DATA REVISIONS TO NOMINAL CATCH FOR IOTC SPECIES

PREPARED BY: IOTC SECRETARIAT[1], 27 NOVEMBER 2014

PURPOSE

To provide the Scientific Committee of the IOTC with an overview of changes to the nominal catch series of IOTC species and sharks (as of October 2014), as derived from new data reports (in accordance with IOTC Resolution 10/02) or major data revisions conducted by the IOTC Secretariat during the last year; and seek endorsement by the IOTC Scientific Committee of the best scientific estimates of catch derived for each species and used in the assessments of IOTC species during 2014.

BACKGROUND

Prior to each IOTC Working Party (WP) meeting the IOTC Secretariat prepares a number of tables, figures and datasets that highlight historical and emerging trends in the fisheries data held by the IOTC Secretariat. This information is used during WP to inform discussions around stock status and in developing advice to the Scientific Committee.

This document summarizes changes to the nominal catch series since the 2013 Scientific Committee, reflecting the latest information made available from IOTC Members and Cooperating non-Contracting Parties (CPCs), in addition to revisions to the catch series implemented by the Data Section of the IOTC Secretariat.

The report covers the following areas:

- Overview of changes to the catch series by IOTC species.
- Appendix 1: Revisions to the catch estimates for non-reporting fleets.
- Appendix 2: Summary of country-specific data reviews by the IOTC Secretariat during the last year.
- Appendix 3: Summary of revisions to the tagging data.

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Bibliographic entry: J. Geehan; Pierre, L.; Herrera, M. (IOTC Secretariat), 2013. Data revisions to nominal catch for IOTC species. Seychelles, 29-30 November 2013. *IOTC–2013–WPDCS09–14.*

TROPICAL TUNA SPECIES – DATA REVISIONS: OVERVIEW

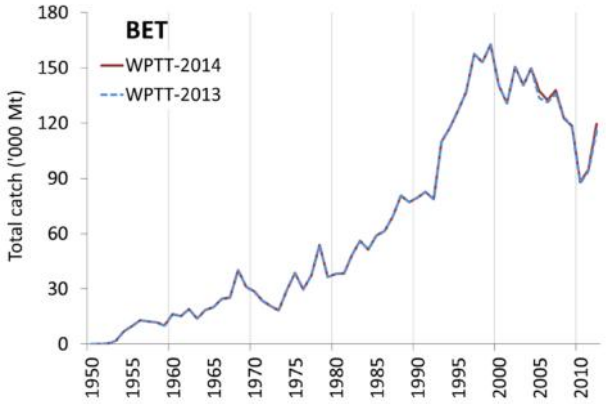


Fig. 1. Bigeye: catches used by the WPTT in 2013 versus those estimated for the WPTT in 2014 (1950–2012).

Bigeye (Thunnus obesus):

- There have been no major revisions to the catch series of bigeye tuna since WPTT15-2013 (**Fig. 1**).

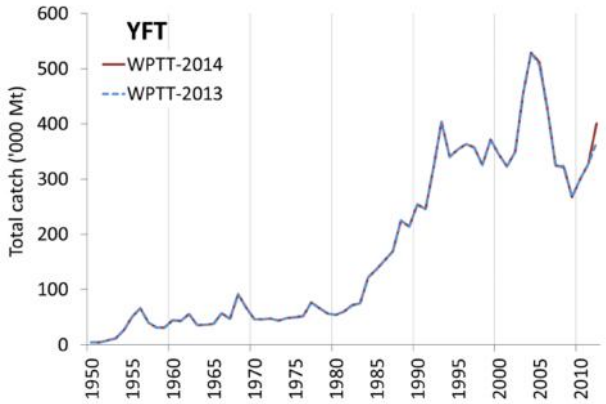


Fig. 2. Yellowfin: catches used by the WPTT in 2013 versus those estimated for the WPTT in 2014 (1950–2012).

Yellowfin (Thunnus albacares):

- There have been no significant changes to the total catches of yellowfin since WPTT15-2013 (**Fig. 2**), with the exception of catches reported by India which in 2012 and 2013 declared catches for a new coastal longline/trolling fishery targeting mostly yellowfin and skipjack tuna (e.g., increasing catches of yellowfin in 2012 by around 6,800 t).

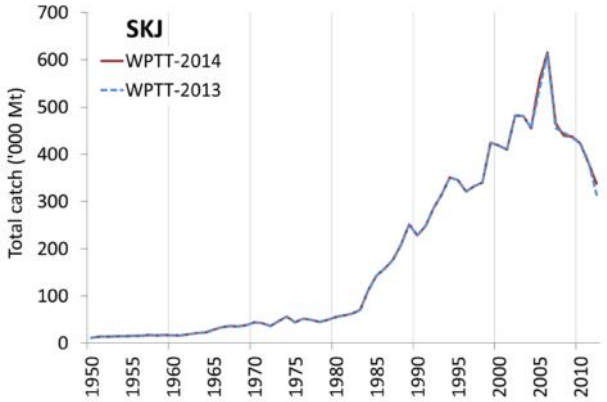


Fig. 3. Skipjack: catches used by the WPTT in 2013 versus those estimated for the WPTT in 2014 (1950–2012).

Skipjack tuna (Katsuwonus pelamis):

- There have been no major revisions to the catch series of skipjack tuna since WPTT15-2013 (**Fig. 3**).
- In 2012 and 2013 India declared catches for a new coastal longline/trolling fishery, targeting mostly yellowfin and skipjack tuna, however this has had a relatively minor impact on catches of skipjack catches (e.g., increasing total catches by around 3,300 t in 2012).

TEMPERATE TUNA SPECIES – DATA REVISIONS: OVERVIEW

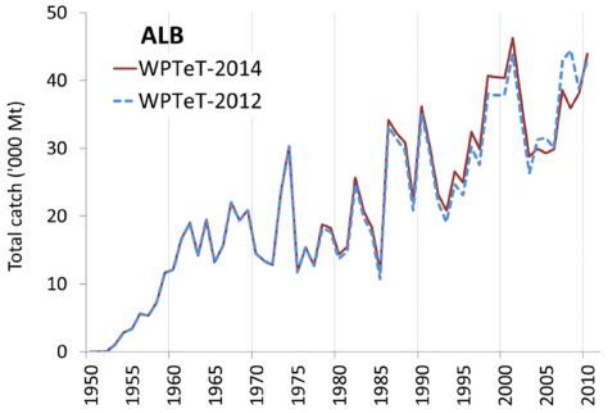


Fig. 4a. Albacore: catches used by the WPTmT in 2014 versus those estimated for the WPTmT in 2012 (1950–2010).

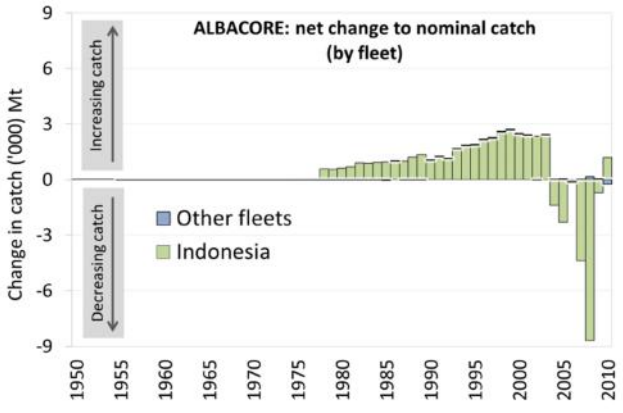


Fig. 4b. Albacore: net change in total catch, by year and fleet.

Albacore tuna (Thunnus alalunga):

- The catch series for albacore has changed since the WPTmT in 2012 (**Fig. 4a**), following a review of the catch series of albacore for the fisheries of Indonesia.
- The major changes to the historical series include revisions to the catch estimates for 2007 and 2008, with revised catches of between 30%-50% lower than those previously recorded by Indonesia (equivalent to a decrease in total catches of albacore of ≈4,400 t in 2007 and 8,500 t in 2008) (**Fig. 4b**).

NERITIC SPECIES –DATA REVISIONS: OVERVIEW

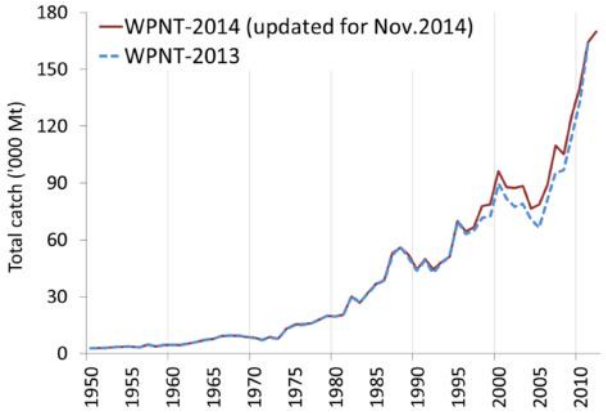


Fig. 5. Longtail: catches used by the WPNT in 2013 versus those estimated for the WPNT in 2014 (1950–2012).

Longtail tuna (Thunnus tonggol):

- Although there have not been significant changes to the total catches of longtail tuna since the WPNT meeting in 2013, the IOTC Secretariat has conducted revisions to the catch series for some fleets, primarily Malaysia following an IOTC-OFCF data mining missing in January 2014 (**Fig. 5**).
- Indonesia is also subject to an on-going review of the catch-series by the IOTC Secretariat, and further improvements to the catch series for longtail in particular are expected for future WPNT.

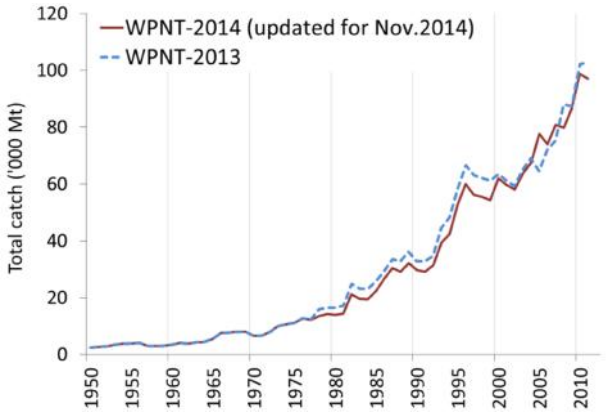


Fig. 6. Frigate: catches used by the WPNT in 2013 versus those estimated for the WPNT in 2014 (1950–2012).

Frigate tuna (Auxis spp.):

- The overall catch series of frigate tuna has not changed substantially since the WPNT meeting in 2012 (**Fig. 6**). The IOTC Secretariat is currently undertaking reviews of the catch series for Indonesia, Malaysia and Thailand which are likely revise the catch estimates for the next WPNT in 2015; however at present the total catches of frigate remain at similar levels when compared to previous estimates.

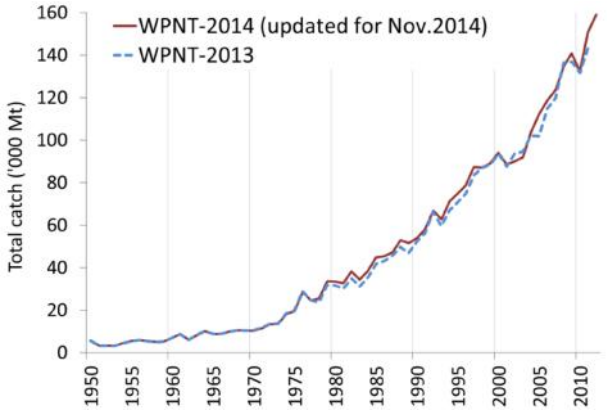


Fig. 7. Kawakawa: catches used by the WPNT in 2013 versus those estimated for the WPNT in 2014 (1950–2012).

Kawakawa tuna (Euthynnus affinis):

- The overall catch series of kawakawa has not changed substantially since the WPNT meeting in 2012 (**Fig. 7**). The IOTC Secretariat is currently undertaking reviews of the catch series for Indonesia, Malaysia and Thailand which are likely revise the catch estimates for the next WPNT in 2015; however at present the total catches of kawakawa remain at similar levels when compared to previous estimates.

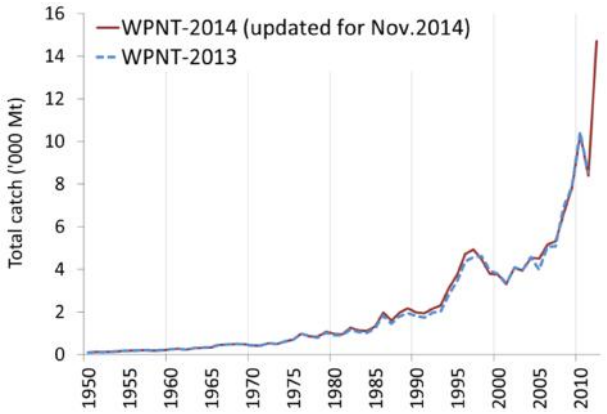


Fig. 8. Bullet tuna: catches used by the WPNT in 2013 versus those estimated for the WPNT in 2014 (1950–2012).

Bullet tuna (Auxis rochei):

- The catch series of bullet tuna has not changed substantially since the WPNT meeting in 2013 (**Fig. 8**).

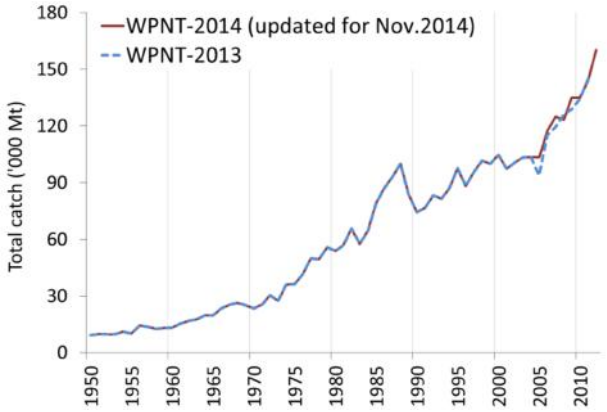


Fig. 9. Narrow-barred Spanish mackerel: catches used by WPNT 2013 versus those estimated for WPNT in 2014 (1950–2012).

Narrow-barred Spanish mackerel (Scomberomorus commerson):

- There have been no major revisions to the catch series of narrow-barred Spanish mackerel since the WPNT meeting in 2013 (**Fig. 9**).

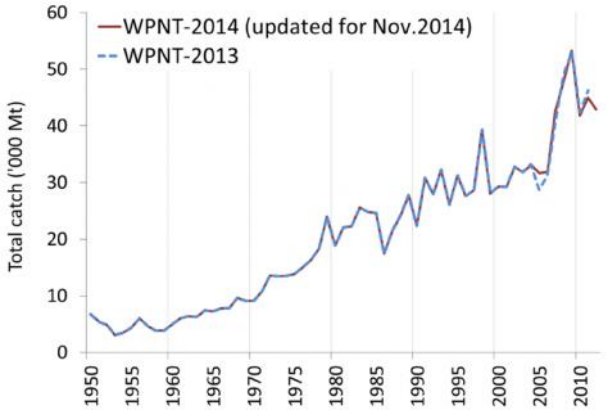


Fig. 10. Indo-Pacific king mackerel: catches used by the WPNT in 2013 versus those estimated for the WPNT in 2014 (1950–2012).

Indo-Pacific king mackerel (Scomberomorus guttatus):

- There have been no major changes to the catch series of king mackerel since the WPNT meeting in 2013 (**Fig. 10**).

BILLFISH SPECIES – DATA REVISIONS: OVERVIEW

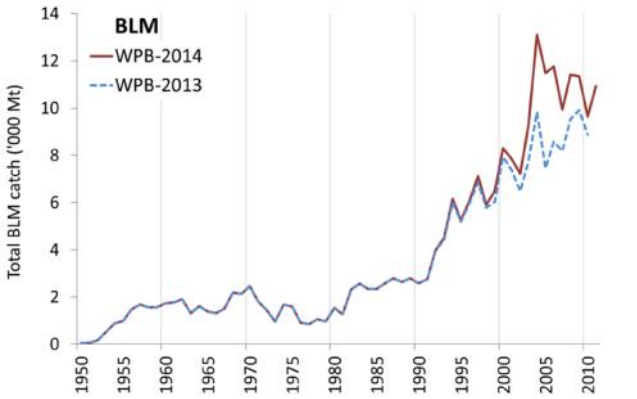


Fig. 11a. Black marlin: catches used by the WPB in 2013 versus those estimated for the WPB in 2014 (1950–2012).

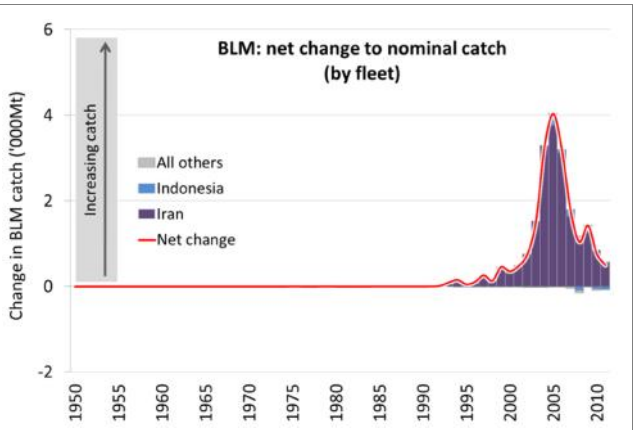


Fig. 11b. Black marlin: net change in total catch, by year and fleet.

Black marlin (Makaira indica):

- There have been relatively large revisions to catches of black marlin since the WPB meeting in 2013 (**Fig. 11a**), mostly the result of changes to catch-by-species for Iran, and to a lesser extent Indonesia (**Fig. 11b**).
- In 2014 Iran provided detailed catches for billfish species that significantly revised the catch-by-species previously estimated by the IOTC Secretariat; the main change being the proportion of catches assigned as black marlin rather than blue marlin for Iran's offshore gillnet fishery.
- As a result of changes in the catch series reported by Iran for 2012 and 2013 – and revision of the catch-by-species for the offshore fishery for earlier years estimated by the IOTC Secretariat – total catches of black marlin have been revised upwards by as much as 30% to 50% for several years around the mid-2000's (e.g., in 2005 catches have been revised from around 7,400 t to nearly 11,500 t) (see **Appendix II** for more details).

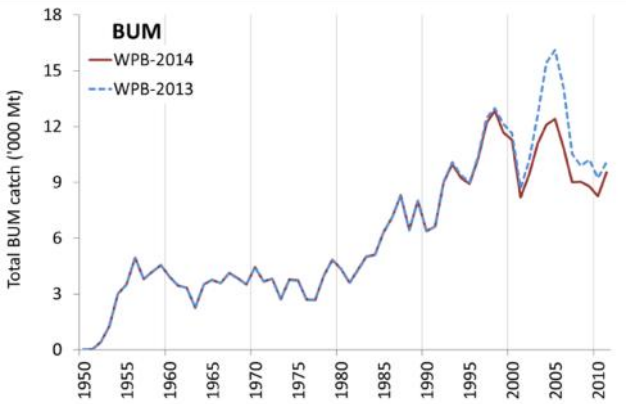


Fig. 12a. Blue marlin: catches used by the WPB in 2013 versus those estimated for the WPB in 2014 (1950–2012).

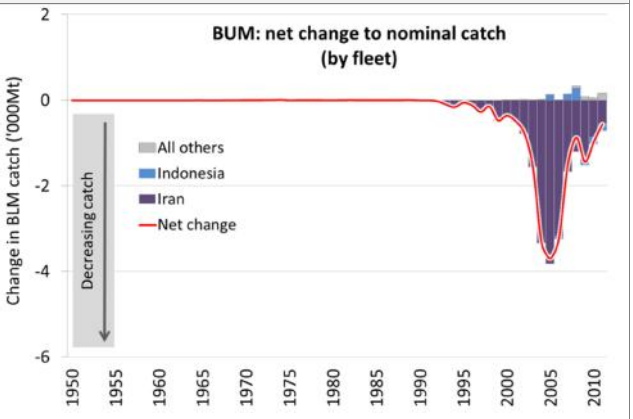


Fig. 12b. Blue marlin: net change in total catch, by year and fleet.

Blue marlin (Makaira nigricans):

- There have been relatively large revisions to the catch estimates of blue marlin since the WPB meeting in 2013 (**Fig. 12a**), mostly the result of changes to catch-by-species for Iran, and to a lesser extent Indonesia (**Fig. 12b**).
- In previous years Iran has reported aggregated catches for all billfish species, which were then estimated by species and gear by the IOTC Secretariat. In 2014 Iran provided catches by billfish species, for 2012 and 2013, which significantly revises the catch-by-species previously estimated by the Secretariat.
- The main change is the significantly higher proportions of black marlin rather than blue marlin reported by Iran, assigned to the offshore gillnet fishery. As a result of changes in the catch series for Iran in 2012 and 2013 – and revision of the catch-by-species for the offshore fishery for earlier years by the IOTC Secretariat – total catches of blue marlin have been revised down by as much as 20% for a number of years around the mid-2000's (see **Appendix II** for more details).

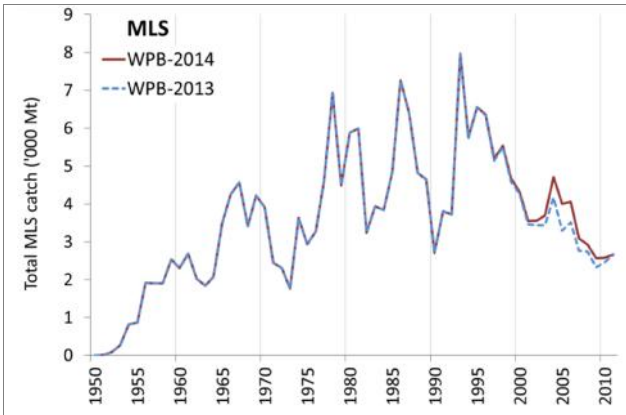


Fig. 13a. Striped marlin: catches used by the WPB in 2013 versus those estimated for the WPB in 2014 (1950–2012).

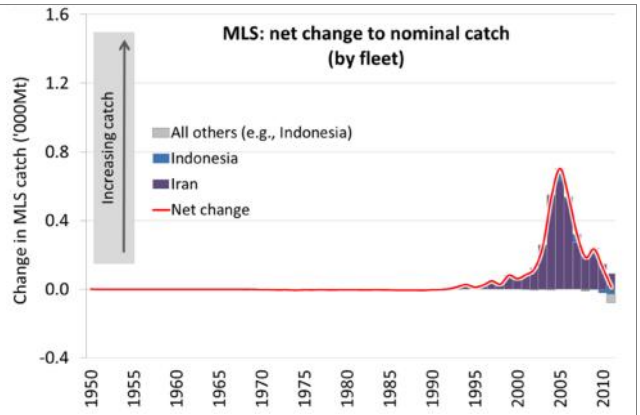


Fig. 13b Striped marlin: net change in total catch, by year and fleet.

Striped marlin (Tetrapturus audax):

- There have been minor changes to the catches of striped marlins since the WPB meeting in 2013 (**Fig. 13a**). The main revisions occur around the mid-2000s as a result of improvements to the estimate of total catch and catch-by-species for Iran and Indonesia (**Fig. 13b**). These changes, however, did not lead to significant changes in the catch estimates for striped marlins.

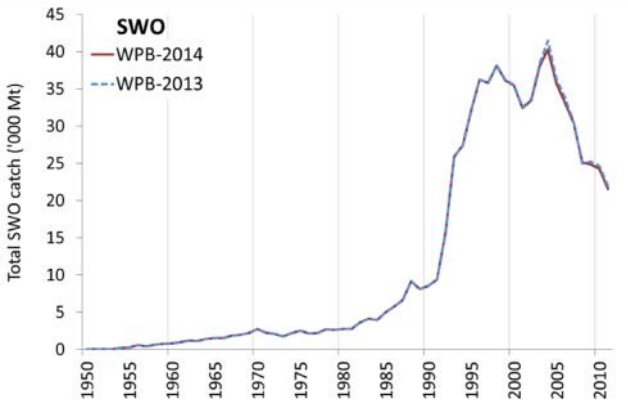


Fig. 14. Swordfish: catches used by the WPB in 2013 versus those estimated for the WPB in 2014 (1950–2012).

Swordfish (Xiphias gladius):

- There have been relatively minor revisions to the catches of swordfish since the WPB meeting in 2013 (**Fig. 14**).
- Any differences in the data series since the last WPB are relatively small changes to the nominal catch as a result of reallocation of catch reported as other billfish species or as aggregated species groups reported by Sri Lanka, and Pakistan to a lesser extent. These changes, however, did not lead to very significant changes in the total catch estimates for swordfish.

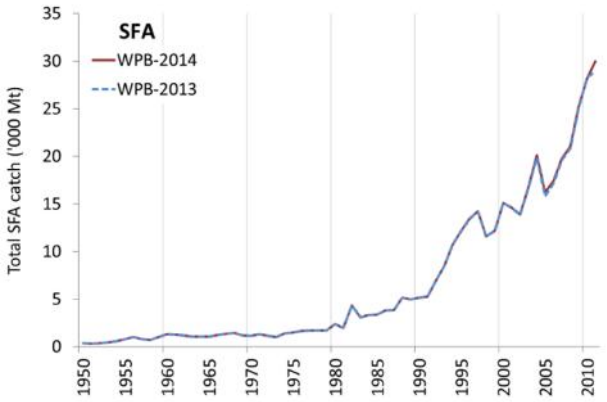


Fig. 15. Indo-Pacific Sailfish: catches used by WPB 2013 versus those estimated for WPB in 2014 (1950–2012).

Indo-Pacific Sailfish (Istiophorus platypterus):

- Catches of sailfish remain largely unchanged since the WPB meeting in 2013 (**Fig. 15**), and have been unaffected by revisions to the catch-by-species for Iranian gillnet offshore fisheries, and also the revisions to the catch series in Indonesia.

APPENDIX I

ESTIMATION OF CATCHES OF NON-REPORTING FLEETS

The estimates of catches of non-reporting fleets were updated in 2014:

The high number of non-reporting fleets operating in the Indian Ocean between the mid-1980's and the late 1990's led to large increases in the amount of catch that had to be estimated for that period. This reduced confidence in the catch estimates for yellowfin tuna and bigeye tuna, and to a lesser extent, skipjack tuna during those years. In recent years the number of fleets from non-IOTC Parties has decreased significantly. However, the decrease in the numbers of industrial vessels fishing in the Indian Ocean from non-IOTC parties has coincided with an increase in the numbers of vessels fishing under flags of some IOTC parties, including coastal countries in the IOTC region (India, Indonesia, Iran, Kenya, Malaysia, Oman, Seychelles, Tanzania and Thailand) and deep-water fishing nations (Belize, Guinea and Senegal), the quality of the statistics collected by these countries varying depending on the case.

- **Purse seine** (**Fig. 16**): Catches for the six former Soviet Union purse seiners, currently under the Thailand flag, were estimated for January-August 2005 and those for the remaining purse seiner (Equatorial Guinea) for 2005–2006. Total catches were estimated using the number of vessels available, the average catches of the former Soviet Union purse seiners in previous years, and average catches available for other fleets for 2005–2006. Total catches were assigned to species and type of school fished according to data available for Thailand purse seiners during the same period (2005–2006). The amount of catch that the Secretariat has to estimate for this fleet has decreased considerably in recent years. It is thought that there are no longer purse seiners operating under flags of non-reporting countries.

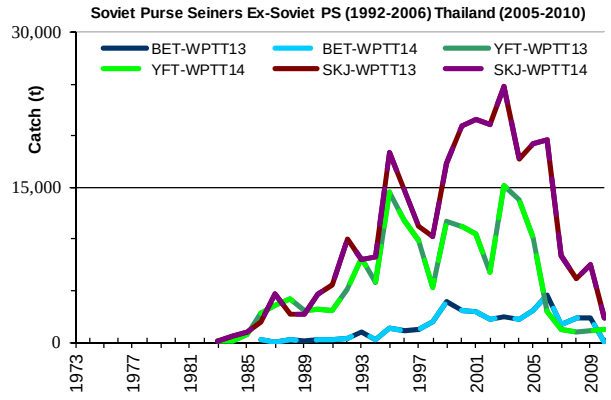


Fig. 16. Catches of Soviet, ex-Soviet and Thai purse seiners estimated in 2012 versus previous catches estimated in 2011 (1983–2010).

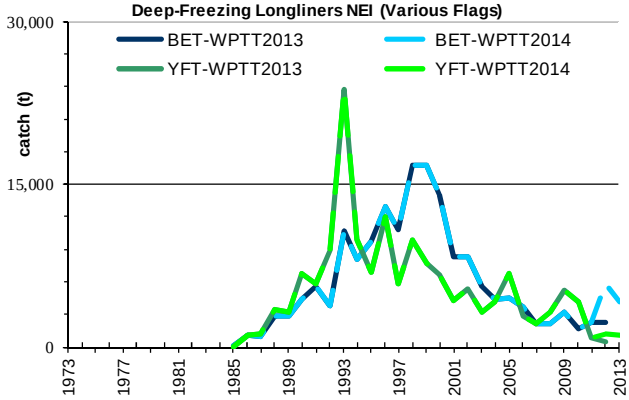


Fig. 17. Catches of deep-freezing longline vessels in the Indian Ocean estimated in 2014 versus catches estimated in 2013 (1985–2013).

- **Deep-freezing longline** (**Fig. 17**): The catches by large longliners from several non-reporting countries were estimated using IOTC vessel records and the catch data from Taiwanese, Japanese or Spanish longliners, based on the assumption that most of the vessels operate in a way similar to the longliners from Taiwan,China, Japan, or EU-Spain. The collection of new information on the activities of non-reporting fleets during the last year, in particular the numbers and characteristics of non-reporting longliners, led to improved estimates of catches. Since 1999 the number of non-reporting longliners in the Indian Ocean has decreased considerably leading to a marked decrease in catch levels. Such decrease has coincided with an increase in the numbers of vessels operated by some IOTC CPC's. Although these countries usually report catches to the Secretariat, the data reported are, in some cases, considered incomplete (as indicated in Section 3)
- **Fresh tuna longline** (**Fig. 18-19**): Fresh tuna longline vessels, mainly from China, Taiwan,China, India, Malaysia, Belize and Indonesia, have been operating in the Indian Ocean since the early 1970's. The catches of these fleets have been estimated by the IOTC Secretariat by using information from the following three sources:

- Catches reported by the flag countries: Although China reported total catches for its longline fleet they were not reported by type of longline until 2006 (fresh-tuna longline or deep-freezing longline). The Secretariat estimated the catches of fresh-tuna longliners for 1999–2005 by using the total catches reported, the numbers of fresh-tuna longline vessels provided by China and catch rates for fresh-tuna longliners available from other years.
- Information on catches and vessel activity collected through several catch monitoring schemes implemented in the main ports of landing for these vessels, involving the IOTC-OFC[2] and/or institutions in the countries where the fleets are based and/or foreign institutions. This applies to Indonesia (2002–2006), Thailand (1998–2006), Sri Lanka (2002–03), Malaysia (2000–2006), Oman (2004–2005) and Seychelles (2000–2002). Since 2007 Indonesia and Malaysia have reported catches for their longline fleets. However, the catches reported are thought to be incomplete as Indonesia and Malaysia do not monitor the activities of vessels under their flags based in other countries. The Secretariat estimated the catches of this component as for the countries indicated below.
- Information available on the number of fresh-tuna longline vessels operating in other ports or on the activity of those vessels (e.g. the number of vessel unloading or total catches unloaded). This applies to India (2005-13), Indonesia (1973–2001), Thailand (1994–2013), Sri Lanka (1990–2001; 2004–13), Malaysia (1989–2012), Singapore, Mauritius and Maldives (recent years). The catches in these ports and years were estimated from the known/presumed levels of activity of the vessels and the average catches obtained in ports that were covered through sampling.

In 2006 Taiwan,China provided total catches for its longline tuna fleet operating in the Indian Ocean for the period 2000 to 2005. The catches for 2006-12 have also been provided, including time area catches and effort for 2007-13. The catches published by Taiwan,China were slightly higher than those that the IOTC Secretariat had estimated from the data collected through port sampling. The new catches provided for 2001-05 were used to replace those in the IOTC database. This was done on the assumption that vessels from Taiwan,China had operated in ports of non-reporting countries, their catches not accounted for in estimates made by the Secretariat. The Secretariat has been using the catches published by Taiwan,China since 2006.

The catches for fleets other than Taiwan,China for 1973–2013 and for Taiwan,China in years prior to 2001 were estimated as explained in the three bullet points above.

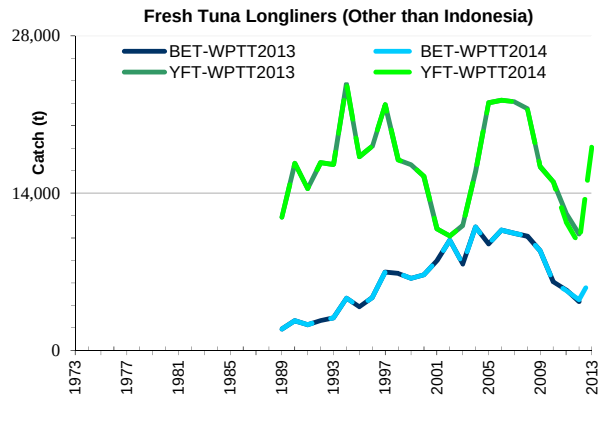


Fig. 18. Catches of fresh-tuna longline vessels based in India, Malaysia, Maldives, Mauritius, Oman, Seychelles, Singapore, Sri Lanka, Thailand and Yemen (mainly registered in China, Taiwan,China and Indonesia) estimated in 2013 versus catches estimated in 2014 (1989–2013).

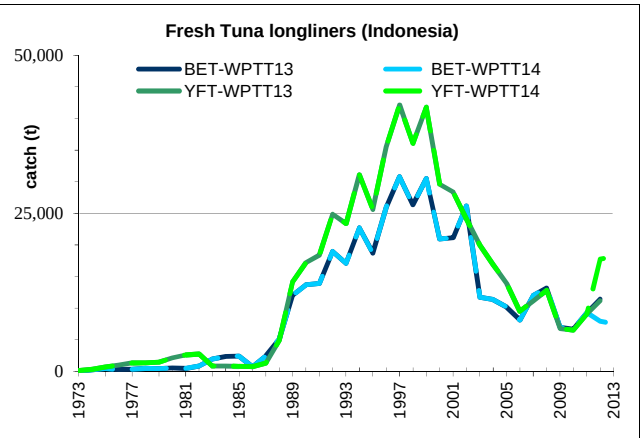


Fig. 19. Catches of fresh-tuna longline vessels based in Indonesia (domestic and foreign) estimated in 2013 versus catches estimated in 2014 (1973–2013).

[2] Overseas Fishery Cooperation Foundation of Japan.

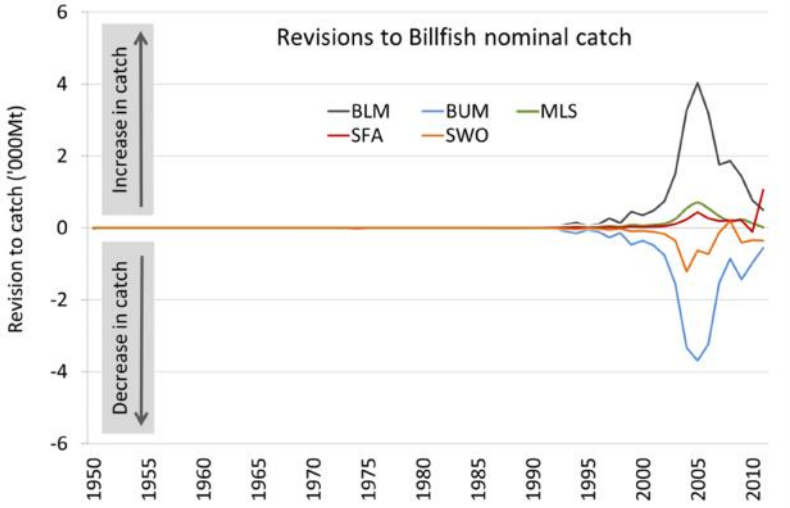
APPENDIX II

COUNTRY-SPECIFIC REVISIONS TO CATCH SERIES

In 2014, revisions were made to the catch series for a small number of countries – namely Iran, and Indonesia – based on new information made available to the IOTC Secretariat, in addition to inconsistencies in the reported data.

The changes mostly affect estimates for billfish species; although while estimates of total billfish catches remain largely the same as for WPB-2013, the catches by species have changed – in particular the reassignment of catches of blue marlin to black marlin for Iran's gillnet fishery (**Fig. 20**).

Fig. 20. Revisions to Billfish nominal catch (all fleets).

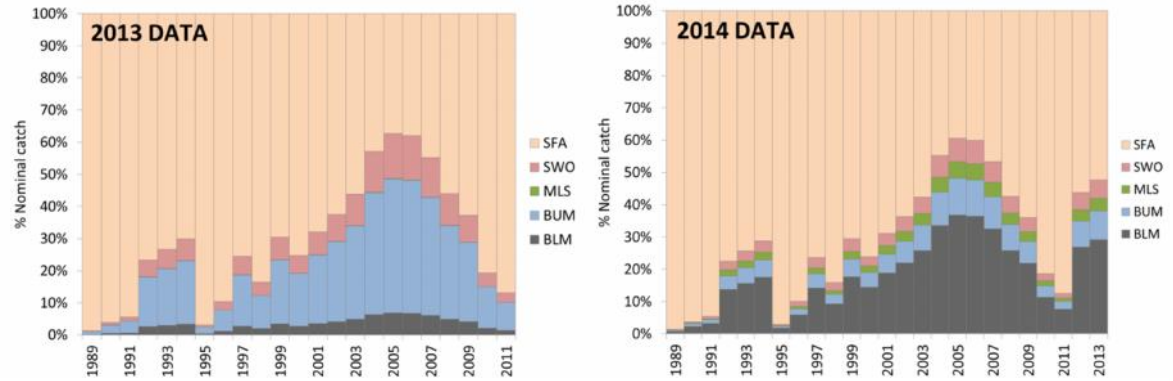


Islamic Republic of Iran – gillnet fisheries

- In previous years I.R. Iran has reported all gillnet catches of billfish as Indo-Pacific Sailfish, which have then been disaggregated by species and gear (coastal and offshore gillnet) by the IOTC Secretariat. In 2014 Iran reported catches separately by billfish species, albeit for 2012 and 2013 only.
- The data for 2012 and 2013 significantly revises the billfish species composition previously estimated by the IOTC Secretariat and assigned to Iran's offshore gillnet fishery[3]. The main change are higher ratios of black marlin to blue marlin, contrary to previous estimates by the Secretariat given blue marlins are more generally associated with offshore fisheries (**Fig. 21**).
- The issue requires further investigation in order to confirm the new species composition, and that the proportion of catch assigned to the coastal and offshore gillnet fisheries estimated by the Secretariat are correct.
- As a result of changes in the catch series for Iran – and revision of the catch-by-species for the historical series based on the 2012 and 2013 data – total catches of blue marlin have been revised down by as much as 20% for a number of years around the mid-2000's.
- Conversely, total catches of black marlin have been revised upwards by as much as 30% to 50% around the mid-2000's (e.g., in 2005 catches of black marlin have been revised from around 7,400 t to nearly 11,500 t).

[3] Species composition previously estimated using Sri Lanka fisheries as a proxy fleet.

Fig. 21. Comparison of billfish species composition for I.R. Iran, WPB-2013 and WPB-2014.



Indonesia – artisanal catches

- In 2014 further improvements were made to the nominal catch of Indonesia, building upon the revised catch series implemented by the Secretariat in 2012/2013[4].
- In recent years the Secretariat has noted large fluctuations in the total nominal catch of Indonesia (**Fig. ii**). In both cases, the issue appears to be inconsistencies in the data reported to the Secretariat – specifically the mixing of catches caught in the Indian Ocean and Pacific Ocean reported at landing sites.
- In 2012 the total catch of IOTC species reported by Indonesia was almost 25% lower than in 2011, most likely the result of assigning catches from the Indian Ocean to areas outside the IOTC area. Likewise, in 2013 total catches reported by Indonesia were around 23% higher compared to 2011 due to catches from the Pacific Ocean also being included in the catch reports to the IOTC Secretariat.
- One reason for the inconsistencies may be confusion over the definition of catches to be reported to the Secretariat. During 2014 it was established that Indonesia publishes two types of catch statistics:

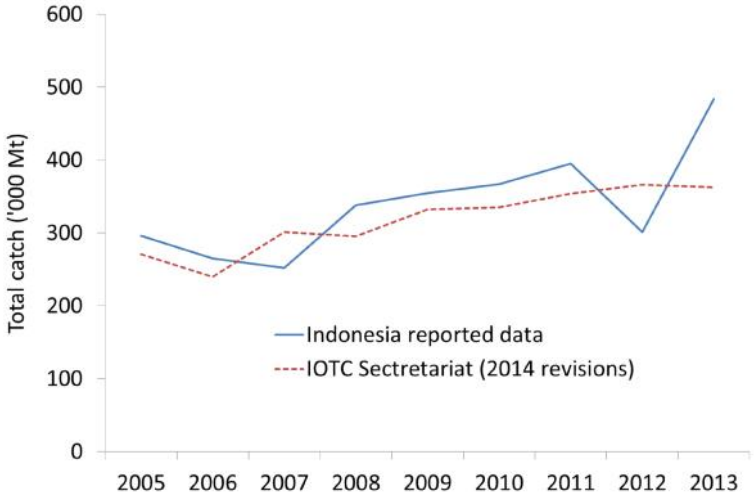
  - Catches by Province – includes total landings by vessels in each province, and can include catches from neighbouring sea areas in which the pattern of fisheries resources, and structure of the fisheries can be quite different from each other). Catches originating from the Indian Ocean, Pacific Ocean, Straits of Malacca, etc. are combined in statistics produced at Province level.
  - Catches by Fisheries Management Areas – capture fisheries statistics for coastal fisheries are compiled by major coastal area, divided into 11 Fisheries Management Areas (FMAs). Catches in coastal areas of the Indian Ocean are recorded exclusively by three FMAs - Malacca Strait and Andaman Sea, Western Sumatera and Sunda Strait, and coastal area covered by Southern Java, Southern Nusa Tenggara, Sawu Sea, and Western of Timor Sea.

- To compensate the possible misreporting of catches, in 2014 the catch series was adjusted to reflect the total catches published by Indonesia for FMAs in the Indian Ocean, from 2005 onwards[5] (**Fig. 23**). The revised catch series is presented in FIGURE xx for comparison. The IOTC Data Section has also requested Indonesia officially provides the Secretariat with corrections to the catch series for 2012 and 2013.

[4] Based on the recommendations from a comprehensive review of the national fisheries data by an IOTC consultant in 2012. For more details, see the research findings and data collated by Moreno, G. (IOTC) in 2012.

[5] Data published by the Directorate General of Capture Fisheries of Indonesia, by Fisheries Management Area is available from 2005 onwards.

Fig. 23. Revision to Indonesia total catch (all IOTC species) based on published data by Fisheries Management Areas.



APPENDIX III

REVISIONS TO THE IOTTP TAGGING DATA

In September 2014, the IOTC Secretariat released an update to the release and recovery data gathered in the framework of the Indian Ocean Tuna Tagging Programme (IOTTP). The update encompasses data gathered during the Regional Tuna Tagging Project – Indian Ocean (RTTP-IO) and data gathered during a series of Small-scale tuna tagging projects in Maldives, India, Mayotte, Indonesia and by other institutions, e.g. SEAFDEC, NRIFSF, with the support of IOTC. In addition in 2012, data from past projects implemented in Maldives in the 1990s were added to the tagging database at the IOTC Secretariat.

Bigeye tuna: Tagging data

- A total of 35,997 bigeye tuna (17.9%) were tagged during the Indian Ocean Tuna Tagging Programme (IOTTP). Most of them (96.0%) were tagged during the main Regional Tuna Tagging Project-Indian Ocean (RTTP-IO) and released off the coast of Tanzania in the western Indian Ocean, between May 2005 and September 2007 (**Fig. 24**). The remaining were tagged during small-scale projects, and by other institutions with the support of the IOTC Secretariat, in the Maldives, India, and in the south west and the eastern Indian Ocean.
- To date, 5,806 specimens (16.1% of releases for this species) have been recovered and reported to the IOTC Secretariat. These tags were mainly reported from the purse seine fleets operating in the Indian Ocean (90.9%), while 5.3% were recovered from longline vessels.
- Around 50 recoveries were added to the database in 2012-2014 (excluding records removed due to data cleaning, validation, etc.) since the release of the last tagging data extract in October 2012.

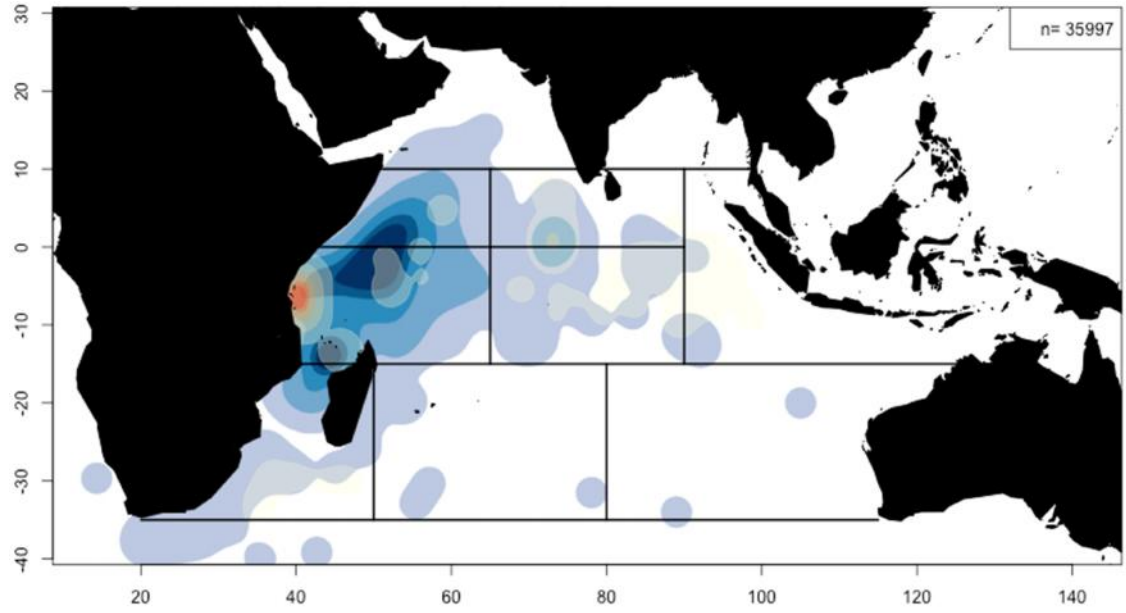


Fig. 24. Bigeye tuna: Densities of releases (in red) and recoveries (in blue). The black line represents the stock assessment areas. Includes specimens tagged during the IOTTP and also Indian Ocean (Maldivian) tagging programmes during the 1990s. Data as of September 2012.

Yellowfin tuna: tagging data

- A total of 63,328 yellowfin tuna (representing 31.4% of the total number of specimens tagged) were tagged during the Indian Ocean Tuna Tagging Programme (IOTTP). Most of them (86.4%) were released during the main Regional Tuna Tagging Project-Indian Ocean (RTTP-IO) and were released around Seychelles, in the Mozambique Channel, along the coast of Oman and off the coast of Tanzania, between May 2005 and September 2007 (**Fig. 25**). The remaining were tagged during small-scale tagging projects, and by other institutions with the support of IOTC Secretariat, in Maldives, India, and in the south west and the eastern Indian Ocean.
- To date, 10,838 specimens (17.1%), have been recovered and reported to the IOTC Secretariat. More than 85.9% of these recoveries we made by the purse seine fleets operating in the Indian Ocean, while around 9.1% were made by pole-and-line and less than 1% by longline vessels. The addition of the data from the past projects in the Maldives (in 1990s) added 3,211 tagged yellowfin tuna to the databases, or which 151 were recovered, mainly from the Maldives.
- Around 25 recoveries were added to the database in 2012-2014 (excluding records removed due to data cleaning, validation, etc.) since the release of the last tagging data extract in October 2012.

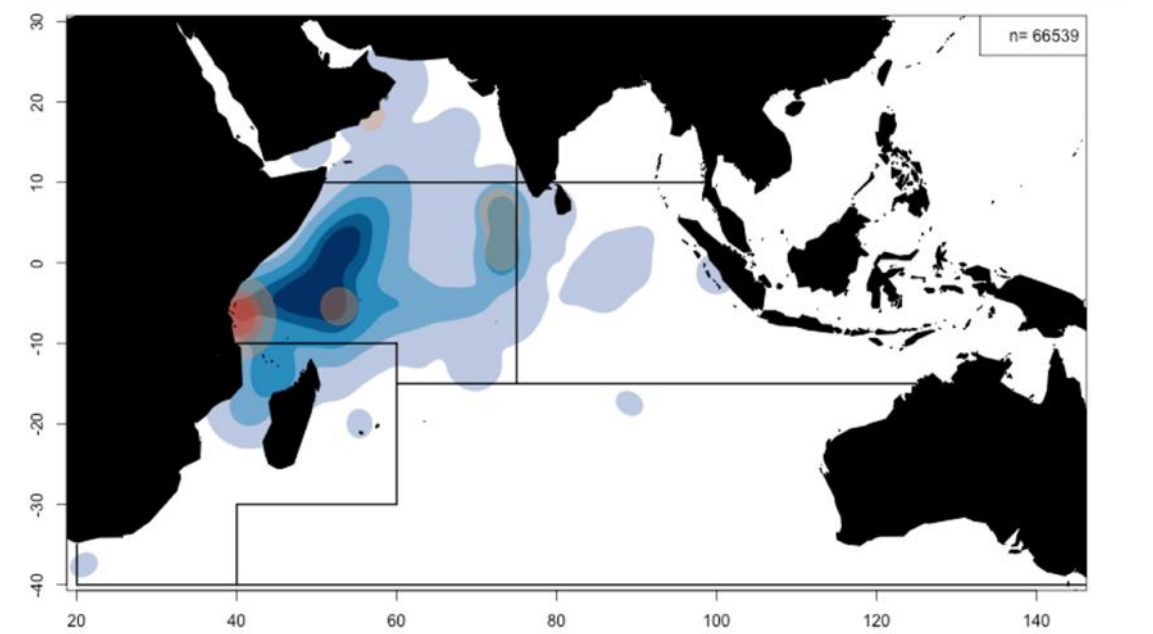


Fig. 25. Yellowfin tuna: Densities of releases (in red) and recoveries (in blue). The black line represents the stock assessment areas. Includes specimens tagged during the IOTTP and also Indian Ocean (Maldivian) tagging programmes during the 1990s. Data as of September 2012.

Skipjack tuna: Tagging data

- A total of 101,212 skipjack (representing 50.2% of the total number of fish tagged) were tagged during the Indian Ocean Tuna Tagging Programme (IOTTP). Most of them, 77.4%, were released during the main Regional Tuna Tagging Project-Indian Ocean (RTTP-IO) and were released around Seychelles, in the Mozambique Channel and off the coast of Tanzania, between May 2005 and September 2007 (**Fig. 26**). The remaining were tagged during small-scale tagging projects, and by other institutions with the support of IOTC, around the Maldives, India, and in the south west and the eastern Indian Ocean.
- To date, 17,667 specimens (17.5% of releases for this species), have been recovered and reported to the IOTC Secretariat. Around 69.6% of the recoveries were from the purse seine fleets operating from the Seychelles, and around 28.8% by the pole-and-line vessels mainly operating from the Maldives. The addition of the data from the past projects in the Maldives (in 1990s) added 14,506 tagged skipjack tuna to the databases, or which 1,960 were recovered mainly in the Maldives.
- No SKJ new recoveries were reported since the release of the last tagging data extract in October 2012.

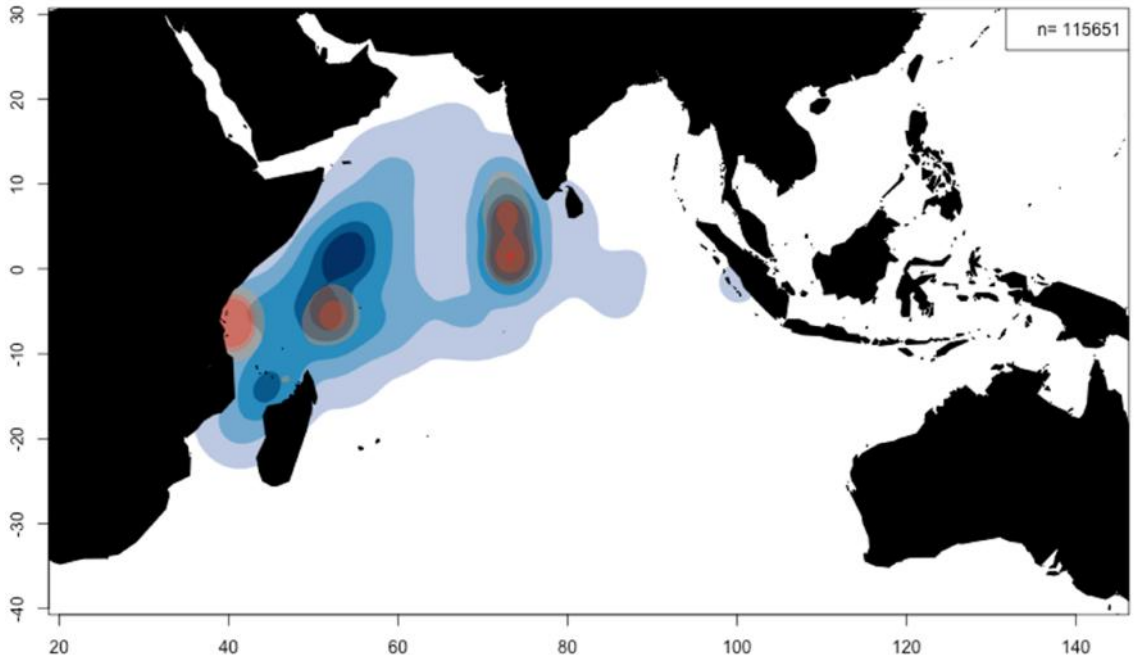


Fig. 26. Skipjack tuna: Densities of releases (in red) and recoveries (in blue). Includes specimens tagged during the IOTTP and also Indian Ocean (Maldivian) tagging programmes during the 1990s. Data as of September 2012.