicated higher CPUE also observed in areas 7 and 8, and the observer record indicated all data collected in the 3rd quarter. Considering the fact that the main fishing season of Japanese longliners in the southwestern central Pacific is 2nd quarter when the high season for southern bluefin tuna, the reported increase of the seabird bycatch number is due to the newly occurred operations in the season outside of the traditional fishing season of Japanese longliners.

Results of analysis of log-book data of Japanese longliners indicate that they mainly operated in areas 2, 3, 4 and 5 (Figure 9). Southern bluefin tunas were caught in areas 2 and 3, and bigeye tunas were in areas 2, 4, and 5. Southern bluefin tunas were almost caught in 2nd quarter in areas 2 and 3, and no southern bluefin tunas were caught in 3rd and 4th quarters (Figures 10 and 11). Some southern bluefin tunas were also caught in 1st quarter in areas 2 and 3, while they become rather small in most recent years. In both areas 2 and 3, CPUEs of southern bluefin tuna in 2nd quarter were much higher than those in 1st quarter.

In the main fishing ground of Japanese longliners in the southwest Pacific, most popular catches were albacore (Figure 12). Southern bluefin tunas were second popular species in areas 2 and 3 while almost rather few southern bluefin tunas were caught in areas 4 and 5.

Conclusion

In the southwest Pacific, Japanese longliners by-caught seabirds in Tasman Sea (areas 2 and 3) where they mainly targeted southern bluefin tuna. Apparent reverse trend of seasonal CPUE patterns were observed between seabirds and southern bluefin tunas, i.e., seabirds CPUE was higher in 1st quarter than 2nd quarter while southern bluefin tuna CPUE was higher in 2nd quarter. Japanese longliners also actively operated in the region north of New Zealand (areas 4 and 5) where they seem to target on bigeye tuna, and some seabirds were bycaught in area 5. In the waters west of the date line (areas 1 – 6), seabird bycatch mainly occurred in the area south of 30S. On-board observers reported high seabird bycatch ratio in the eastern area of the New Zealand (areas 7 and 8) in 2014 and 2015, while the amounts of effort deployed in this area in 2014 and 2015 were rather limited. These results should be considered in further analysis of seabird bycatch data.

References

Katsumata, N., K. Yokawa and K. Oshima (2015) Information of seabirds bycatch in area south of 25 S latitude in 2010 from 2015. ICCAT SCRS document SCRS/2016/164, 25p.

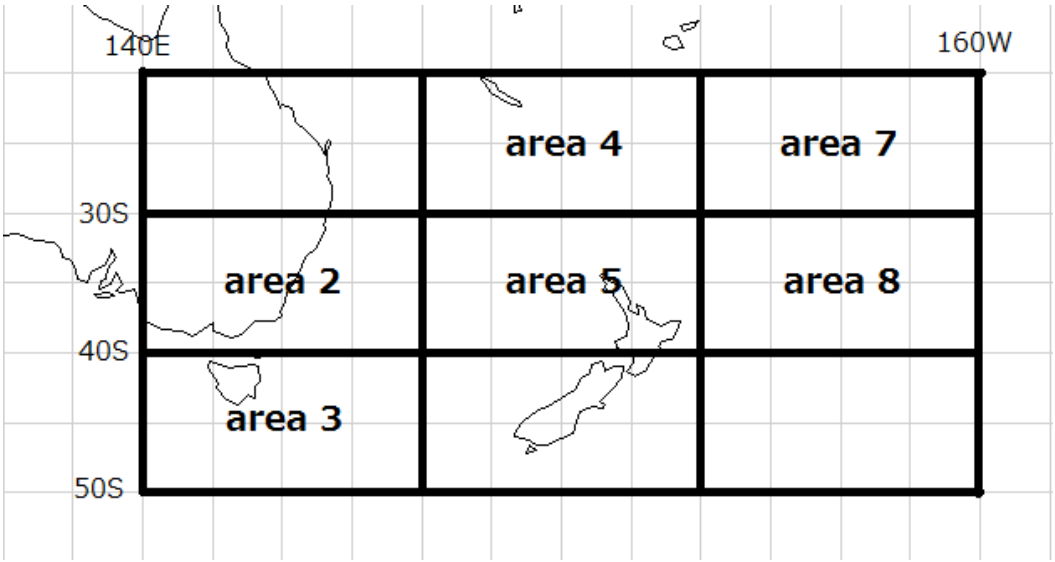

Figure 1. Subarea designation used in this study.

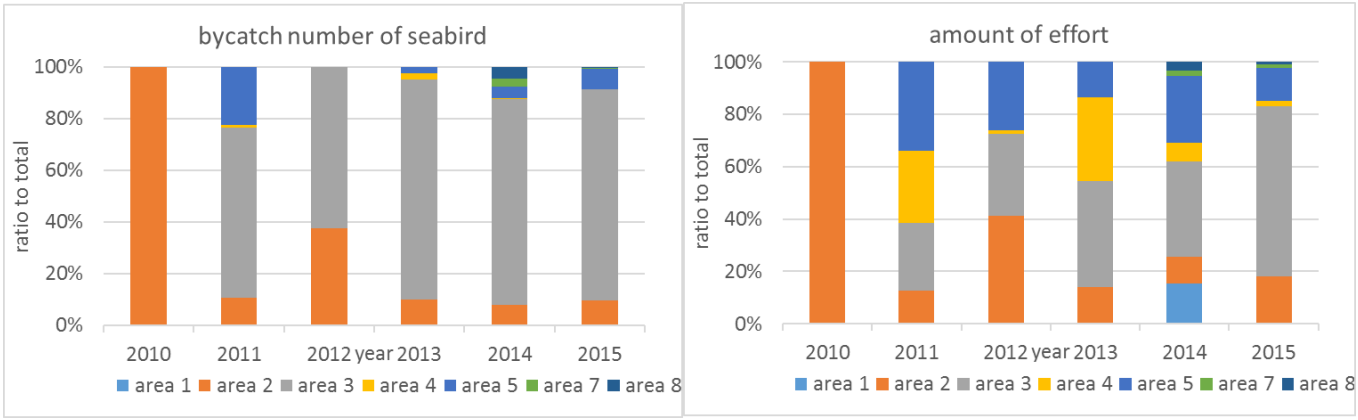

Figure 2. Ratio of seabird bycatch number (left) and amount of effort (right) of area reported by observers in the southwest Pacific in the period between 2010 and 2015.

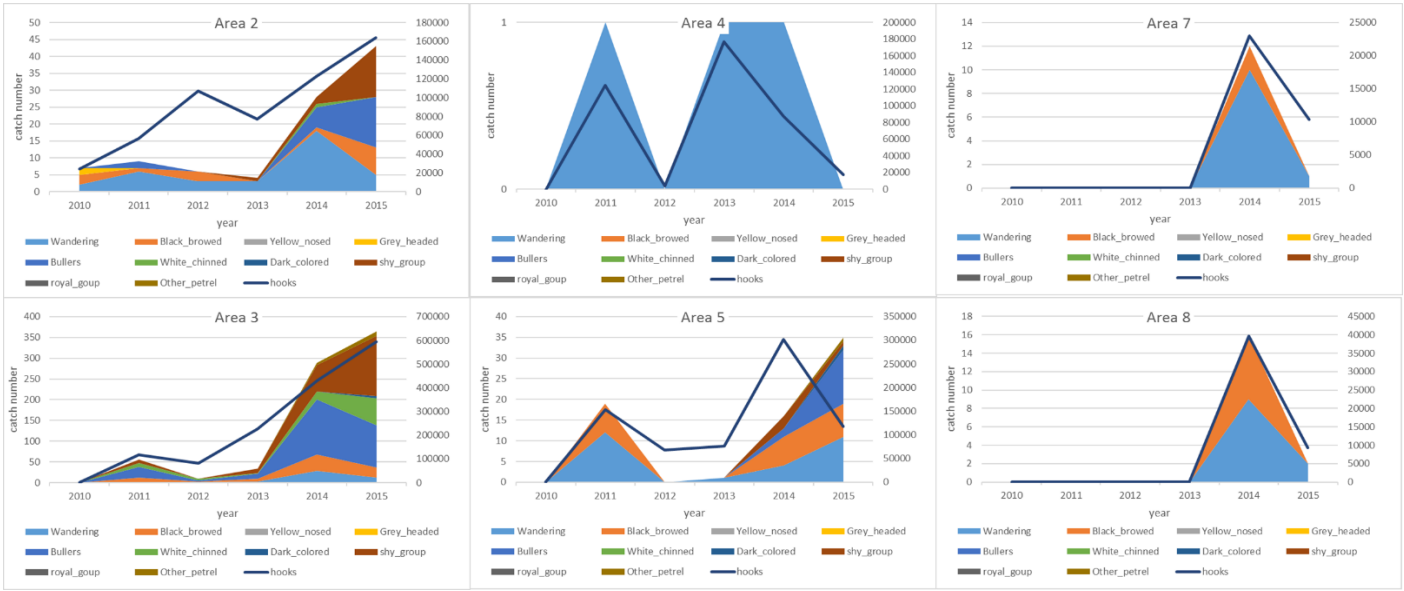

Figure 3. Annual bycatch numbers of seabird by species groups reported by Japanese on-board observers in the region south of 20S during 2010 – 2015.

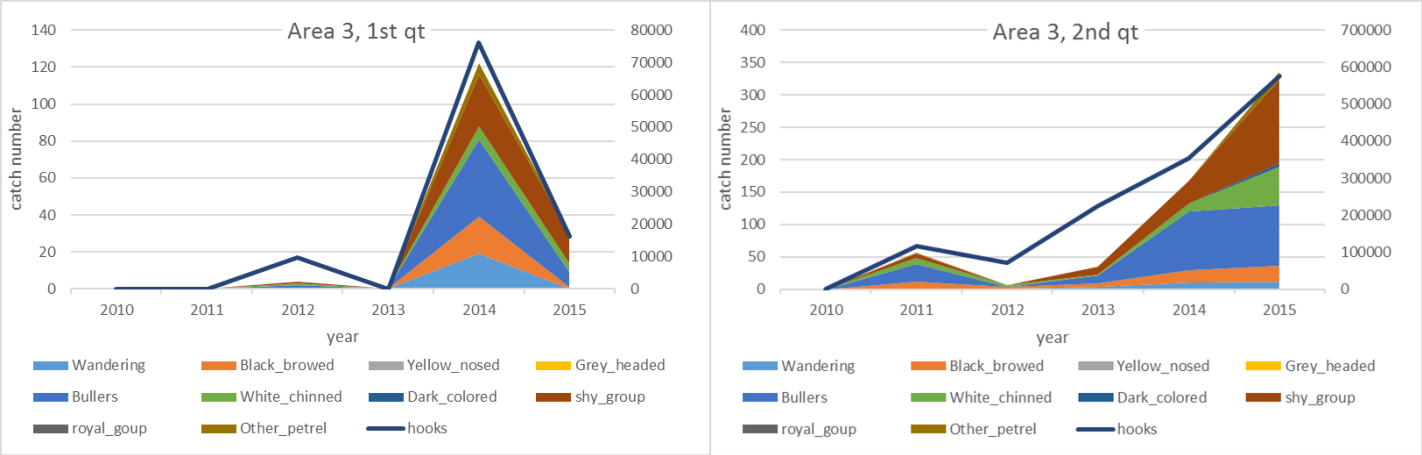

Figure 4. Annual bycatch numbers of seabird by species groups reported by Japanese on-board observers in the 1st and 2nd quarters in the area 3 during 2010 – 2015.

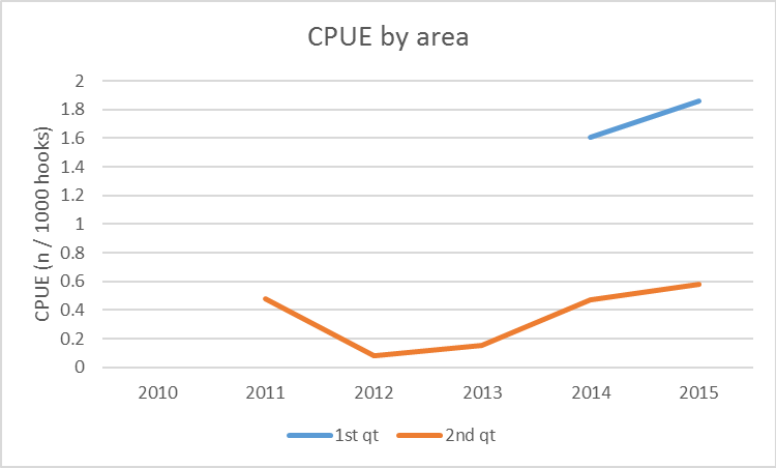

Figure 5. Annual CPUE (n / 1000 hooks) of total seabird caught by sets of Japanese longliners with on-board observers in the 1st and 2nd quarters in the area 3 during 2010 – 2015.

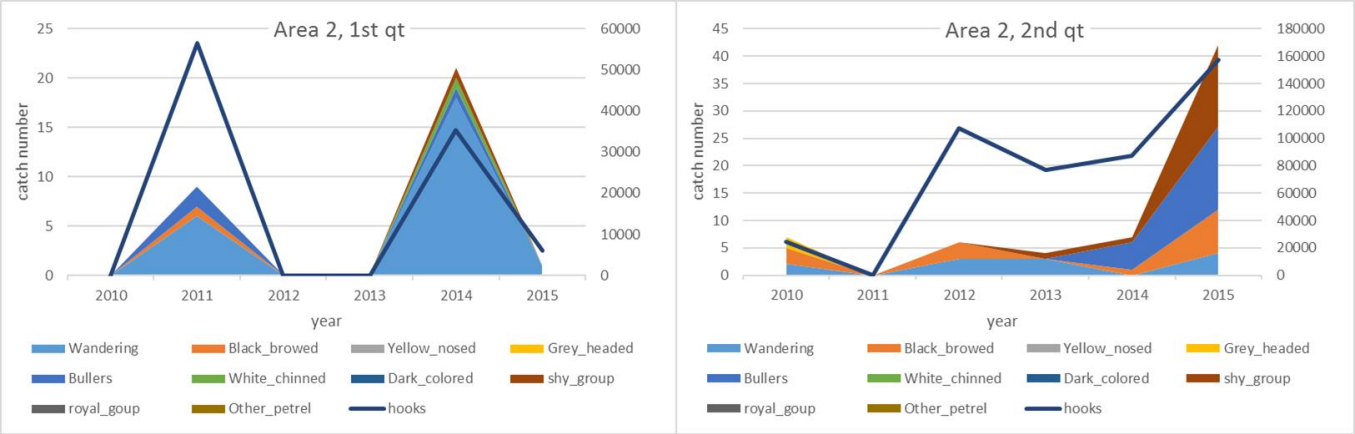

Figure 6. Annual bycatch numbers of seabird by species groups reported by Japanese on-board observers in the 1st and 2nd quarters in the area 2 during 2010 – 2015.

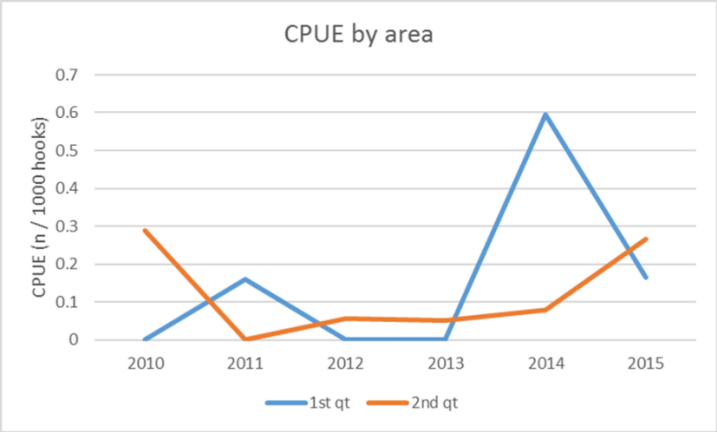

Figure 7. Annual CPUE (n / 1000 hooks) of total seabird caught by sets of Japanese longliners with on-board observers in the 1st and 2nd quarters in the area 3 during 2010 – 2015.

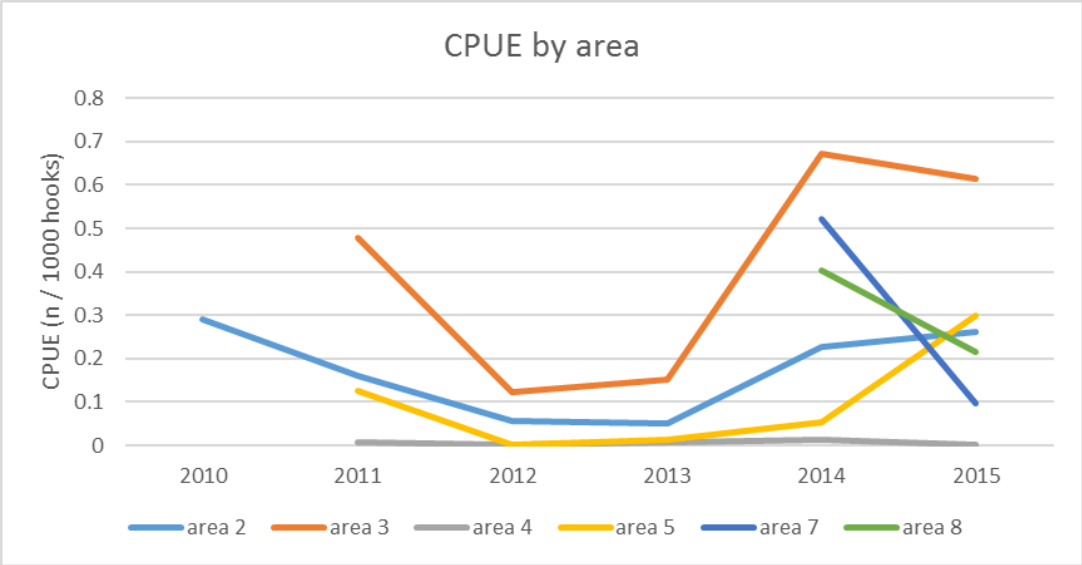

Figure 8. Annual CPUE (n / 1000 hooks) of total seabirds caught by Japanese longliners with on-board observers during 2010 – 2015 in the southwestern central Pacific.

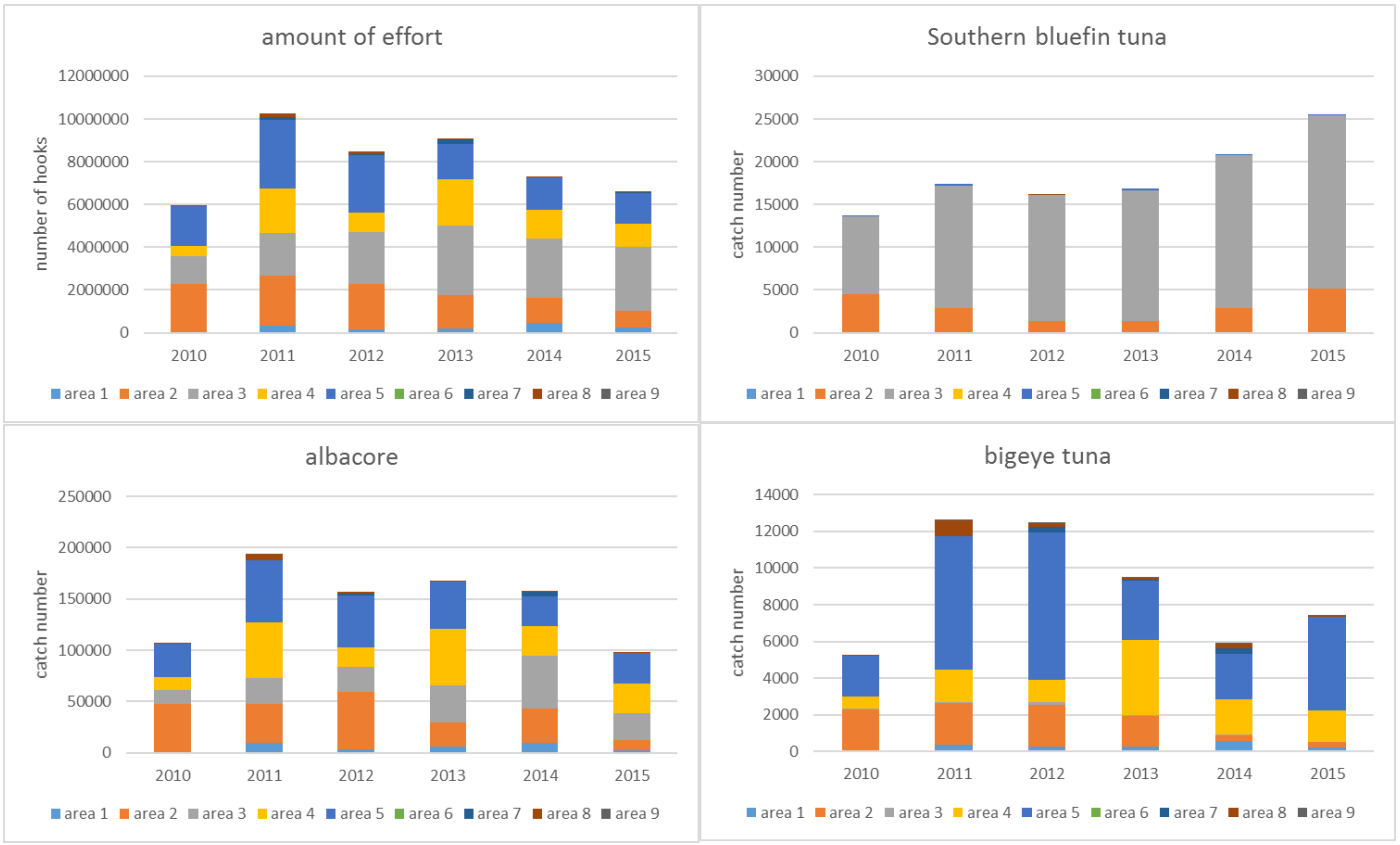

Figure 9. Annual amount of effort (number of hooks)(left top), catch number of southern bluefin tuna (right top), albacore (left bottom) and bigeye tuna (right bottom) by area in 2010 – 2015.

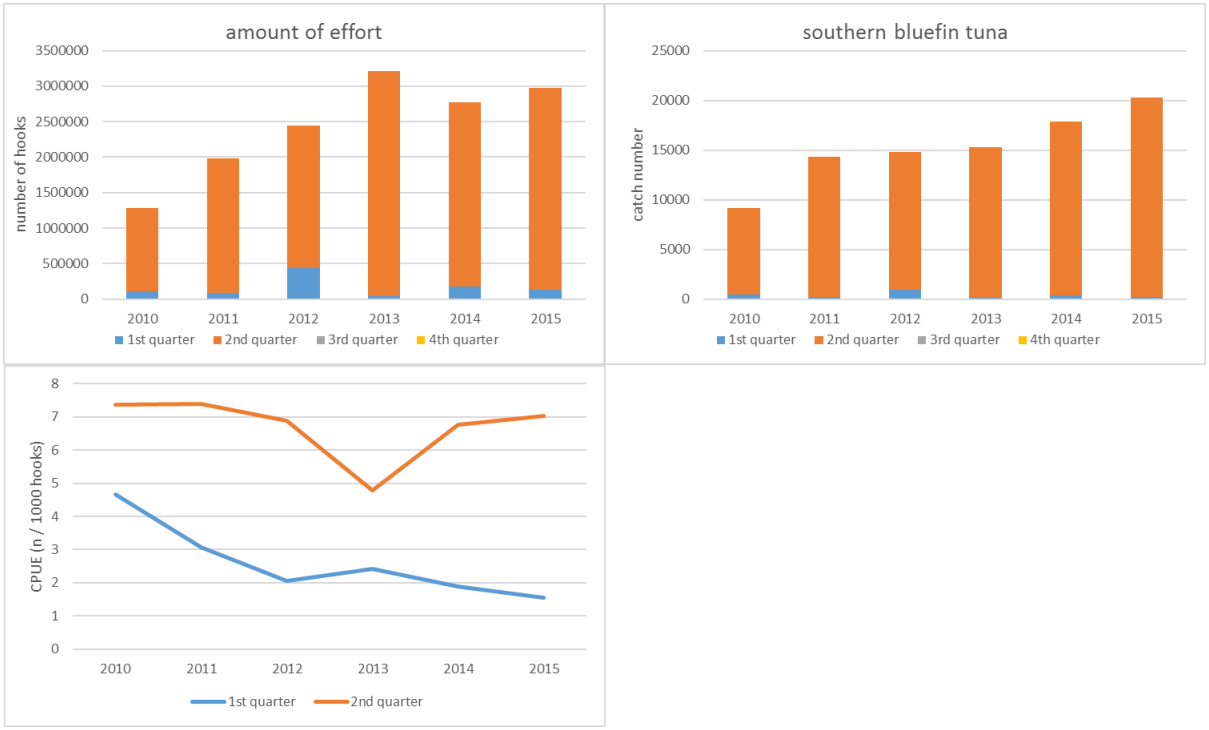

Figure 10. Annual amount of effort (number of hooks)(left top), catch number of southern bluefin tuna (right top), and CPUE (n / 1000 hooks) of southern bluefin tuna (right bottom) by quarter in area 3 in 2010 – 2015.

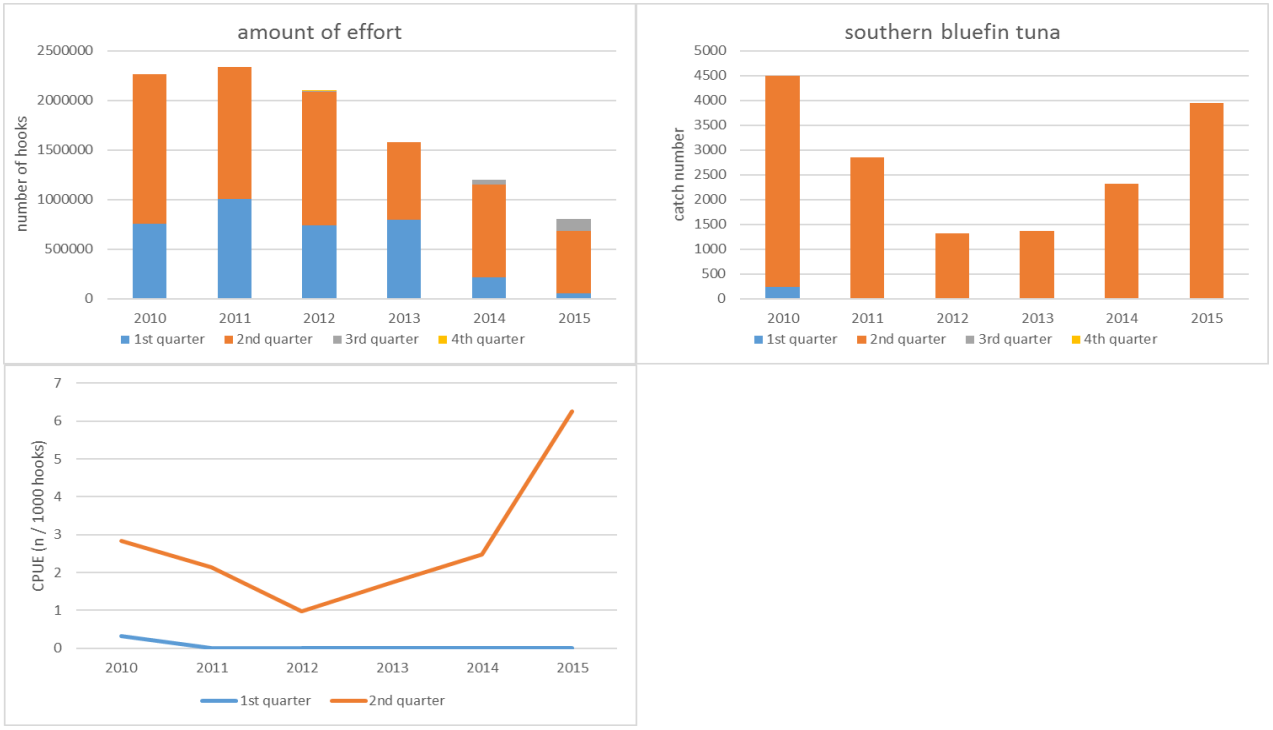

Figure 11. Annual amount of effort (number of hooks)(left top), catch number of southern bluefin tuna (right top), and CPUE (n / 1000 hooks) of southern bluefin tuna (right bottom) by quarter in area 2 in 2010 – 2015.

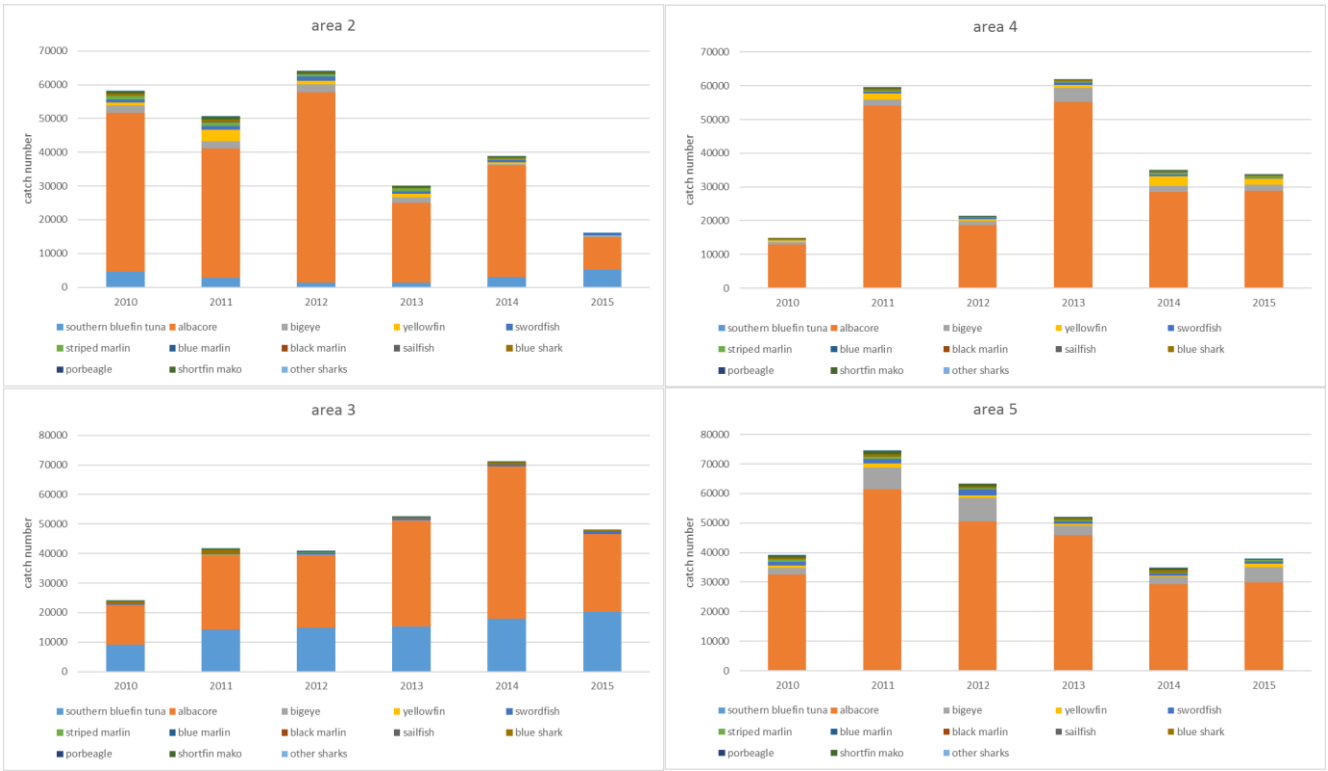

Figure 12. Annual catch number by species of Japanese longliners operated in area 2 (left top), area 3 (left bottom), area 4 (right top) and area 5 (right bottom) in the period between 2010 and 2015.