Failure to manage yellowfin tuna by the Indian Ocean Tuna Commission

JESS RATTLE October 2020
jess@bluemarinefoundation.com

BLUE MARINE FOUNDATION

Executive Summary

One and a half million metric tons of yellowfin tuna were caught worldwide in 2018, with a dock value of US$4.4 billion and an end value of almost US$16 billion[1]. The Indian Ocean accounts for roughly 30 per cent of the world's yellowfin tuna catch. Sold in cans, as steaks or raw as high-value sashimi, yellowfin tuna is one of three species of tropical tuna under the management of the Indian Ocean Tuna Commission (IOTC). The Indian Ocean yellowfin tuna stock has been overfished and subject to continued overfishing for more than five years and, as a result, is now at risk of collapse.

In June 2019, Blue Marine Foundation (BLUE) published a report titled *A case study on the management of yellowfin tuna by the Indian Ocean Tuna Commission* which showcased the plight of Indian Ocean yellowfin and called on the IOTC and its member states to implement a 25 per cent catch reduction as a matter of urgency.

Eighteen months later, the outlook is still bleak for the large, "near threatened" species, with the IOTC's rebuilding plan failing to enforce the kind of reductions needed to prevent the yellowfin stock from collapsing which, scientists say, could happen as soon as 2026 if nothing is done to reduce the fishing pressure[2]. Several retailers have already committed to stop sourcing tuna from the Indian Ocean until the IOTC adopts an effective rebuilding plan for the stock.

The global COVID-19 pandemic has resulted in the postponement of the annual IOTC Commission meeting until November 2020 and has forced the member states to meet virtually, rather than in person. Because of this, it has been decided that no new conservation and management measures will be discussed at the meeting due to the limitations of virtual negotiations, allowing the current, ineffective plan to be rolled over for another year. The downside of that decision is that the longer scientific advice remains un-implemented by IOTC members, the larger the cuts in catches will have to be when they come – if stock collapse does not intervene. An emergency meeting to resolve the yellowfin issue by heads of delegations is desirable in the near future.

Often caught alongside skipjack and bigeye tuna by purse seine vessels fishing on fish aggregating devices (FADs), yellowfin tuna is not the only stock in trouble. For the second year in a row, catches of Indian Ocean skipjack in 2019 were above the limit set by the stock's harvest control rule – effectively making it unregulated. Bigeye tuna was also found to be subject to overfishing in 2019. The mismanagement of these globally important stocks by the IOTC member states is a threat not only to the stocks themselves, but to the many coastal communities that depend on them for food and income.

This report evaluates the attempts being made to save the Indian Ocean yellowfin stock, examines the role of FAD-associated purse seine fisheries in the capture of millions of juvenile yellowfin tuna, and investigates the misreporting, overfishing and lack of compliance with international safety regulations undertaken by the EU's distant water purse seine fleet, the biggest harvester of tropical tuna in the Indian Ocean.

---

[1] Netting Billions 2020: A Global Tuna Valuation, The Pew Charitable Trusts, 2020.

[2] Leading scientists take on EU over yellowfin overfishing, Blue Marine Foundation, 2020.

Contents

Abbreviations

AIS	Automatic identification system
BLUE	Blue Marine Foundation
BET	Bigeye tuna
BMSY	Biomass that produces MSY
CMM	Conservation and management measure
CPCs	Contracting Parties and Cooperating Non-Contracting Parties
DG MARE	Directorate-General for Maritime Affairs and Fisheries
EEZ	Exclusive economic zone
FAD	Fish aggregating device
FAO	Food and Agriculture Organisation of the United Nations
FIP	Fisheries improvement project
GTA	Global Tuna Alliance
HCR	Harvest control rule
IOTC	Indian Ocean Tuna Commission
IUU	Illegal, unreported, and unregulated fishing
MSC	Marine Stewardship Council
MSY	Maximum sustainable yield
MT	Metric tons
NGO	Non-governmental organisation
OPAGAC	Organización de Productores Asociados de Grandes Atuneros Congeladores
PS	Purse seine
RFMO	Regional fisheries management organisation
SBMSY	Spawning biomass at maximum sustainable yield
SGP	Secretaría General de Pesca
SIDS	Small island developing states
SIOTI	Sustainable Indian Ocean Tuna Initiative
SKJ	Skipjack tuna
SOLAS	International Convention for the Safety of Life at Sea
SSBMSY	Stock spawning biomass at maximum sustainable yield
TAC	Total allowable catch
VMS	Vessel Monitoring System
WPTT	Working Party on Tropical Tunas
WWF	World Wide Fund for Nature
YFT	Yellowfin tuna

Introduction

Yellowfin, like most species of tuna, are highly migratory and range across the jurisdiction of many countries as well as the high seas, requiring international cooperation for their conservation and management. The Indian Ocean Tuna Commission (IOTC) is the regional fisheries management organisation (RFMO) responsible for the management of tuna and tuna-like species in the India Ocean, with a jurisdiction that stretches from the east coast of Africa to the west coast of Australia.

Membership of the IOTC is open to Indian Ocean coastal countries and to countries that are members of the UN and fish for tuna in the Indian Ocean, and there are currently 33 contracting parties and cooperating non-contracting parties (CPCs)[3]. In addition to annual Commission meetings, the IOTC's Compliance and Scientific Committees meet annually to monitor compliance of the CPCs and the status of the stocks respectively. Sessions of the IOTC Working Party on Tropical Tunas (WPTT) are also conducted annually to review issues relevant to the fisheries and status of the three tropical tuna species under the IOTC mandate – bigeye, skipjack and yellowfin tuna.

Tropical tuna fisheries in the Indian Ocean range from industrial, distant water purse seine fleets to artisanal hand line fisheries in the inshore waters of coastal states. While none of the tropical tuna stocks are being managed particularly well in the Indian Ocean, yellowfin tuna is overfished, subject to continued overfishing and at risk of collapse, and therefore constitutes the focus of this report.

Historical context

Globally, yellowfin tuna is listed on the IUCN Red List as "near threatened" with a decreasing population trend. However, the assessment was carried out almost a decade ago and, given the increase in fishing pressure since 2011, the health of the species could well have deteriorated since then. Indian Ocean yellowfin tuna – which is considered a single stock[4] – has been overfished for more than 12 years, with the IOTC first acknowledging in 2008 that "the stock is very close to an overfished state, or already overfished"[5].

By 2018, ten years after the IOTC first acknowledged that the yellowfin tuna stock under its supervision was probably overfished, the total catch had risen by a third, or 100,000 MT. Figure 1 shows the annual catches of yellowfin tuna in the Indian Ocean from 1950 to 2018. The rise in catches in the early 1990s can be attributed to the rapid development of purse seine, gillnet and longline fisheries in the region[6], with the sharp decline from 2007 to 2011 occurring as a result of the threat posed by piracy in the Western Indian Ocean during this period.

[3] A full list of IOTC CPCs can be found here: Structure of the Commission.
[4] Status of the Indian Ocean yellowfin tuna (YFT: Thunnus albacares) resource, IOTC, 2015.
[5] Report of the Eleventh Session of the Scientific Committee, IOTC, 2008.
[6] Historical trends of tuna catches in the world. FAO Fisheries Technical Paper 467, MP Miyake, N Miyabe & H Nakano, 2004.

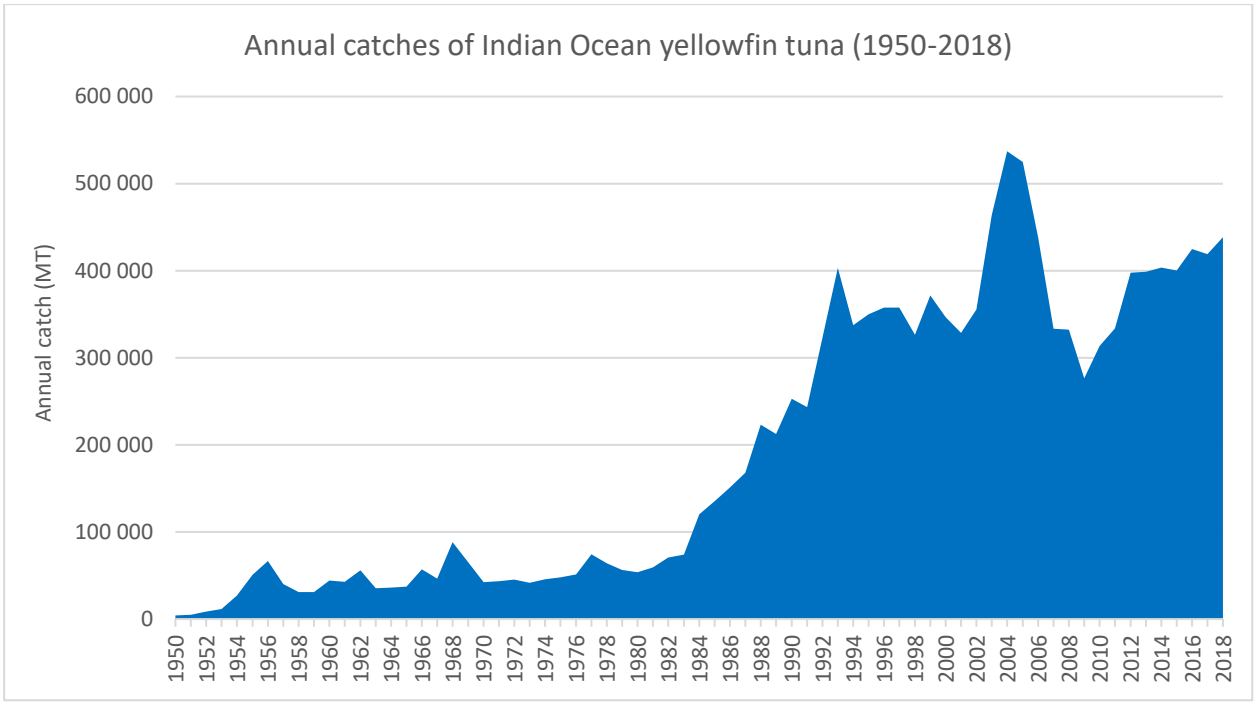


Figure 1: Total annual Indian Ocean yellowfin tuna catch for 1950-2018[7]

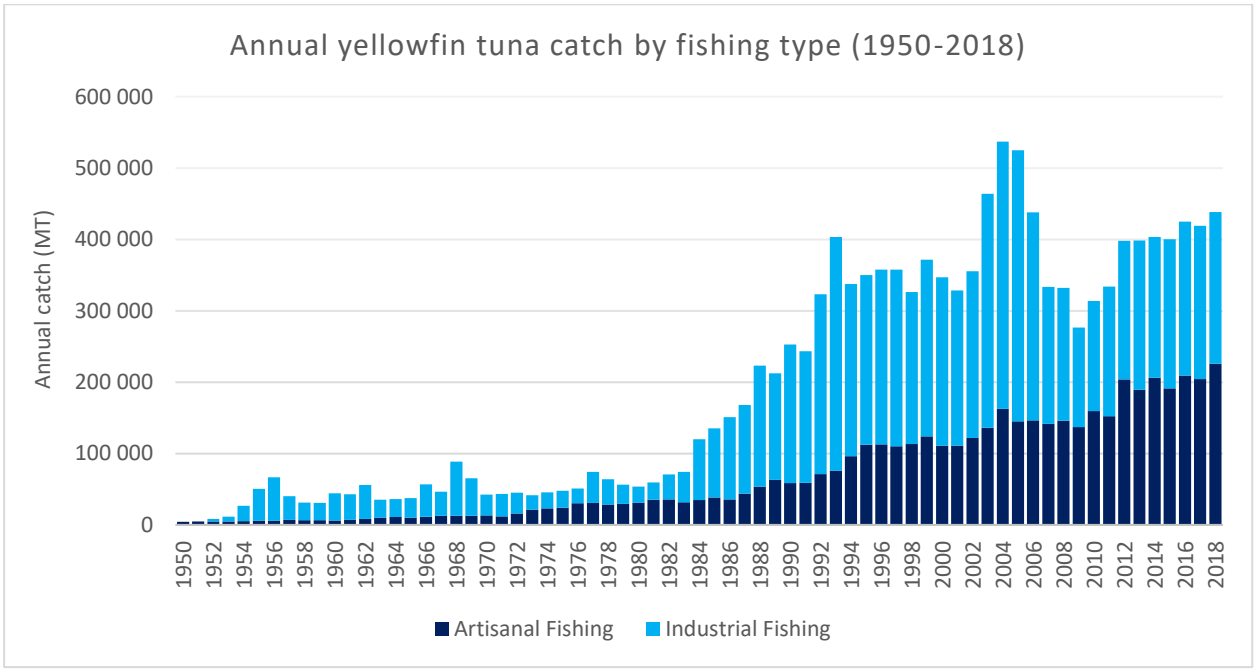


Figure 2: Total annual Indian Ocean yellowfin tuna catch by gear type for 1950-2018[8]

[7] Nominal catch by species and gear, by vessel flag reporting country, IOTC, 2020 (accessed 30.09.2020).
[8] Nominal catch by species and gear, by vessel flag reporting country, IOTC, 2020 (accessed 30.09.2020).

Figures 2 and 3 show the makeup of the Indian Ocean yellowfin tuna fishery, by fishing and gear type. Unlike other oceans, the artisanal fishery component of yellowfin catches in the Indian Ocean is substantial and has been increasing since the 1980s, accounting for roughly half of the total catches in recent years[9]. Catch by longliners has decreased over the past decade, with catches by "other gears", including baitboats (pole and line), hand lines, hooks and lines and troll lines steadily increasing. Despite being one of the least catch controllable and least environmentally sustainable gears, catches by gillnets have also risen steadily over the past decade. Catches of yellowfin tuna by purse seiners in the Indian Ocean reached a record high of over 230,000 MT in 2004 and industrial purse seine fishing is still the dominant gear type, in terms of catch volume.

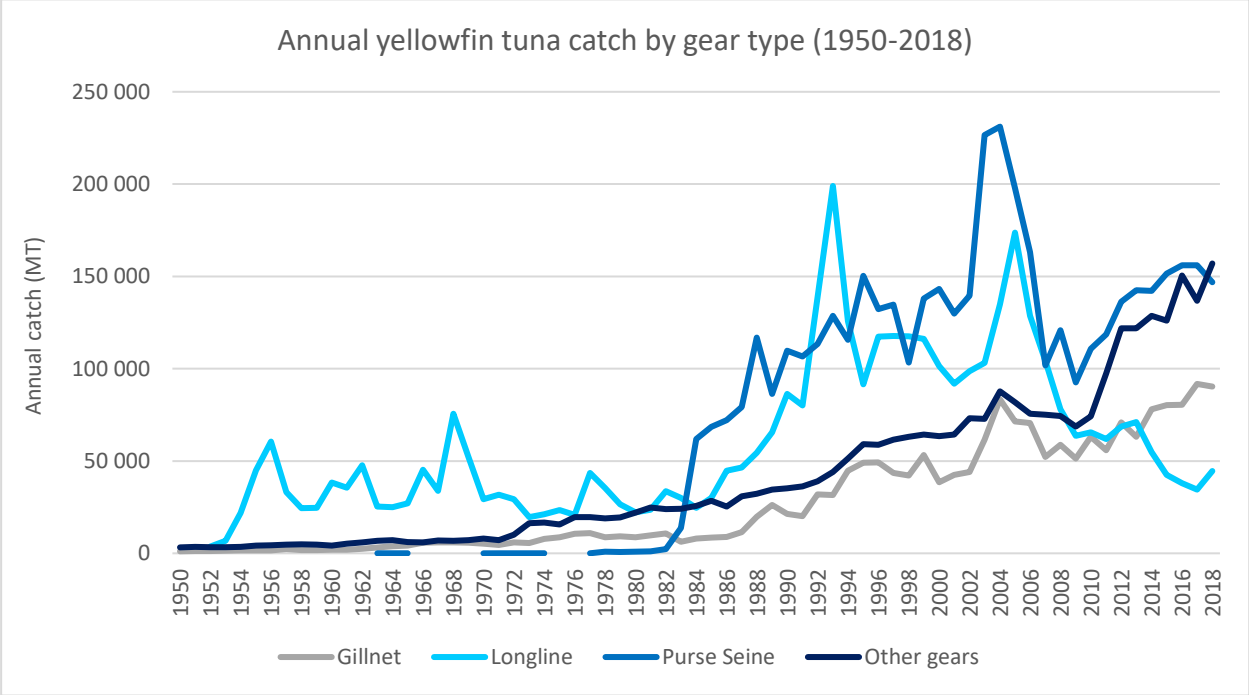


Figure 3: Total annual Indian Ocean yellowfin tuna catch by gear type for 1950-2018[10]

The state of the yellowfin tuna stock

In 2015, the IOTC's Scientific Committee confirmed that, "on the weight-of-evidence available in 2015, the yellowfin tuna stock is determined to be overfished and subject to overfishing" [11]. A subsequent stock assessment conducted in 2018 confirmed these findings. A more detailed analysis of the yellowfin tuna stock assessments can be found on pages seven to nine of *A case study on the management of yellowfin tuna by the Indian Ocean Tuna Commission*.

[9] In its definition of "artisanal fisheries", the FAO acknowledges that: "In practice, definition varies between countries, e.g. from gleaning or a one-man canoe in poor developing countries, to more than 20-m. trawlers, seiners, or long-liners in developed ones. Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries".

[10] Nominal catch by species and gear, by vessel flag reporting country, IOTC, 2020 (accessed 30.09.2020).

[11] Report of the 18th Session of the IOTC Scientific Committee, IOTC, 2015.

A stock projection model was applied to yellowfin tuna in 2018. The subsequent projection report suggests that there is a 90 per cent chance of violating the limit reference point – the bare minimum stock size needed to maintain the population – by 2027, if the catch remains 100 per cent of what it was in 2017[12]. However, catches have increased since then, and even 2017's catch total has had to be adjusted upwards in light of new evidence of increased fishing. When the stock projection model was applied, it was thought that the total yellowfin catch in 2017 was 409,567 MT. The current IOTC nominal catch dataset puts the 2017 total at 418,945 MT[13].

Additionally, a new IOTC dataset puts 2018's total yellowfin tuna catch at 440,834 MT[14]– eight per cent higher than the original figure for 2017 and only two per cent away from being 110 per cent of the original 2017 catch figure of 409,567 MT. Continuing to fish at close to 110 per cent of the 2017 baseline would, according to the stock projection report, precipitate a **certainty of stock collapse by 2026** and a possibility of collapse as early as 2024, as shown in Figure 4.

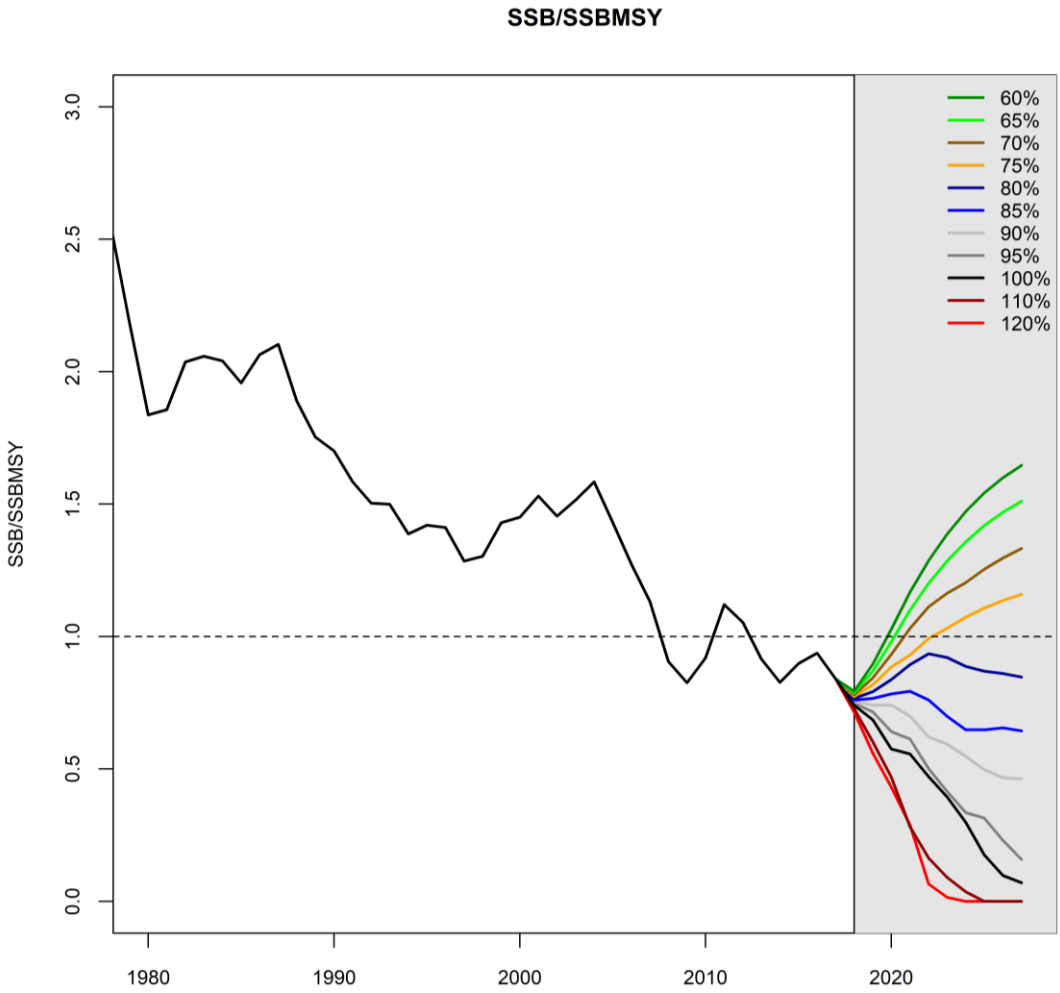


Figure 4: Trajectory of the state of Indian Ocean YFT stock with a 10-year projection (2018-2027) assuming a constant level of catch at 60% –120% of the 2017 catch level. The grey area represents the projection period[15]

[12] Indian Ocean Yellowfin Tuna SS3 Model Projections, IOTC, 2018.
[13] Nominal catch by species and gear, by vessel flag reporting country, IOTC, 2020 (accessed 30.09.2020).
[14] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.
[15] Indian Ocean Yellowfin Tuna SS3 Model Projections, IOTC, 2018 (unpublished figure).

Minimum international best practice, based on the MSC Fisheries Standard, is "likely" recovery in two generations. "Likely", in this context, means greater than or equal to the 70th percentile of a distribution (i.e., there shall be at least a 70 per cent probability that the true status of the stock is higher than the point at which there is an appreciable risk of recruitment being impaired)[16].

For yellowfin tuna that reach maturity at between three and five years in the Indian Ocean, the conservative recovery timescale would therefore be within six years. The necessary recovery plan for yellowfin in the Indian Ocean is therefore a 70 per cent chance (or greater) of recovery to the biomass that enables the stock to deliver the maximum sustainable yield (BMSY) within six years. The IOTC's *Indian Ocean Yellowfin Tuna SS3 Model Projections* shows that a reduction of 25 per cent would have given a high probability of recovering the stock by 2025, had it been implemented. It is for this reason that BLUE called for at least 25 per cent reduction in June 2019[17]. This call has since been echoed and strengthened by other NGOs and industry groups. It is now likely that a 30 or even 35 per cent reduction will be required to allow the stock to recover[18].

The yellowfin tuna stock rebuilding plan

In 2016, the IOTC adopted an interim rebuilding plan to address overfishing of the yellowfin tuna stock (Resolution 16/01), which supposedly took into account the recommendations made by the Scientific Committee in 2015 that the catches of yellowfin tuna had to be reduced by 20 per cent of the 2014 levels to recover the stocks to levels above the interim target reference points with 50 per cent probability by 2024[19].

Resolution 16/01 set out gear-specific catch reductions for fisheries which surpassed specified catch thresholds in 2014, as follows:

- **Purse seine:** CPCs whose purse seine catches of yellowfin reported for 2014 were above 5,000 MT were required to reduce their purse seine catches of yellowfin by **15 per cent** from the 2014 levels.
- **Longline:** CPCs whose longline catches of yellowfin reported for 2014 were above 5,000 MT were required to reduce their longline catches of yellowfin by **10 per cent** from the 2014 levels.
- **Gillnet:** CPCs whose gillnet catches of yellowfin reported for 2014 were above 2,000 MT were required to reduce their gillnet catches of yellowfin by **10 per cent** from the 2014 levels.
- **Other gears:** CPCs whose catches of yellowfin from other gears reported for 2014 were above 5,000 MT were required to reduce their catches of yellowfin by other gears by **5 per cent** from the 2014 levels.

CPCs agreed to observe these catch limits for yellowfin tuna starting in January 2017. Fleets that did not catch the minimum amounts in 2014 have been exempt from making reductions, as have vessels under 24

[16] MSC Fishery Certification Requirements and Guidance v2.01, MSC, 2018.
[17] A case study on the management of yellowfin tuna by the Indian Ocean Tuna Commission, J. Rattle, 2019.
[18] As suggested by Developing management advice to rebuild the Indian Ocean yellowfin tuna (Thunnus albacares) stock in two generations, GTA, 2020 and IOTC Bigeye and Yellowfin Tuna Management Procedure (MP) Evaluation Update Oct 2019, D Kolody & P Jumppanen, 2019.
[19] Report of the 18th Session of the IOTC Scientific Committee, IOTC, 2015.

m overall length unless they fish outside the exclusive economic zone (EEZ) of their flag state. It should be noted that small island developing states (SIDS) were granted permission to base their reductions on either their 2014 or 2015 yellowfin tuna catches. The Seychelles is the only CPC reported to have taken advantage of this provision and elected to base its reduction on its 2015 yellowfin tuna catch.

As outlined in *A case study on the management of yellowfin tuna by the Indian Ocean Tuna Commission*, while some fisheries reported substantial reductions in catch in 2017, their efforts barely offset those fleets whose cuts did not meet the required level, not to mention those whose catches actually increased in 2017. Overall, instead of achieving the 20 per cent catch reduction called for by the IOTC Scientific Committee in 2015, **total catches of yellowfin in 2017 increased by about three per cent** from 2014/2015 levels.

Resolution 17/01 and the 2018 yellowfin tuna catch

Resolution 16/01 has been revised three times over the past four years, creating Resolutions 17/01 in 2017, 18/01 in 2018 and finally 19/01, which is currently active[20]. Very few changes were made in 2017 and 2018, and Resolution 19/01 (which applies to 2020's catch) is discussed in greater detail on page 12. Resolution 17/01, and the same catch reductions listed above, applied to the fleets' catches of yellowfin tuna in 2018. Table 1 lists the fleets that were subject to Resolution 17/01 and the catch reductions required of them in 2018, based on their 2014 baselines, or 2015 for the Seychelles.

Fleet	Gear	Reduction	2014	2015	2016	2017	2018		Difference with baseline			
									Absolute		%	
EU	Purse seine	15%	91 405	86 149	87 075	86 893	75 375	88 981	-16 030	-2 424	-18%	-3%
Korea	Purse seine		8 852	7 509	10 347	6 362	5 415		-3 437		-39%	
Seychelles	Purse seine		23 463	39 072	40 014	41 694	35 023		-4 049		-10%	
Taiwan	Longline	10%	12 285	13 921	16 958	9 115	10 845		-1 441		-12%	
Sri Lanka	Longline		8 625	5 933	3 939	6 448	8 554		-71		-1%	
Iran	Gillnet	10%	24 401	26 780	31 079	37 193	35 534		11 132		46%	
Maldives	Baitboat	5%	18 481	15 796	8 550	17 500	10 749		-7 732		-42%	
Maldives	Hand line		30 246	36 300	44 385	30 563	16 704		-13 542		-45%	
Total			**217 759**	**231 461**	**242 348**	**235 767**	**198 199**	**211 805**	**-35 169**	**-21 563**	**-15%**	**-9%**

Table 1: Yellowfin tuna catches in 2018 by fleet and gear type in relation to the requirements of Resolution 17/01[21]

The 21st Session of the IOTC Working Party on Tropical Tunas (WPTT) identified inconsistencies in the reporting of catch by Spain's purse seine fleet in 2018, discussed in detail on page 20. This accounts for the two different EU catch totals and the two subsequent percentage reductions listed in Table 1.

Regardless of whether the fleets subject to Resolution 17/01 reduced their total catch by nine per cent or 15 per cent as shown in Table 1, the many fleets that were exempt from the resolution more than offset the reduction made by the fleets listed in Table 1. The following fleets were exempt from reducing their catches of yellowfin tuna:

- the Mauritian purse seine fleet that increased its catch by **134 per cent**, from 4,844 MT in 2014 to 11,322 MT in 2018;

[20] Resolution 18/01 remains binding on India after it objected to Resolution 19/01 in 2019.
[21] Report of the 21st Session of the IOTC Working Party on Tropical Tunas, IOTC, 2019.

- the Indonesian purse seine fleet that increased its catch by **71 per cent**, from 5,598 MT in 2014 to 9,564 MT in 2018;
- the Seychelles longline fleet that increased its catch by **251 per cent**, from 1,616 MT in 2014 to 4,062 MT in 2018;
- the Indian gillnet fleet that increased its catch by **166 per cent**, from 5,153 MT in 2014 to 13,717 MT in 2018;
- the Omani gillnet fleet that increased its catch by **525 per cent**, from 2,268 MT in 2014 to 14,184 MT in 2018;
- the Iranian "other gears" fleets that increased their catches by **22,010 per cent**, from 57 MT in 2014 to 12,682 MT in 2018;
- the Sri Lankan "other gears" fleets that increased their catches by **76 per cent**, from 15,280 MT in 2014 to 26,892 MT in 2018; and
- the Omani "other gears" fleets that increased their catches by **191 per cent**, from 4,912 MT in 2014 to 14,281 MT in 2018.

As a result of these and other increases (as well as the failure of several of the fleets in Table 1 to make the required cuts), **overall catches of yellowfin tuna increased by 10 per cent in 2018**[22].

Resolution 18/01 and the 2019 yellowfin tuna catch

A new set of catch data for 2019 was made available in September 2020 by the IOTC for its forthcoming WPTT meeting. While the data may not match exactly with the IOTC's nominal catch dataset, they are still useful in analysing the preliminary yellowfin tuna catches for 2019 and the fleets' compliance with Resolution 18/01, as shown in Table 2.

Fleet	Gear	Reduction	2014	2015	2019	Difference with baseline	
						Absolute	%
EU	Purse seine	15%	91 405	86 149	69 479	-21 926	-24%
Korea	Purse seine		8 852	7 509	8 730	-122	-1%
Seychelles	Purse seine		23 463	39 072	33 006	-6 066	-16%
Taiwan	Longline	10%	12 285	13 921	9 427	-2 858	-23%
Sri Lanka	Longline		8 625	5 933	10 746	2 121	25%
Iran	Gillnet	10%	24 401	26 780	44 024	19 623	80%
Maldives	Baitboat	5%	18 481	15 796	10 165	-8 316	-45%
Maldives	Hand line		30 246	36 300	15 918	-14 329	-47%
Total			**217 759**	**231 461**	**201 495**	**-31 873**	**-14%**

Table 2: Yellowfin tuna catches in 2019 by fleet and gear type in relation to the requirements of Resolution 18/01[23]

[22] Report of the 21st Session of the IOTC Working Party on Tropical Tunas, IOTC, 2019.
[23] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.

While many of the fleets subject to Resolution 18/01 appear to have succeeded in making the required catch reductions[24][25], Sri Lanka and Iran both increased their respective longline and gillnet catches, significantly offsetting the reductions made by other fleets. In addition, many of the same eight fleets increased their catches again in 2019 as follows:

- the Mauritian purse seine fleet increased its catch by **154 per cent**, from 4,844 MT in 2014 to 12,290 MT in 2019;
- the Indonesian purse seine fleet increased its catch by **75 per cent**, from 5,598 MT in 2014 to 9,775 MT in 2019, however, this was offset by the 35 per cent decrease in catch by the Indonesian longline fleet in the same year;
- the Seychelles longline fleet increased its catch by **192 per cent**, from 1,616 MT in 2014 to 6,984 MT in 2019;
- the Indian gillnet fleet increased its catch by **32 per cent**, from 5,153 MT in 2014 to 6,801 MT in 2019;
- the Omani gillnet fleet increased its catch by **408 per cent**, from 2,268 MT in 2014 to 11,516 MT in 2019;
- the Iranian "other gears" fleets increased their catches by **16,263 per cent**, from 57 MT in 2014 to 9,385 MT in 2019;
- the Sri Lankan "other gears" fleets increased their catches by **97 per cent**, from 15,280 MT in 2014 to 30,076 MT in 2019; and
- the Omani "other gears" fleets increased their catches by **413 per cent**, from 4,912 MT in 2014 to 25,219 MT in 2019.

As a result of these and other increases (as well as the failure of several of the fleets in Table 2 to make the required cuts) the total catch in 2019 was 427,240 MT[26] – **four per cent higher** than the original 2017 catch figure of 409,567 MT upon which the 25 per cent reduction requirement was based. The total yellowfin tuna catches by CPC for 2018 and 2019 are shown in Figure 5 below, highlighting the significant quantity caught by the EU – over 12,000 MT more than the next highest, Iran, followed by the similar catch totals of Sri Lanka, Maldives, Seychelles, Oman and India.

Iran's gillnet fleet exceeded its catch limit for yellowfin tuna by almost 20,000 MT in 2019. In June 2020, an investigation by Global Fishing Watch detected nearly 200 Iranian vessels fishing illegally in Somali and Yemeni waters, representing one of the world's largest illegal fishing operations[27]. The vessels are thought to have been using pelagic gillnets to deplete fish stocks in Somalia – a country where one in three people

[24] While the Maldives has made the required cuts, the bait boat and handline reductions in 2019 of 45 per cent and 47 per cent respectively are misleading. The catch totals listed in Table 2 refer to the offshore component of the two fleets' catches (or to the catch of vessels >24 m – this remains unclear). When one takes into account the inshore catch (or the catch of vessels <24 m), it becomes clear that the baitboat and hand line fleets reduced their catches by seven per cent and 11 per cent respectively, as the 2014 baseline upon which the reduction is based is the total catch for the two gear types.

[25] The EU's seemingly impressive catch reduction should be acknowledged with caution, as the Spanish purse seine fleet has yet to adequately explain its misreporting from 2017 and 2018, as well as its seemingly incorrect species composition, as explained on page 20.

[26] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.

[27] Nearly 200 Iranian vessels detected in Somali and Yemeni waters represent one of the world's largest illegal fishing operations, Global Fishing Watch, 2020.

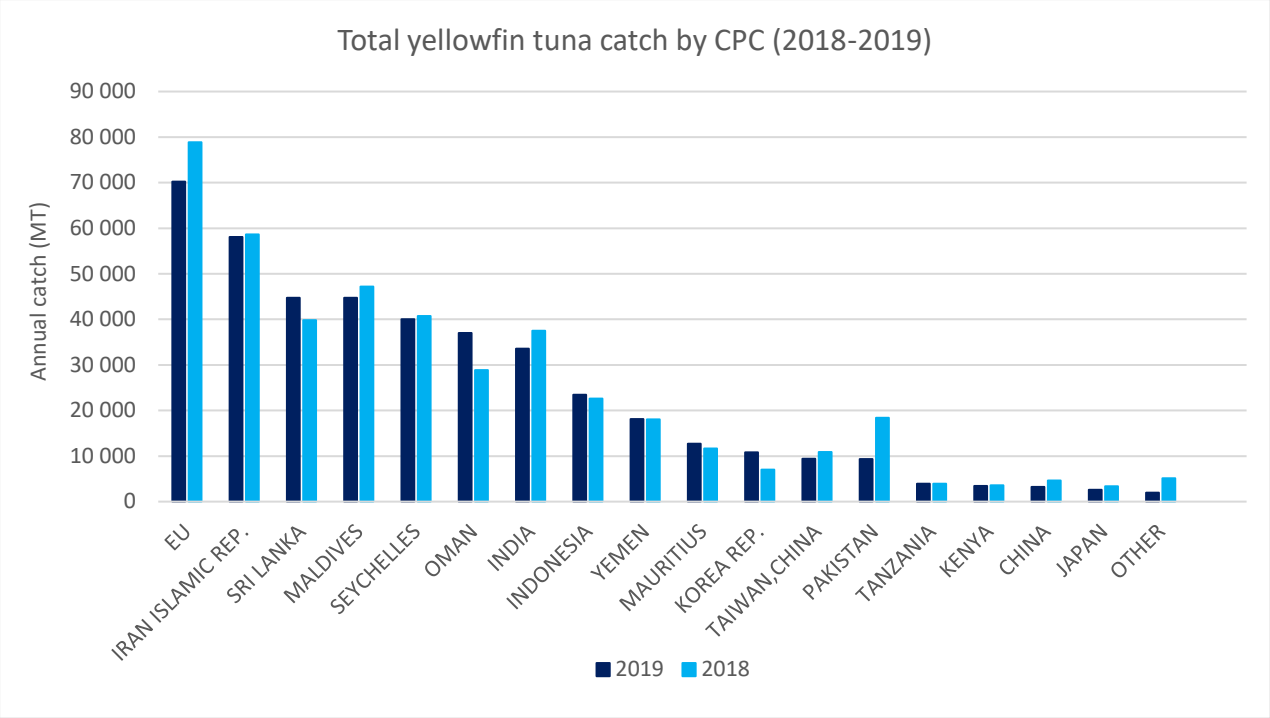


Figure 5: Total annual Indian Ocean yellowfin tuna catch by CPC for 2018-2019[28]

face acute shortages of food. Disappointingly, after being sent the findings of the report, a representative from the IOTC stated: "The IOTC secretariat does not have an investigative function. Currently the matter is between Somalia and the Islamic Republic of Iran"[29], despite the clear evidence of illegality and overfishing.

The amendments made to the current IOTC interim plan for rebuilding the yellowfin tuna stock (Resolution 19/01) have introduced a "payback" system for those fleets who overshot their catch limits for 2017, 2018 and 2019. Because of this, it is likely that Iran will not be able to catch any yellowfin tuna in 2020, according to the new regulations.

Resolution 19/01 has also addressed the many exemptions afforded to fleets that did not meet the minimum catch threshold in 2014/2015 but that have since greatly increased their catches of yellowfin tuna. However, countries with fishing vessels under 24 m operating within their own EEZ are still exempt, regardless of whether they exceed the catch limits established by the plan. Over the past few years, these kinds of exemptions have allowed for overall catches to increase, despite many of the CPCs subject to the resolution making the required reductions.

Another possible reason for the failure of the stock rebuilding plan is the lack of any agreed total allowable catch (TAC) for the stock. A formally acknowledged total catch limit that would bring about the necessary 25-35 per cent catch reduction, allowing for the recovery of the stock, would help to focus the efforts of the IOTC's 33 CPCs.

[28] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.
[29] Iranian fleet accused of stealing Somalian fish despite acute food shortage, The Guardian, 2020.

A recent report by the Global Tuna Alliance (GTA) also found that:

> "The implementation of resolution 16/01 and its amendments, has had undesirable results, such as the increase in the number of juveniles of yellowfin and bigeye tuna caught by the purse seine fleet, the increase of the effort on skipjack, and an increasing risk on protected species, as the purse seine fishery has shifted its effort towards FAD sets, in order to avoid exhausting their TAC of yellowfin tuna too early in the year.[30]"

Skipjack and bigeye tuna overfishing

Skipjack is the main target species of most tuna purse seine fisheries, including those in the Indian Ocean. Juvenile bigeye and yellowfin tuna may frequently be found schooling with skipjack around drifting FADs as their sizes are similar[31], making the nature of the skipjack fishery highly relevant to the health of the yellowfin tuna stock. As a small, fast-growing and highly productive species, skipjack is generally thought to be resilient to fishing pressure[32]. However, it is thought that the continued use and mismanagement of FADs could result in overfishing of skipjack stocks in the future[33].

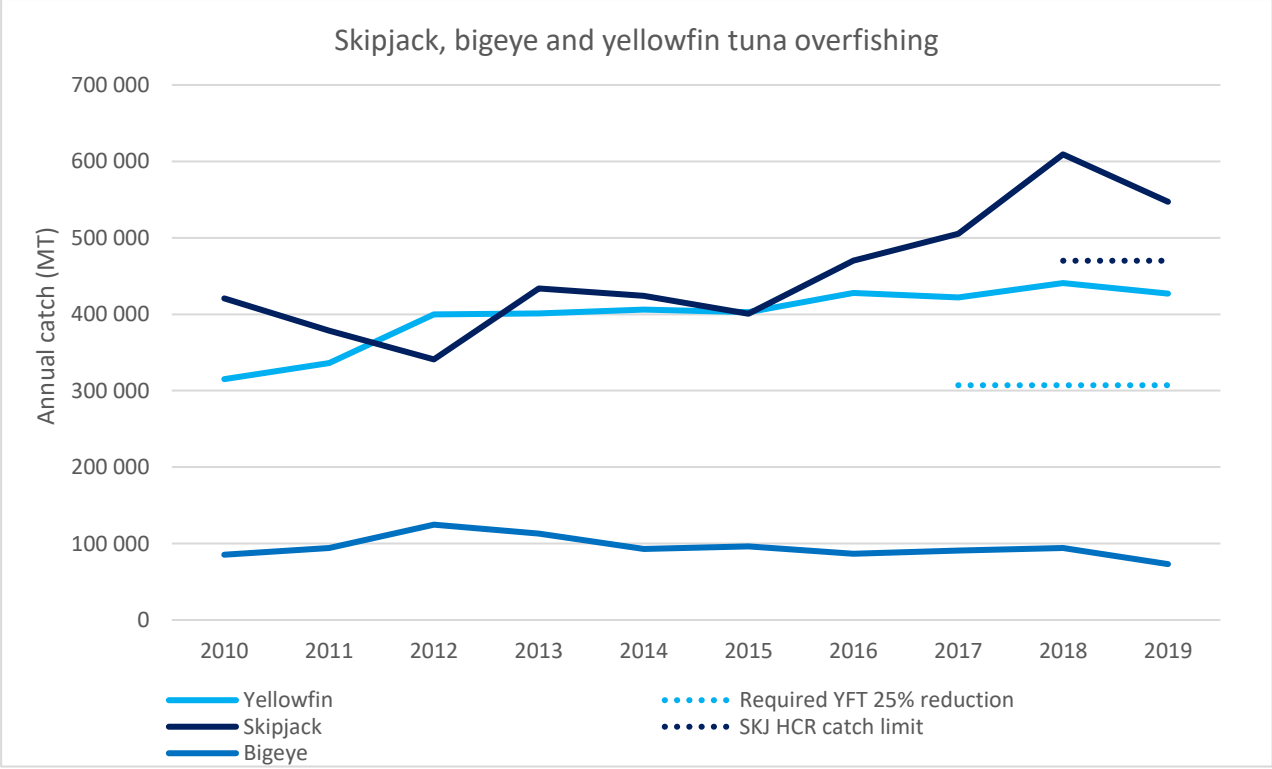


Figure 6: Total skipjack, bigeye and yellowfin catch compared to catch limits (2010-2019)[34]

[30] Developing management advice to rebuild the Indian Ocean yellowfin tuna (Thunnus albacares) stock in two generations, GTA, 2020
[31] Bycatch and non-tuna catch in the tropical tuna purse seine fisheries of the world. FAO Fisheries and Aquaculture Technical Paper No. 568, M Hall & M Roman, 2013.
[32] Fishing effects and life history traits: A case study comparing tropical versus temperate tunas, JM Fromentin & A Fonteneau, 2001.
[33] Updated indicators of stock status for skipjack tuna in the eastern Pacific Ocean, MN Maunder, 2011.
[34] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.

In 2016, the IOTC adopted a harvest control rule (HCR) for skipjack tuna consistent with scientific advice. An annual catch limit of 470,029 MT was set for skipjack for the years 2018 to 2020, but no allocation by CPC was established. A total of 609,179 MT was caught in 2018 and 547,248 MT in 2019 – **30 per cent and 16 per cent over the agreed catch limit**, respectively. This means that overfishing is occurring and, with no effective HCR in place, there is an argument to be made that the Indian Ocean skipjack fishery is unregulated and could therefore constitute illegal, unreported, and unregulated (IUU) fishing.

Similarly, at the 22nd Session of the IOTC Scientific Committee December 2019, the state of bigeye tuna was discussed and it was established that "recent increase in catch from purse seine fleets have increased this pressure and the stock is estimated to be subject to overfishing"[35]. It was decided that the overall bigeye catch should be reduced by 10 per cent of what was thought to be the total 2018 catch (81,413 MT), bringing the suggested catch limit to 73,272 MT. However, current IOTC datasets suggest that the catch total for bigeye in 2018 was 94,240 MT[36]. This lack of clarity is due, in part, to the confusion surrounding Spain's reported species composition for 2018 (see page 20). While total catches appear to have dropped in 2019, these data are still considered preliminary and have not yet been scrutinised by the various IOTC committees in 2020, nor has Spain – by far the largest harvester of bigeye tuna according to the 2018 catch figures – adequately explained the confusion surrounding its purse seine fleet's species composition.

The capture of juvenile yellowfin tuna

In addition to understanding and reducing the quantity of tuna being harvested, it is also important to consider the size of the fish being caught. Figures 7 and 8, taken from the Report of the 21st Session of the IOTC Working Party on Tropical Tunas, show the average weight of Indian Ocean yellowfin tuna caught by various gear types over time. Of particular interest is the significant difference in average weight of fish caught by purse seine vessels targeting free schools of tuna, compared to those setting (fishing) on FADs.

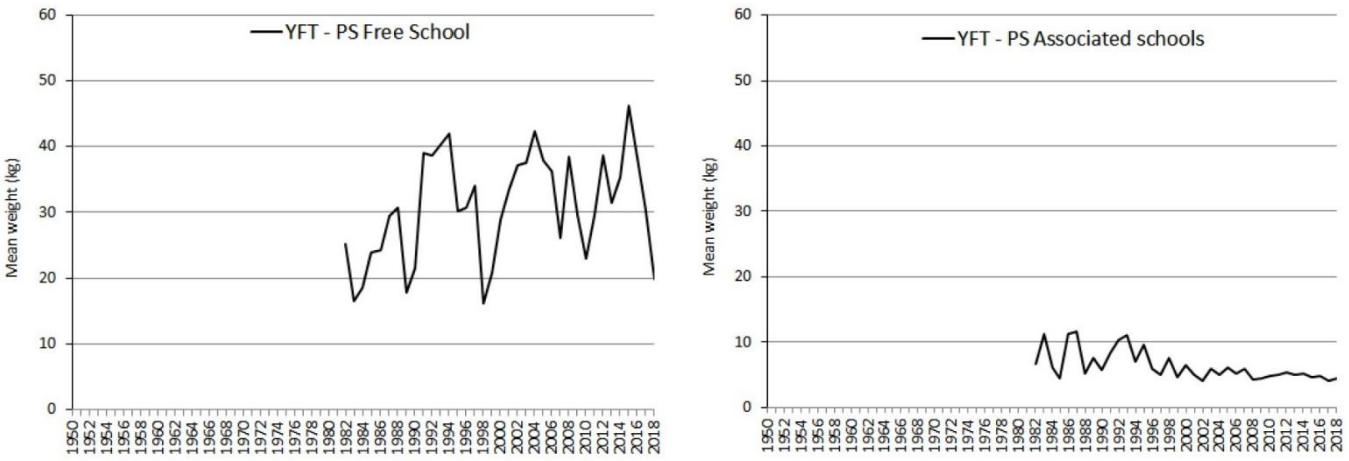


Figure 7: Mean weight of yellowfin tuna caught by purse seiners targeting free schools (left) and FAD-associated schools (right)[37]

[35] Report of the 22nd Session of the IOTC Scientific Committee, IOTC, 2019.
[36] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.
[37] Report of the 21st Session of the IOTC Working Party on Tropical Tunas, IOTC, 2019.

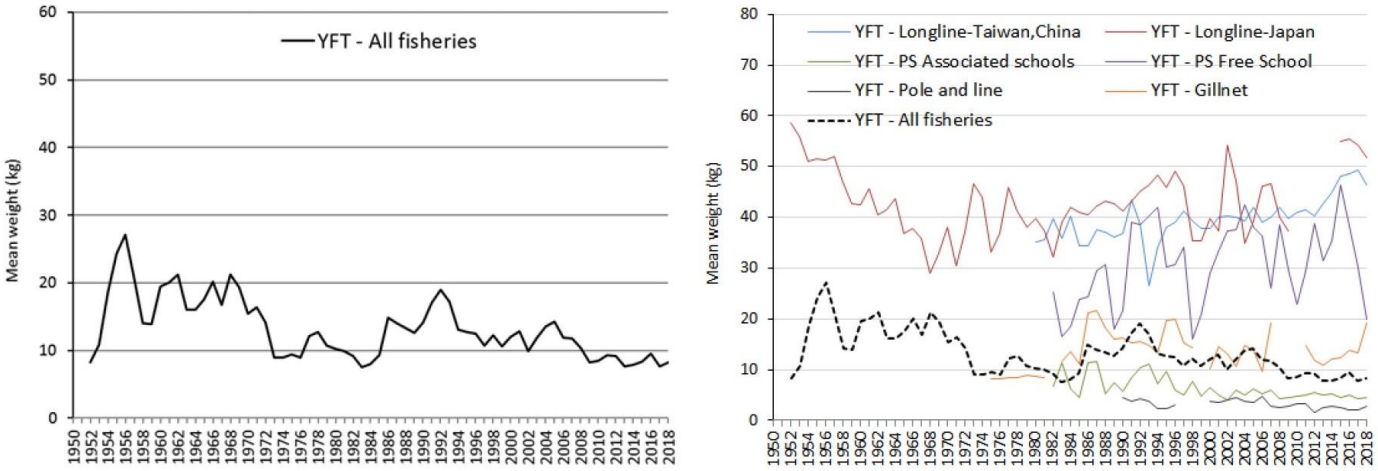


Figure 8: Mean weight of yellowfin tuna across all Indian Ocean fisheries (left) and by gear type (right)[38]

Because juvenile yellowfin and bigeye congregate, along with skipjack, around floating objects, the size of fish caught around FADs is significantly smaller than those caught in free schools. In recent years, over 90 per cent of the Indian Ocean skipjack tuna caught by purse seine vessels were taken from around FADs[39]. With these massive quantities of skipjack are caught significant amounts of both juvenile yellowfin and juvenile bigeye tuna, almost all destined for cans. Yellowfin tuna in the Indian Ocean reach maturity at about 100 cm[40]. However, many millions are caught long before they reach this size.

In order to avoid reaching the quotas for yellowfin tuna under the IOTC's Resolution 19/01, purse seiners have increasingly switched their fishing effort from free schools to FAD-associated schools. This is done in order to avoid catching the larger yellowfin tuna which are associated with free schools sets, as these larger fish would cause the fleets to reach their yellowfin quotas sooner than if they were catching juvenile yellowfin on FADs.

While other fishing methods, such as pole and line, also catch small fish, the impact of the Indian Ocean purse seine fishery warrants special attention, by virtue of it being the dominant gear type in the region, catching far more yellowfin tuna than any other fishing method, as illustrated in Figure 3. Figures 9 and 10 show the sizes of individual yellowfin tuna caught by purse seine vessels setting on free schools and FADs, respectively. The red line in both graphs shows the size at which male and female yellowfin tunas are thought to reach maturity – 100 cm. Any fish below this size can be considered immature or juvenile.

[38] Report of the 21st Session of the IOTC Working Party on Tropical Tunas, IOTC, 2019.
[39] Skipjack tuna supporting information, IOTC, 2017.
[40] Yellowfin tuna supporting information, IOTC, 2017.

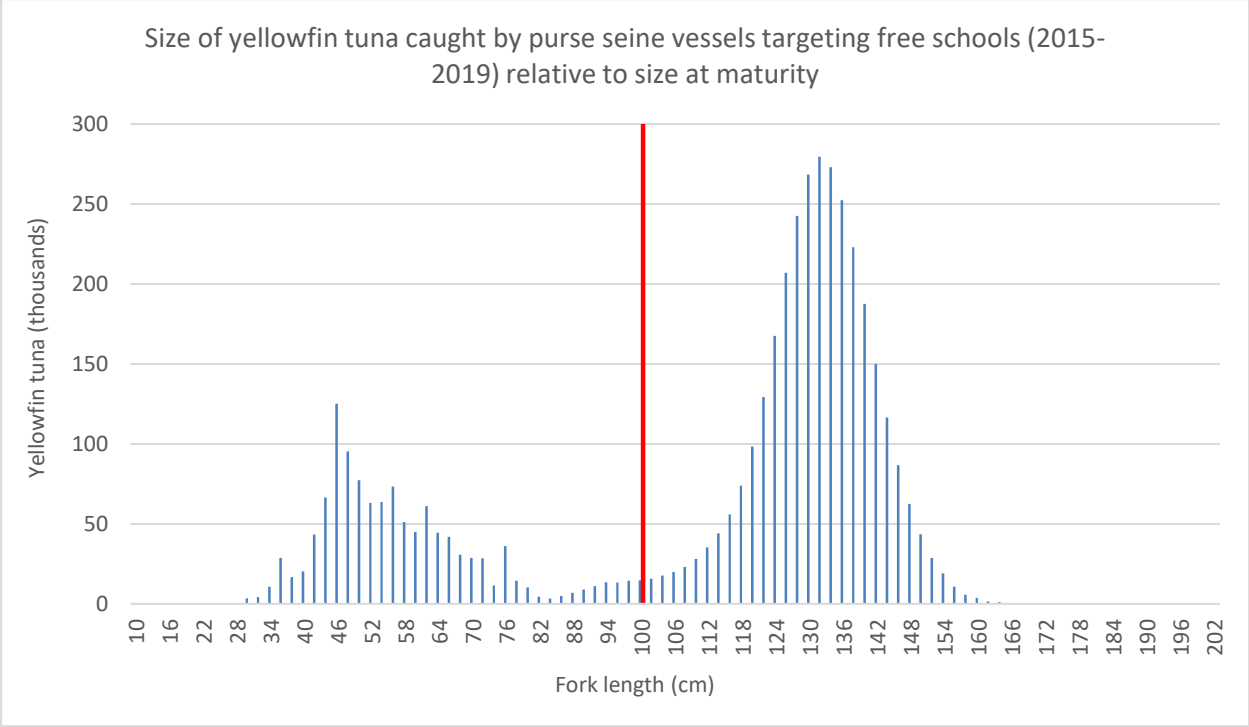


Figure 9: Size of yellowfin tuna caught by purse seiners targeting free swimming schools (2015-2019)[41]

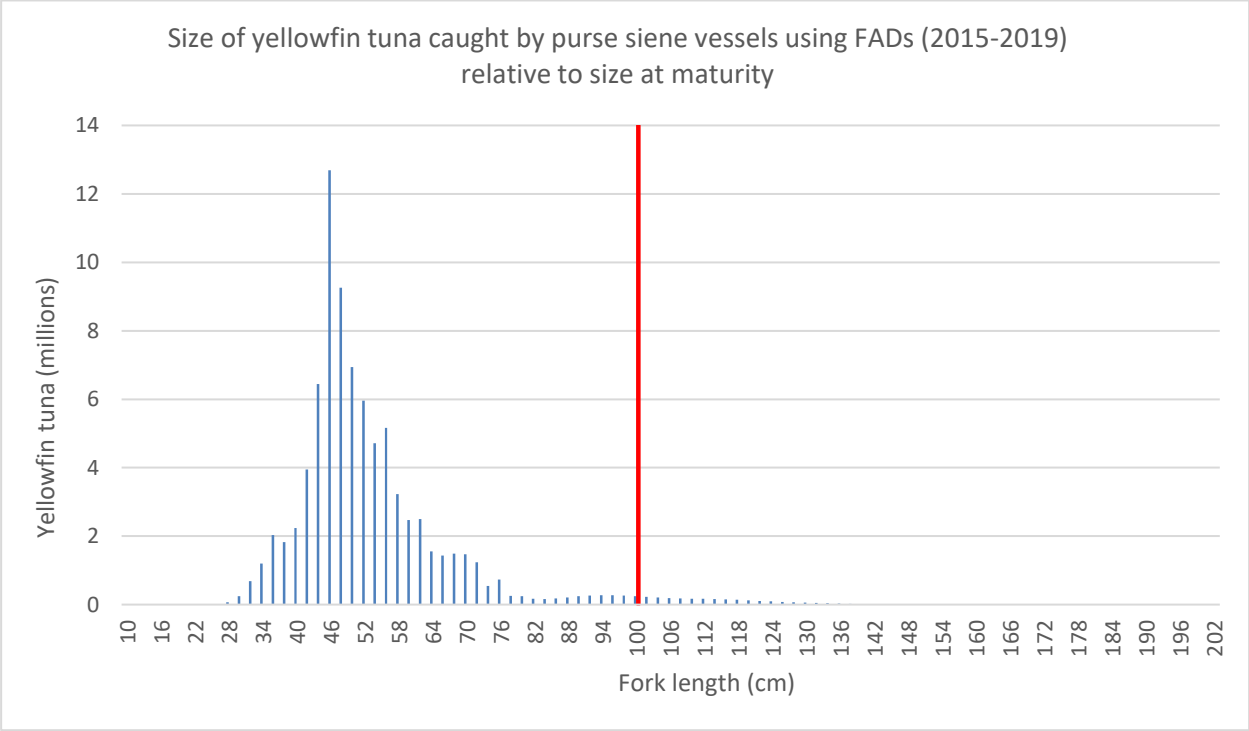


Figure 10: Size of yellowfin tuna caught around FADs by purse seiners (2015-2019)[42]

[41] Size frequency data - Yellowfin tuna (YFT), IOTC, 2020.
[42] Size frequency data - Yellowfin tuna (YFT), IOTC, 2020.

Different purse seine fleets fish on FADs to varying degrees. Table 3 below lists the five main purse seine fleets operating in the Indian Ocean and provides the percentage of yellowfin tuna caught using FADs for each over the last five years. While the vast majority of Spain and the Seychelles' catch is FAD-associated, France and Mauritius tend to set more on free schools. This grouping is no coincidence, as many of the purse seine vessels flagged to the Seychelles and Mauritius have beneficial owners based in Spain and France, respectively.

CPC	2015	2016	2017	2018	2019
EU-Spain	61%	75%	67%	96%	79%
EU-France	39%	51%	61%	86%	66%
Korea	74%	48%	46%	52%	22%
Mauritius	39%	30%	57%	54%	32%
Seychelles	59%	81%	71%	94%	86%

Table 3: Percentage of total yellowfin tuna caught by purse seiners using FADs, by CPC[43]

Figures 11 and 12 below compare the proportion of juvenile to adult yellowfin caught on FADs and in free schools by the Indian Ocean purse seine fleet between 2015 and 2019.

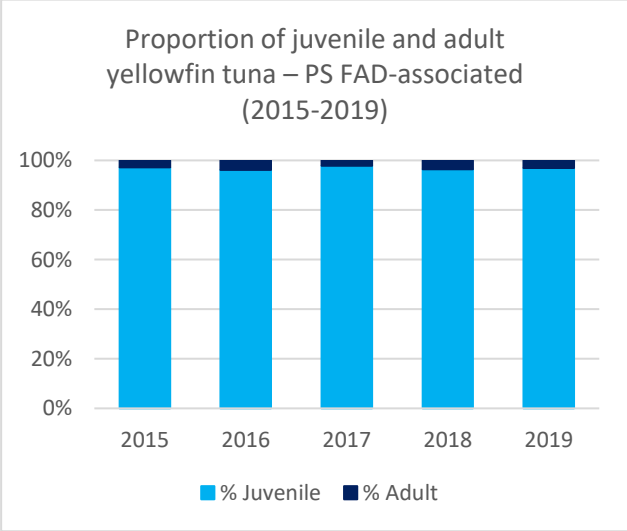


Figure 11: Proportion of juveniles caught around FADs[44]

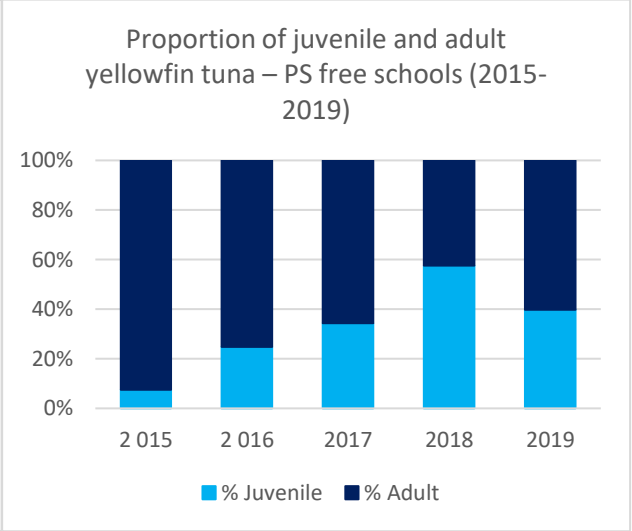
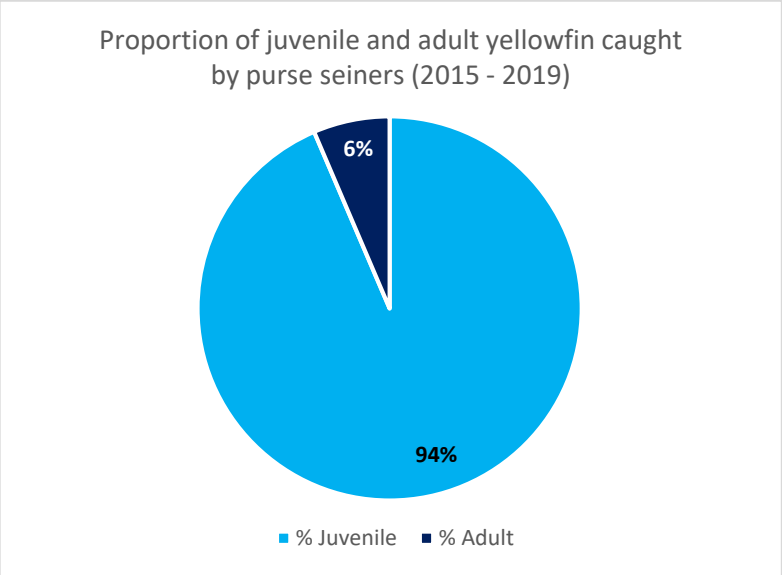


Figure 12: Proportion of juveniles caught in free schools[45]

Ninety-seven per cent of yellowfin tuna caught on FADs by the Indian Ocean purse seine fleet between 2015 and 2019 were under 100 cm and, therefore, juveniles. When one considers that 96 per cent of Spain's total catch in 2018, and 79 per cent in 2019, was caught around FADs, the scale of the problem becomes apparent. Spain caught 36,584 MT of yellowfin tuna using FADs in 2017, 43,644 MT in 2018 and

[43] Catch and effort data - surface fisheries, IOTC, 2020.
[44] Size frequency data - Yellowfin tuna (YFT), IOTC, 2020.
[45] Size frequency data - Yellowfin tuna (YFT), IOTC, 2020.

33,569 MT in 2019. With 97 per cent of its FAD-associated catch made up of immature fish, this adds up to over 100,000 MT of juvenile yellowfin tuna caught by Spain's purse seine fleet in just three years.



Some advocates of fishing on FADs claim that catching juveniles can be done sustainably. However, when one considers that half of all Indian Ocean yellowfin tuna caught around FADs are 50 cm long or smaller or, put another way, less than a year old, it seems impossible that this can be sustainable, especially for an already overfished stock at risk of collapse. If left in the ocean, yellowfin tuna can mature and spawn, growing to over two metres long and weighing 200 kg and supporting the productivity of the stock.

Figure 13: Proportion of juvenile and adult yellowfin caught by purse seiners[46]

As long ago as 2006, the IOTC's Scientific Committee sounded the alarm, saying:

> "Since the early-1980s there has also been an increase in both purse seine fishing on floating objects and artisanal fisheries which has led to a rapid increase in the catch of juvenile yellowfin. The rapid expansion, particularly on juvenile fish, is cause for concern, since it displays all the symptoms of a potentially risky situation."[47]

Industry response to yellowfin overfishing

Over the past few months, several industry groups have voiced their concern over the continued overfishing of Indian Ocean yellowfin tuna. The Global Tuna Alliance, an independent group of retailers and supply-chain companies interested in improving the sustainability of the tuna sector, commissioned a report to develop management advice for Indian Ocean yellowfin tuna that would rebuild the stock in two generations[48]. The report, published in August 2020, confirmed that a 25 per cent catch reduction in reference to the 2017 catch levels will be necessary to rebuild the stock in two generations and put forward three proposals on how catch reductions could be achieved.

[46] Catch and effort data - surface fisheries, IOTC, 2020.
[47] Report of the Ninth Session of the Scientific Committee, IOTC, 2006.
[48] Developing management advice to rebuild the Indian Ocean yellowfin tuna (Thunnus albacares) stock in two generations, GTA, 2020.

In September, Tesco announced[49] that it would stop sourcing tuna and billfish from the Indian Ocean for its Own Brand supply in the UK and Ireland if the IOTC failed to adopt a credible and effective recovery plan to rebuild the yellowfin tuna stock within two generations at the next Commission meeting in November 2020. The same day as Tesco's announcement was made, the IOTC released its provisional agenda for the November meeting – the first Commission meeting to take place virtually, as a result of the COVID-19 pandemic. The agenda made clear the IOCT's decision not to include the negotiation of new conservation and management measures (CMMs), including a new stock rebuilding plan for yellowfin tuna, meaning that Tesco will have to honour its sourcing commitment.

The announcement by Tesco was followed by similar announcements by the Co-operative Group in the UK and the leading Belgian retailer Colruyt Group[50]. The announcements from both Tesco and the Co-op called on the IOTC to address the issue of yellowfin tuna overfishing.

A case study on the management of yellowfin tuna by the Indian Ocean Tuna Commission described several of the fisheries improvement projects (FIPs) associated with the Indian Ocean yellowfin tuna stock and highlighted the various ways in which the projects allow processors and retailers to make bold and misleading claims about the sustainability of the tuna in their cans. The fact that at least three[51] Indian Ocean yellowfin tuna FIPs are currently rated "A" on FisheriesProgress.org (a FIP tracking database) when the stock is potentially less than six years away from collapse reveals the inherently flawed nature of the projects and the system upon which they are based.

Another A-rated FIP, "Indian Ocean tropical tuna – purse seine (OPAGAC)" [52], was deemed "completed" in August 2020, by virtue of the fact that the fishery had entered full Marine Stewardship Council (MSC) assessment – the end goal of most FIPs. Despite having made no progress towards rebuilding the Indian Ocean yellowfin tuna stock in almost four years of being part of a FIP, the Organización de Productores Asociados de Grandes Atuneros Congeladores (OPAGAC) announced its entry into MSC assessment in September 2020[53]. While it is highly unlikely that the Indian Ocean yellowfin tuna stock will be recovered or well managed enough for the MSC to certify any of its fisheries for the foreseeable future, it is possible that the OPAGAC Indian Ocean skipjack catch from the purse seine fishery may achieve certification, despite the significant threat it poses to juvenile yellowfin. The Spanish Echebastar skipjack purse seine fishery received MSC certification in 2018, despite the many flaws in the assessment raised by the World Wide Fund for Nature (WWF) in a formal objection process[54], including the fact that half of its catch was overfished yellowfin.

[49] Tesco announces Yellowfin tuna pledge, Tesco, 2020.
[50] UK retailer Co-op reaffirms pledge not to stock yellowfin tuna, Undercurrent News, 2020.
[51] See Indian Ocean tuna - purse seine (SIOTI), Indian Ocean tuna - longline (Thai Union), Sri Lanka tuna and swordfish – longline, FisheriesProgress.org (all accessed 10.10.2020).
[52] See COMPLETED Indian Ocean tropical tuna - purse seine (OPAGAC), FisheriesProgress.org (accessed 10.10.2020).
[53] AGAC four oceans Integral Purse Seine Tropical Tuna Fishery, MSC, 2020.
[54] WWF statement on MSC certification of Spanish Purse Seine "Echebastar" Fishery in the Indian Ocean, WWF, 2018.

Misreporting by EU-Spain

According to the IOTC's preliminary catch dataset, in 2019 Spain caught 172,843 MT of tropical tuna (bigeye, yellowfin and skipjack)[55] in the Indian Ocean – more than any other country. As a developed, distant water fishing nation and by far the biggest player when it comes to Indian Ocean tropical tuna, it is concerning that questions have had to be raised by the IOTC, NGOs and two Indian Ocean countries – South Africa and the Maldives – about the many inconsistencies in Spain's catch reporting over multiple years.

With the reductions imposed by IOTC Resolution 16/01 taken into account, Spain was issued an Indian Ocean yellowfin quota of 45,682 MT by the EU for 2017[56]. According to the catch data reported to the IOTC by the EU, the Spanish purse seine fleet exceeded its quota by 19 per cent in 2017, catching 54,513 MT in 2017. According to these figures, Spain should have been required to repay the over-catch of 8,831 MT in the following year (or years), according to Article 105 of Regulation (EC) No 1224/2009.

Additionally, because the Spanish fleet overshot its quota by 19 per cent, a multiplying factor of 1.2 should have been applied to the allocation "payback", as set out in Article 105(2) of Regulation (EC) No 1224/2009. Spain should therefore have been required to repay 10,597 MT in the year or years following the overfishing.

However, the EU dismissed these figures, calling them "estimates"[57] and issuing a different catch total of 48,148 MT for Spain's purse seine fleet in 2017[58]. It is on this much lower figure that the EU decided to base its quota payback for the following years. Additionally, because the total was only 2,466 MT, or 5 per cent, over quota, Spain avoided having to apply any multiplying factors to its repayment.

In 2019, a letter from the Government of South Africa to the Directorate-General for Maritime Affairs and Fisheries (DG MARE) with the subject line "Discrepancies in data reporting by EU Spanish vessels in the Indian Ocean" was leaked by BLUE in *A case study on the management of yellowfin tuna by the Indian Ocean Tuna Commission*. The letter highlighted concerns over the fact that Spain had reported one set of catch figures for yellowfin tuna to the IOTC and had used another, much lower, catch total on which to base its own quota payback, as is required by European law. The letter claimed that the new quota had pushed Spain into a "catching frenzy" as the country's total catches in 2017 were 12 per cent higher than the average over the previous five years.

The South African letter went on to say:

> "For a stock that is overfished and subject to overfishing, there needs to be a credible and reliable reporting mechanism, and it is disappointing to see that this is not the case for the EU-Spanish vessels in the Indian Ocean. This is a very concerning practice from one of the EU countries, and goes against the EU Common Fisheries Policy and corresponding regulations. In the meantime, the EU also has continuously called upon the

[55] Nominal catches by fleet, year, gear, IOTC area and species, IOTC, 2020.
[56] Council Regulation (EU) 2017/127 of 20 January 2017 fixing for 2017 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, EU, 2017.
[57] Spain hits back against accusation of overfishing in Indian Ocean, Undercurrent News, 2019.
[58] Commission implementing regulation (EU) 2019/479 of 22 March 2019 operating deductions from fishing quotas available for certain stocks in 2018 on account of overfishing of other stocks in the previous years and amending Implementing Regulation (EU) 2018/1969, EU, 2019.

developing coastal states in the Indian Ocean on the need to strengthen data reporting and to impose penalties for non-compliance."

The EU promised to clarify the issue of their 2017 misreporting at the 2019 IOTC Commission meeting in Hyderabad. However, to this day, no adequate explanation of the 2017 Spanish catch discrepancies has been provided.

Spain was only able to commit to repaying 327 MT in 2018, deducting this amount from its quota and leaving it with an allocation of 45,355 MT of yellowfin tuna in 2018. Once again, two different catch totals were provided by Spain for 2018. The EU reported a catch of 45,318 MT to the IOTC but published a total of 44,964 in its own Journal[59]. However, this discrepancy pales in comparison to the third catch total for Spain in 2018.

In October 2019, at the 21st Session of the IOTC Working Party on Tropical Tunas, it was noted that the 2018 catches of bigeye tuna reported by the EU purse seine fleet alone exceeded the catches recorded by all purse seine fleets the previous year. The 2018 catch characteristics and species composition reported by the EU did not match the data reported by other purse seine fleets during the same year, nor the data reported by the EU purse seine fleet in years prior to 2018 and the WPTT noted the possibility of errors related to the fleet's estimation of the species composition for catches in 2018. It was acknowledged that the matter arose from the Spanish component of the EU purse seine fleet and that this could be due to changes introduced in the type of statistical methodologies adopted for the production of catch statistics by Spain in 2018, making specific reference to Spain's new method of estimation based on catch per vessel instead of T3 that is predominantly used by the IOTC.

The relative species composition of Spain's reported FAD-associated purse seine catches in 2017 to 2018 are as follows:

Year	Bigeye	Skipjack	Yellowfin
2017	6% (7,926 MT)	65% (83,426 MT)	29% (36,583 MT)
2018	12% (24,507 MT)	66% (132,709 MT)	22% (43,652 MT)

Table 4: Species composition for the Spanish purse seine fleet (2017-2018)[60]

When the same species composition identified for Spain's associated purse seine fleet in 2017 was applied by the WPTT to the total catches reported by the same fleet in 2018, the resulting revised total catch by species for the fleet and fishing mode in 2018 were as follows:

- Bigeye tuna: 12,405 MT
- Skipjack tuna: 130,575 MT
- Yellowfin tuna: 57,259 MT

[59] Commission implementing regulation (EU) 2019/1726 of 15 October 2019 operating deductions from fishing quotas available for certain stocks in 2019 on account of overfishing in the previous years, EU, 2019.
[60] Report of the 21st Session of the IOTC Working Party on Tropical Tunas, IOTC, 2019.

This method brings Spain's revised associated purse seine yellowfin tuna catch for 2018 to 13,606 MT – or **31 per cent** – higher than was reported by the EU. Adding the remaining free school component of Spain's 2018 yellowfin tuna catch (approximately 1,666 MT[61]) brings Spain's total yellowfin tuna purse seine catch for 2018 to 58,925 MT.

However, according to official catch data provided by the Secretaría General de Pesca (SGP) of the Spanish Government to BLUE, Spain's revised yellowfin tuna catch total for 2018 is recorded as 46,992 MT[62] – only 1,674 MT more than the original number submitted by the EU and almost 12,000 MT less than the total put forward by the IOTC WPTT. It is understood that this new total has been arrived at using the SGP's new system which uses data from landing reports and sale slips to monitor the utilisation of quota by individual vessels, as outlined in the appended SGP document entitled *Adoption of a new methodology to produce nominal catch statistics for the industrial tuna purse seine fleet of EU-Spain operating in the IOTC Area of Competence*.

The following questions pertaining to Spain's misreporting remain unanswered: the majority were submitted[63] to the IOTC Compliance Committee in advance of its meeting in October 2020 and were sent to the EU Head of Delegation via email.

- How does the EU explain the discrepancy in catch totals for 2017, given that the new system of allocating quota by vessel and calculating catch through landing reports and sale slips was only introduced in 2018?
- What is the status of the appended SGP document entitled "Adoption of a new methodology to produce nominal catch statistics for the industrial tuna purse seine fleet of EU-Spain operating in the IOTC Area of Competence"?
- Please can the EU explain: (a) whether the EU intends that IOTC CPCs should rely on this SGP document as an explanation for the issue (described above) raised by the WPTT; and(b) whether the EU agrees with the explanation provided in the appended SGP document?
- Has the rest of the EU fleet (specifically French and Italian-flagged vessels), in respect of 2018 catches of tropical tuna by its purse seine fleet, used T3 or, instead, used the same new reporting procedure as Spain as outlined in the appended SGP document?
- The appended SGP document states that: "Once the SGP adopts the new system for the production of catch statistics, more work will be devoted to the preparation of other datasets, in particular catch-and-effort and catch-at-size, which at present should be considered preliminary." Please can the EU explain whether the SGP has already adopted the new system or, as suggested by the extract above, the SGP is still to adopt the new system? If it is the latter, why were the 2018 catch statistics provided to IOTC under the new system?
- The appended SGP document states that: "… since 2017, Spanish purse seiners have refrained from fishing on free-schools, fishing almost exclusively on FADs. This may explain why the contribution of bigeye tuna to the total catch of tropical tunas has been higher in 2017 and 2018." Table 5 shows

[61] This is calculated by subtracting the FAD-associated portion of the catch (43,652 MT) from Spain's total reported yellowfin tuna purse seine catch for 2018 (45,318 MT), as listed in the IOTC Nominal Catch Dataset.
[62] This information was received as part of a Freedom of Information Act request on 11 June 2020.
[63] The questions submitted by BLUE in August 2020 can be found here: Inconsistencies in tropical tuna catch calculations and reporting by Spain.

the proportion of catch by Spanish-flagged purse seine vessels arising from FAD sets for bigeye, skipjack and yellowfin tuna during 2016 to 2019.

Year	Yellowfin	Bigeye	Skipjack
2016	75%	90%	97%
2017	67%	64%	99%
2018	96%	94%	99%
2019	79%	68%	88%

Table 5: Proportion of catch by Spanish-flagged purse seine vessels arising from FAD sets for bigeye, skipjack and yellowfin tuna (2016-2019)[64]

Please can the EU explain why the proportion of catch of bigeye tuna arising from FAD sets is above 90 per cent in 2016, then drops to 64 per cent in 2017 and then rises again to above 90 per cent for 2018 before dropping to 68 per cent in 2019? We ask this question because that pattern does not fit with the statement in the SGP document that fishing "almost exclusively on FADs" started in 2017.

- Which of Spain's multiple yellowfin tuna catch totals for 2018 will be adopted by the IOTC?

The questions asked of the EU by BLUE received no response – not during the Compliance Committee meeting, nor from the EU Head of Delegation. Similarly, a series of questions was formally submitted to the EU by the Government of the Maldives in advance of the 17th Session of the IOTC Compliance Committee, with the island nation noting: "Maldives notes our concern with the issues raised by the relevant working parties and the scientific committee with regards to issues with data reporting for an overfished stock and note that these have not been addressed by the EU in any of the compliance reporting mechanisms mentioned above" [65]. The Maldivian government's questions have also failed to elicit satisfactory responses from the EU.

Misuse of AIS by purse seine vessels operating in the IOTC area of competence

In August 2020, BLUE published a report titled *Automatic Identification System (AIS) usage by Spanish and French-flagged vessels*[66] which highlighted concerns regarding the inconsistent usage of AIS by the EU purse seine vessels operating in the Western Indian Ocean. The paper, which analysed the AIS usage by 14 Spanish-flagged and 11 French-flagged vessels over a period of more than two years, found that the French and Spanish fleets failed to transmit AIS for 68 per cent and 80 per cent of the analysis days, respectively.

The International Convention for the Safety of Life at Sea (SOLAS) establishes that AIS has to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, all cargo ships of 500 gross tonnage and upwards regardless of where they operate and all passenger vessels.

[64] Catch and effort data - surface fisheries, IOTC, 2020.
[65] The questions can be found on page 31 of the 2020 EU Compliance report.
[66] The report can be found here: Automatic Identification System (AIS) usage by Spanish and French-flagged vessels.

Similarly, EU law requires fishing vessels above 15 metres to be fitted with AIS which must be maintained at all times and may only be switched off in "exceptional circumstances" where the master considers this necessary in the interest of the safety or security of his vessel (imminent danger). Despite this, one Spanish-flagged vessel failed to transmit AIS for a continuous period of 519 days, with 13 other vessels also "going dark" for more than 100 days at a time. Of the 25 vessels analysed, 20 of them spent more than half of their time at sea with AIS switched off.

In November 2019, BLUE submitted the AIS study, conducted by OceanMind, to the European Commission, highlighting the concerning lack of compliance. Despite assurances from the European Commission that it would "follow this up as a matter of urgency with the relevant Member States, given the safety and surveillance implications", BLUE has not received any explanation of the Spanish and French-flagged vessels' non-compliance, despite numerous requests over 11 months.

BLUE also requested to be sent the corresponding Vessel Monitoring System (VMS) data, to allow for cross-checking to be undertaken to establish where the vessels went after turning their AIS off and to understand what they may have been doing during this time. This request has not been granted and, without it, it is impossible to know what they were trying to hide by "going dark".

In addition to monitoring the AIS (mis)use of the Spanish and French purse seine fleets, OceanMind also investigated AIS usage by the Seychelles-flagged purse seine fleet. An updated account of the fleet's AIS use can be found here.

Conclusion

The yellowfin tuna stock rebuilding plan put in place by the IOTC in 2016 has, thus far, failed to reduce catches from the baseline at all, let alone by the 25 per cent necessary to save the stock from collapse. While some fleets have succeeded in making the required catch reductions, others continue to increase their landings, while others still are exempt from making any catch reductions at all. The lack of a widely agreed catch limit for yellowfin tuna fuels the ongoing debate over allocation. However, the failure of the IOTC to enforce the skipjack catch limit dictated by the HCR does little to inspire confidence that a yellowfin TAC would be respected by IOTC member states even if it were to be agreed.

In addition to reducing the amount of yellowfin tuna caught, it is also important to take into account how the fish are caught and at what age. The fact that 94 per cent of the yellowfin tuna caught by the Indian Ocean purse seine fleet – the dominant gear type – between 2015 and 2019 were juveniles is a problem that cannot be ignored. Similarly, the continued misreporting and lack of compliance by the EU distant water fleet – which should be leading by example as a bloc of developed and experienced fishing nations – is of real concern.

With COVID-19 forcing CPCs to meet virtually at this year's Commission meeting, there appears to be very little hope of a new recovery plan for yellowfin tuna being negotiated in November 2020, meaning that the stock will have to wait until 2021. Given the delay between agreeing a rebuilding plan and having it implemented on the water, this could be one of the last chances that the IOTC and its member states have to save this globally important stock. BLUE therefore urges the IOTC to convene an emergency session as early as possible in 2021 to establish an effective and equitable recovery plan for yellowfin tuna in the Indian Ocean.

MINISTERIO
DE AGRICULTURA, PESCA Y
ALIMENTACIÓN

SECRETARIA GENERAL DE PESCA

DIRECCIÓN GENERAL DE
RECURSOS PESQUEROS

SUBDIRECCION GENERAL DE ACUERDOS Y
ORGANIZACIONES REGIONALES DE PESCA

Adoption of a new methodology to produce nominal catch statistics for the industrial tuna purse seine fleet of EU-Spain operating in the IOTC Area of Competence

General Secretariat of Fisheries of Spain[1]

Abstract

The General Secretariat of fisheries of Spain (SGP) is responsible for the monitoring of catches of all fishing vessels flagged in Spain, including those operating in the areas of competence of tuna-Regional Fisheries Management Organizations such as the Indian Ocean Tuna Commission (IOTC). This document responds to a request from the Working Party Tropical Tuna of the IOTC which, at its 21st Session, identified discrepancies in catch estimates for EU-Spain and was informed that they originated from changes in reporting procedures introduced by the Secretariat of Fisheries of Spain, applicable since 2018. The SGP has introduced those changes in order to follow EU Procedures for stocks subject to multi-annual plans, which call for EU member States to use data from landing reports and sale slips to monitor the utilization of quotas by individual vessels. The new system is based on landing reports and sale slips which are verified through inspection in port, carried out by inspectors under the SGP. The SGP consider that the catches recorded in such reports reflect more timely and accurately the retained catches of individual purse seine vessels, as opposed to previous catch estimates, which used a complex algorithm to raise catch estimates for scientific purposes. The SGP is currently evaluating the implementation of the new system and will inform the IOTC WPDCS regarding any future reviews to the system or time-series of catch for the Spanish fleet, as deemed appropriate.

Background

The Secretariat of fisheries of Spain (SGP) is responsible for the monitoring of catches of all fishing vessels flagged in Spain, including those operating in the areas of competence of tuna-Regional Fisheries Management Organizations such as the Indian Ocean Tuna Commission (IOTC). This document responds to a request from the Working Party Tropical Tuna of the IOTC which, at its 21st Session, identified discrepancies in catch estimates for EU-Spain and was informed of changes in reporting procedures introduced by the Secretariat of Fisheries of Spain, applicable initially since 2018.

The Spanish purse seine fleet have been operating in the Indian Ocean since 1984. Since its arrival, the fleet has complied with Regional, EU and flag state regulations concerning the monitoring and control of its activities and production and reporting of estimates of catch and other datasets requested by the Commission.

[1] Subdirección General de Acuerdos y Organizaciones Regionales de Pesca: orgmulpm@mapa.es

Until 2017, the Spanish Government used logbook and landing statistics to produce estimates of total catch for each individual vessel trip, with the catches of yellowfin tuna and bigeye tuna of more and less of 10kg round weight reported separately. The catches recorded in logbooks under each size category and for each set during a trip were then broken by species using proportions by species obtained from data collected through sampling in port, through a complex catch estimation algorithm. This meant that the samples used to correct the catches of each individual set for a given vessel trip came from many different vessels, regardless of purse seine flag or size.

While the EU and Seychelles changed their sampling and stratification procedures in 1998 (Pallarés & Hallier, 1997; Pianet *et al.*, 2000), the underlaying basis for the estimation remained the same, with catches for each individual purse seine set corrected using proportions coming from samples originating from all available samples from vessels that operated in the same stratum where that set occurred (each stratum referring to a large area and quarter), regardless of the flag of the vessel (Spain, France or Seychelles) or of whether samples were available for the vessel concerned. This means that, while the system could be useful to obtain estimates of catch in bulk, for the combined purse seine fleet, it cannot be used to monitor the utilisation of quota at the individual vessel level. In addition, the system cannot be used to monitor quota utilization in near real time, as catches are estimated at the end of each quarter (due to the type of stratification used).

The estimation procedures previously used by France, Spain and Seychelles, generally referred to as T3, are currently under review. The main reason is potential biases that have been identified when comparing estimates from T3 for each individual vessel against data from sale slips collected on EU-Spain and Seychelles purse seiners both in the Atlantic and Indian oceans (Herrera & Báez, 2019); and through the analysis of stratification and catch estimation procedures, which tend to confirm that current estimates of catches of tropical tunas might be subject to various types of bias (Duparc *et al.*, 2018, 2019a,b).

Since 2017, the Indian Ocean yellowfin tuna stock has been subject to an interim Rebuilding Plan (IOTC Resolution 19/01 at present). In 2017, the SGP noted a discrepancy between the catch reports originating from Spanish purse seiners (sale slips) and estimates obtained using T3. In order to maintain the consistency of estimates, the SGP decided to report scientific estimates and data from landing reports for that year. This was also possible because the SGP monitored the implementation of the yellowfin tuna quota in bulk, as purse seiners were not assigned individual quotas during that year. However, in 2018 the SGP adopted Individual Vessel Quotas which for the reasons indicated in the previous paragraphs cannot be monitored using T3. It was then decided to use sale slips for the control of quota utilization by Spanish purse seine vessels.

New method used to produce estimates of nominal catch for Spanish purse seiners

In 2018, the SGP adopted a new system to estimate nominal catches of tropical tunas, which is based primarily on Council Regulation (EC) No 1224/2009 *establishing a*

Community control system for ensuring compliance with the rules of the common fisheries policy (Anon. 2009). Appendix 1 includes provisions of the referred Regulation which are relevant to the control of stocks subject to a multi-annual plan.

The method implemented by the SGP for 2018 relies on the sale slip data reports available, which cover all the unloadings of tuna corresponding to fishing sets made by Spanish purse seiners over the year 2018. This is in line with provisions in Council Regulation (EC) No 1224/2009. It is important to highlight provisions in the following Articles:

> **Articles 14 & 15**: Obligation to keep a logbook in which to record catches of all species kept aboard above 50kg of live-weight equivalent with a margin of tolerance of 10% for all species retained on board. And completion and transmission of logbook data through electronic means.
>
> **Articles 23 & 42**: Completion of landing and transhipment (in port) declarations for all species unloaded or transhipped from the vessel.
>
> **Article 60**: Weighing of fishery products on landing, prior to the fisheries products being held in storage, transported or sold. And use of the figure resulting from the weighing for the completion of landing declarations, transport document, sales notes and take-over declarations.
>
> **Article 62:** Submission of sale slips within 48 hours after the first sale, where possible in electronic format.
>
> **Article 74**: Carry out inspections to verify the legality of the catch kept on board, stored, transported, processed or marketed and the accuracy of the documentations or electronic transmissions relating to it.

All Spanish flagged purse seiners carry onboard an electronic logbook, known as the DEA (Diario Electrónico de A bordo). Data on all fishing sets and activities is reported in near-real time to the SGP (DEA1). In addition, data from landing and transhipment in port are reported electronically, through the same system (DEA2).

According to the Regulations in place, the difference between logbook catch reports and landing declarations cannot exceed 10% for all species whose retained catch is over 50kg. In addition, the amounts recorded in landing declarations and sale slips must be the same. The SGP Control Agency monitors the consistency of reports and shipowners are controlled on that basis, with penalties established according to the regulation, where appropriate.

In addition to the above, the SGP has concluded an Inspection Protocol that has been implemented to control the catches of yellowfin tuna unloaded in ports of the Indian Ocean. So far, a team of inspectors from the SGP has been based in Seychelles, carrying out inspections of Spanish purse seine vessels in port, at unloading. The team might move to other ports as unloading activities increase in those ports, according to the seasonality of the fishery.

Next steps

In order to validate the new system implemented, the SGP is collating all landing data and information on inspections. The results of these inspections will be used to validate landing declarations, and also compared to estimates obtained using T3 for those trips. The results of this work will inform future adjustments to the monitoring system, as required.

While the SGP acknowledges the concerns expressed by the WPTT that the proportion of bigeye tuna reported by Spain for 2018 differs markedly from that recorded in previous years, it should be noted that the catches reported for 2018 were not obtained using T3, for the reasons explained above. A preliminary evaluation of the sale slip data collected by the SGP over the period 2014-2018 showed that the proportions of bigeye tuna in sale slips reported by Spanish purse seiners is higher than that estimated using T3. This is presented in Table 1. It is also important to note that, since 2017, Spanish purse seiners have refrained from fishing on free-schools, fishing almost exclusively on FADs. This may explain why the contribution of bigeye tuna to the total catch of tropical tunas has been higher in 2017 and 2018.

Table 1. Amount (metric tons) of bigeye tuna reported on sale slips and estimated using T3, and proportion (%) that those catches represent over the total catches of tropical tunas, for purse seiners flagged in Spain, over the period 2014-2018

Year	2014	2015	2016	2017	2018
MT BET SALE SLIPS	11,802	10,519	12,785	24,146	26,174
%BET SALE SLIPS	8.7	8.6	9.1	12.5	12.8
MT BET T3	8,988	9,832	9,371	12,345	*na*
%BET T3	7.1	8.6	7.1	8.2	*na*

As indicated above, the SGP is collating additional information to validate the new system and will decide if future revisions of the estimates or time-series are required, according to the results of this work. At present, SGP is evaluating the eventual sources of discrepancies that could be related to change on fishing patterns, catch estimates or a combination of both.

Once the SGP adopts the new system for the production of catch statistics, more work will be devoted to the preparation of other datasets, in particular catch-and-effort and catch-at-size, which at present should be considered preliminary.

Conclusion

TAC and quota systems, catch limits, or similar regulations, may lead to significant changes in the way fisheries operate. In the case of industrial tuna purse seine fisheries in the Indian Ocean, Spanish scientists have documented changes in the fishery following the adoption of catch limits for yellowfin tuna (Báez & Ramos, 2019). The main changes reported referred to purse seine skippers refraining from catching free-swimming schools of yellowfin tuna, to avoid reaching the yellowfin catch limit too soon. This operational change in the behaviour of the fleet resulted in an inflection point in the trends from time series (Báez & Ramos, 2019). In addition, while fishing mostly on FADs all purse seine fleets seem to have been avoiding large concentrations of juvenile yellowfin tuna on FADs, as the contribution of skipjack and/or bigeye tuna to the total catches on FADs has increased considerably since the implementation of the catch limit (IOTC 2019).

The SGP consider that the catches recorded in landing reports and sale slips reflect more timely and accurately the retained catches of individual purse seine vessels, as opposed to previous catch estimates, which originated from a complex algorithm and could not be assigned to the individual vessel. In addition, at present monitoring in near real-time is only possible through landing reports and sale slips, as T3 cannot be used for this purpose.

The SGP is currently evaluating the implementation of the new system and will inform the IOTC WPDCS regarding any future reviews to the system or time-series of catch for the Spanish purse seine fleet, as deemed appropriate.

References

Anon. (2009). COUNCIL REGULATION (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R1224&from=EN

Báez, J.C., Fernández, F., Pascual, P., Ramos, M.L. & Abascal, F. (2017). Updating the statistics of the EU-Spain purse seine fleet in the Indian Ocean (1990-2016). Submitted to 19th Working Party on Tropical Tunas (WPTT19), IOTC. IOTC-2017-WPTT19-INFO5

Báez, J.C., Fernández, F., Pascual, P., Ramos, M.L. & Abascal, F. (2018). Updating the statistics of the EU-Spain purse seine fleet in the Indian Ocean (1990-2016). Submitted to 20th Working Party on Tropical Tunas (WPTT20), IOTC. IOTC-2018-WPTT20-15.

Báez, J.C. & Ramos, M.L. (2019). Free school fishery trends for Spanish tropical purse seiners in the Indian Ocean. IOTC-2019-WPTT21–12.

Duparc, A., P. Cauquil, M. Depestris, P. Dewals, D. Gaertner, A. Hervé, J. Lebranchu, F. Marsac, and P. Bach. 2018. Assessment of accuracy in processing purse seine

tropical tuna catches with the T3 methodology using French fleet data. Pages 1–19 Report of thte 20th session of the IOTC Working Party on Tropical Tunas. IOTC, Victoria, Seychelles.

Duparc, A., V. Aragno, M. Depestris, L. Floch, P. Cauquil, J. Lebranchu, D. Gaertner, and P. Bach. 2019a. Assessment of the species composition of major tropical tunas in purse seine catches: a new modelling approach for the Tropical Tuna Treatment processing. Case of the French fleet in Atlantic Ocean. Tropical Tuna Species Group Meeting.

Duparc A., Aragno V., Depetris M., Floch L., Cauquil P., Lebranchu J., Gaertner D., Marsac F., Bach P. (2019b). Assessment of the species composition of major tropical tunas in purse seine catches: a new modelling approach for the tropical tuna treatment processing, Case of the French fleet in Indian Ocean. IOTC-2019-WPTT21-10

Herrera, M. & Báez, J.C. (2019). On the potential biases of scientific estimates of catches of tropical tunas of purse seiners the EU and other countries report to the ICCAT and IOTC. Vol. Sci. Pap. ICCAT 75 (7) (2019) 2202-2232.

IOTC 2019. IOTC Nominal Catch data presented to the 21st Meeting of the Working Party on Tropical Tunas of the Indian Ocean Tuna Commission. Extracted on 29 October 2019. https://iotc.org/WPTT/21/Data/03-NC

Pallarés, P. & Hallier, J.-P. (1997). Analyse du schéma d'échantillonnage multispécifique des thonidés tropicaux (Rapport scientifique No. Programme no 95/37). IEO/ORSTOM.

Pianet, R., Pallarés, P. & Petit, C. (2000). New sampling and data processing strategy for estimating the composition of catches by species and sizes in the European purse seine tropical tuna fisheries. In: IOTC Proceedings IOTC No. 3, pp. 104–139.

APPENDIX I: Extract from COUNCIL REGULATION (EC) No 1224/2009

Provisions in COUNCIL REGULATION (EC) No 1224/2009 which are relevant to the implementation of catch controls for stocks subject to a multi-annual plan, as it is the case with the stock of yellowfin tuna in the IOTC Area of Competence (bold font from author):

(17) Member States should monitor the activities of their fishing vessels in and outside Community waters. To facilitate effective monitoring masters of Community fishing vessels of 10 metres' length overall or more should be obliged to keep a **fishing logbook and submit landing and transhipment declarations**. In order to make use of modern technologies, for fishing vessels of 12 metres' length overall or more, the fishing **logbook should be in electronic form** and the **landing and transhipment declarations should be submitted electronically**.

(18) The information contained in the fishing logbooks of fishing vessels should be verified at the time of landing. Accordingly, those involved in the landing and marketing of fish and fishery products **should be required to declare the quantities landed, transhipped, offered for sale or purchased**.

(24) Particular measures should apply in case of multiannual plans as a particular form to protect the concerned stocks. Transhipments of catches of stocks subject to a multiannual plan should be allowed only in designated ports and **only if these catches have been weighed**.

(29) To ensure that all catches are properly controlled Member States should ensure that all fisheries products are first marketed or registered at an auction centre or to registered buyers or to producer organisations. As the exact weight of catches needs to be known to follow the utilisation of quotas, Member States should ensure that all fisheries products are weighed unless sampling plans based on a common methodology are in place.

(30) In order to follow the way of the catch and to be able to verify their coherence with catch data, registered buyers, registered auctions or other bodies or persons authorised by Member States **should submit sales notes**. If they have an annual turnover in first sales of fisheries products of more than EUR 200 000 **the sales notes should be transmitted electronically**.

(34) The concept and the tasks of control observers should be clearly established for future control observer schemes. At the same time rules should also be established on the conduct of inspections.

Article 14 Completion and submission of the fishing logbook

1 Without prejudice to specific provisions contained in multiannual plans, masters of Community fishing vessels of10 metres' length overall or more shall **keep a fishing logbook of their operations, indicating specifically all quantities of each species caught and kept on board above 50 kg of live-weight equivalent**.

3 **The permitted margin of tolerance in estimates recorded in the fishing logbook of the quantities in kilograms of fish retained on board shall be 10 % for all species**.

Article 15 Electronic completion and transmission of fishing logbook data

1 Masters of Community fishing vessels of 12 metres' length overall or more shall record by electronic means the information referred to in Article 14, and shall send it by electronic means to the competent authority of the flag Member State at least once a day.

Article 21 Completion and submission of the transhipment declaration

1. Without prejudice to specific provisions contained in multiannual plans, masters of Community fishing vessels of 10 metres' length overall or more involved in a transhipment operation **shall complete a transhipment declaration**, indicating specifically all quantities of each species transhipped or received above 50 kg of live-weight equivalent.

Article 23 Completion and submission of the landing declaration

1. Without prejudice to specific provisions contained in multiannual plans, the master of a Community fishing vessel of10 metres' length overall or more, or his representative, shall **complete a landing declaration**, **indicating specifically all quantities of each species landed**.

Article 42 Transhipment in port

1. Fishing vessels engaged in fisheries subject to a multiannual plan shall not tranship their catches on board of any other vessel in a designated port or in places close to the shore unless they have been weighed in accordance with Article 60.

Article 60 Weighing of fishery products

1. **A Member State shall ensure that all fishery products are weighed on systems approved by the competent authorities** unless it has adopted a sampling plan approved by the Commission and based on the risk-based methodology adopted by the Commission in accordance with the procedure referred to in Article 119.

2. Without prejudice to specific provisions, the weighing shall be carried out on landing prior to the fisheries products being held in storage, transported or sold.

4. Registered buyers, registered auctions or other bodies or persons which are responsible for the first marketing of fisheries products in a Member State shall be responsible for the accuracy of the weighing operation unless, in accordance with paragraph 3,the weighing takes place on board a fishing vessel, in which case it shall be the master's responsibility.

5. **The figure resulting from the weighing shall be used for the completion of landing declarations, transport document, sales notes and take-over declarations**.

Article 62 Completion and submission of sales notes

1. Registered buyers, registered auctions or other bodies or persons authorised by Member States with an annual financial turnover in first sales of fisheries products of less than EUR 200 000 which are responsible for the first marketing of fisheries products landed in a Member State, **shall submit, if possible electronically, within 48 hours after the first sale, a sales note to the competent authorities of the Member State in whose territory the first sale takes place. The accuracy of the sales note shall be the responsibility of these buyers, auctions, bodies or persons**.

Article 74 Conduct of inspections

1. Member States shall set up and keep up to date a **list of officials responsible for carrying out inspections**.

3. **Officials shall check** in particular:

(a) **the legality of the catch kept on board, stored, transported, processed or marketed and the accuracy of the documentations or electronic transmissions relating to it**;

3rd Floor South Building,
Somerset House, Strand, London,
WC2R 1LA

+44 0207 845 5850
jess@bluemarinefoundation.com
www.bluemarinefoundation.com

BLUE MARINE
FOUNDATION