



Updates on Stock Status of Large Pelagic ICCAT species in the Mediterranean Sea.

*Working Group (WG2) on pelagic fishes -
ICCAT*

ICCAT Secretariat

(11 October 2019)

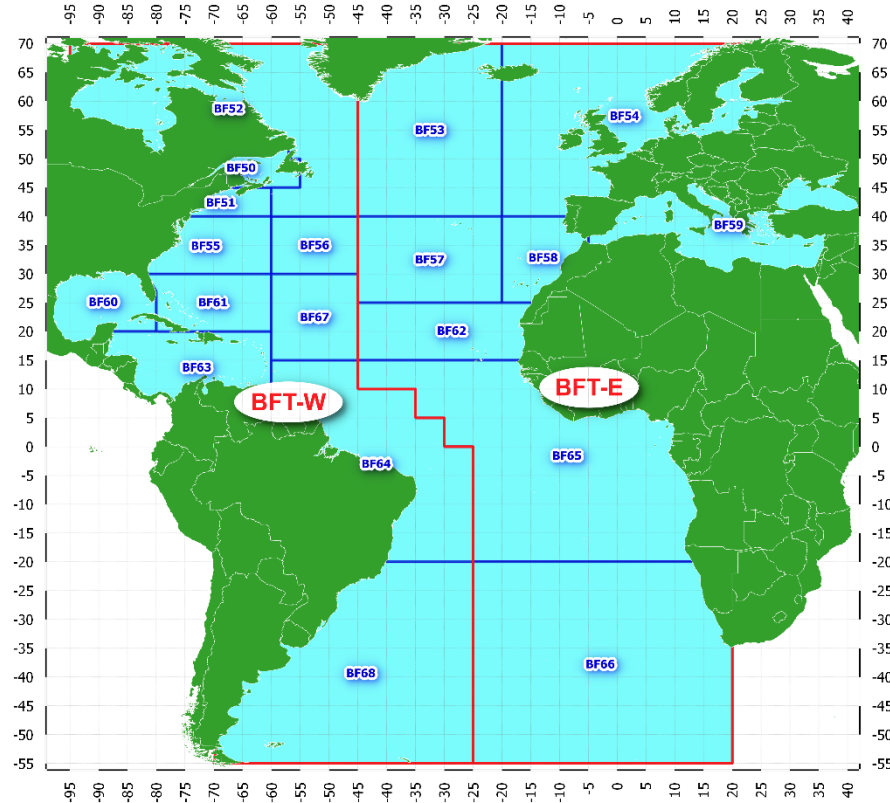
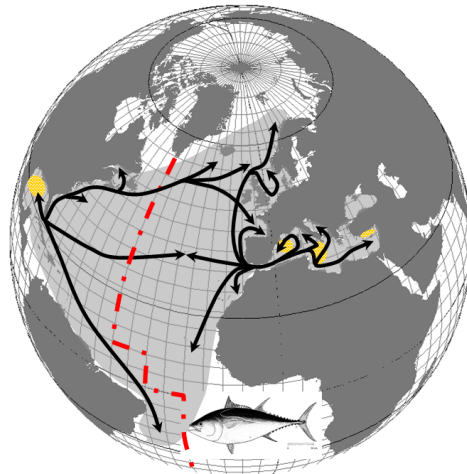
ICCAT CICTA CICAA



Bluefin tuna: Background information

Managed by International Commission for the Conservation of Atlantic Tunas (ICCAT):

- Two stocks East and West (mixing occurring, but extent not know)
- Last assessment in September 2017 (Update assessment 2020)
- Management through input control measures (e.g. vessel list, minimum size/weight, fisheries closures, TAC, etc.)



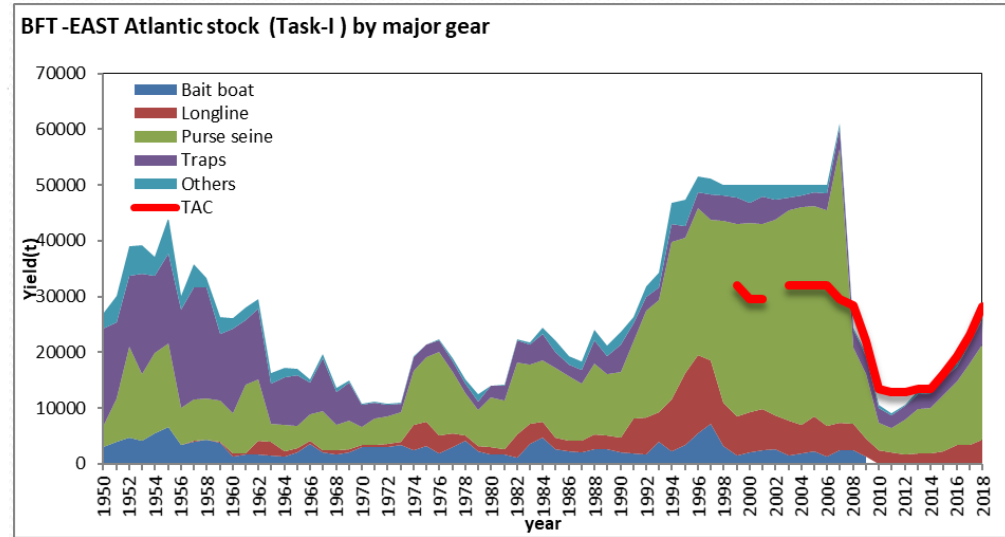
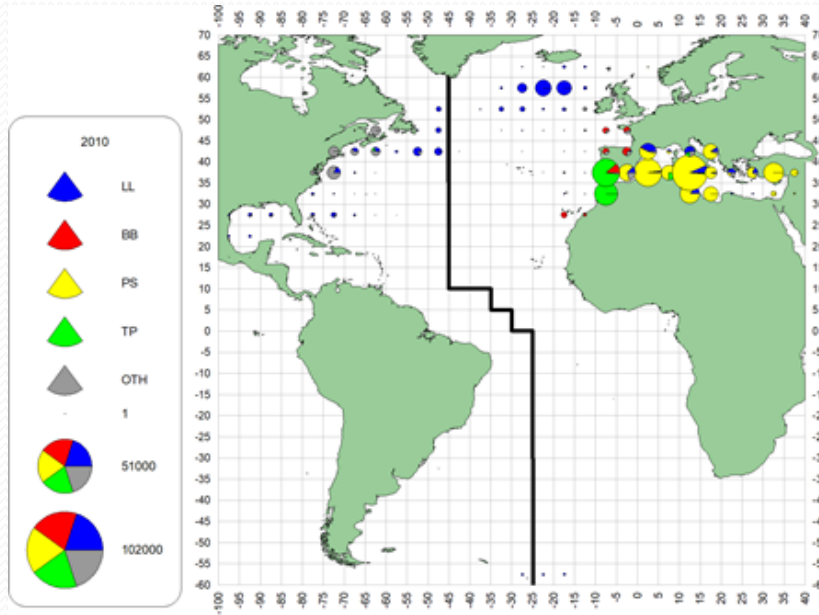
Objective:

- Maintain the stocks at level which will permit maximum sustainable catch for food and other purposes



Fisheries

- Main gears:
 - East-Atlantic -Traps, longlines and baitboats
 - Mediterranean – Purse-seine, traps, longlines and Sport fisheries



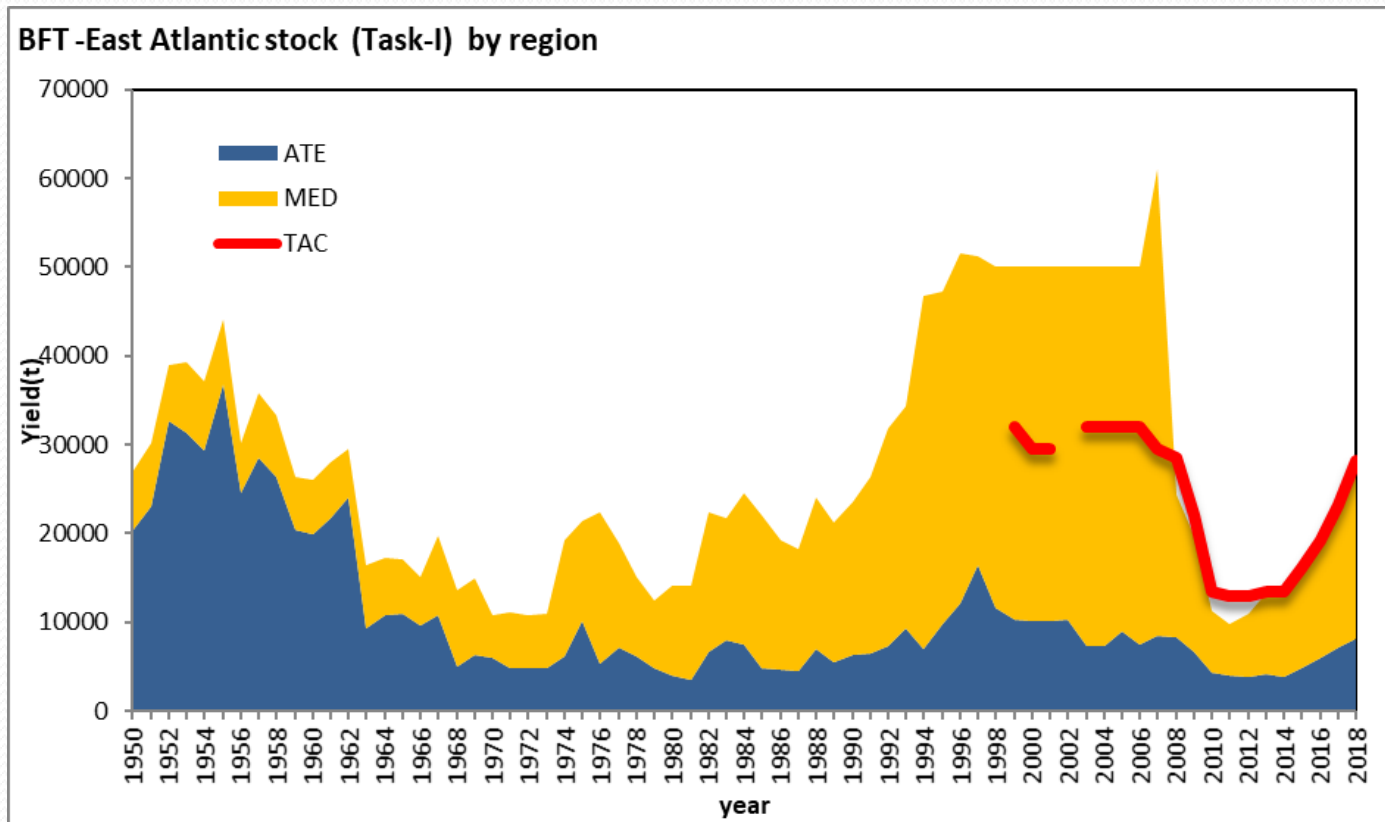
Geographic distribution of bluefin tuna catches per 5x5 degrees and per main gears from 1990 to 2017.



Fisheries

- Production:

- Maximum catch estimated at 62,638 t in 2007.
- Catch in 2018* 27,757 t TAC (28,200), of which 19,600 t (70%) in the Mediterranean Sea.

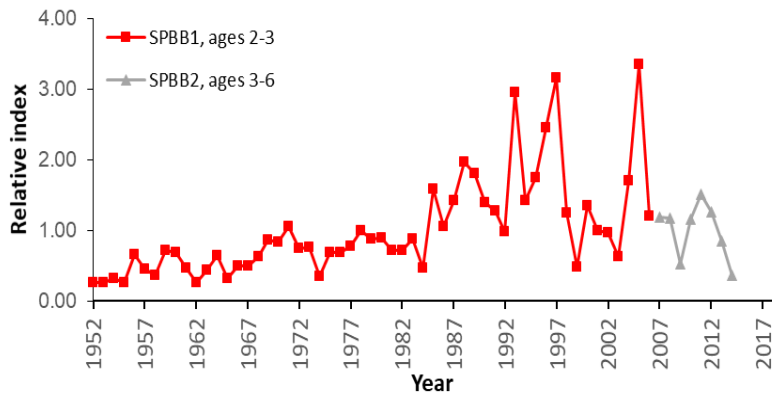


* Catch as of September 16, 2019.

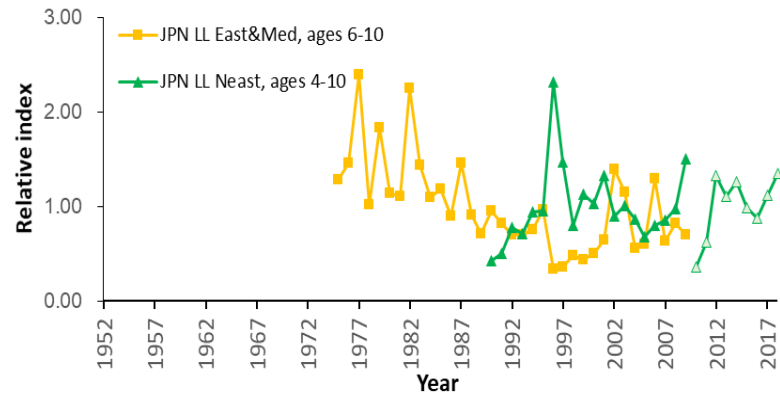


Updated Fisheries dependent and independent CPUE indicators BFT East-Med stock

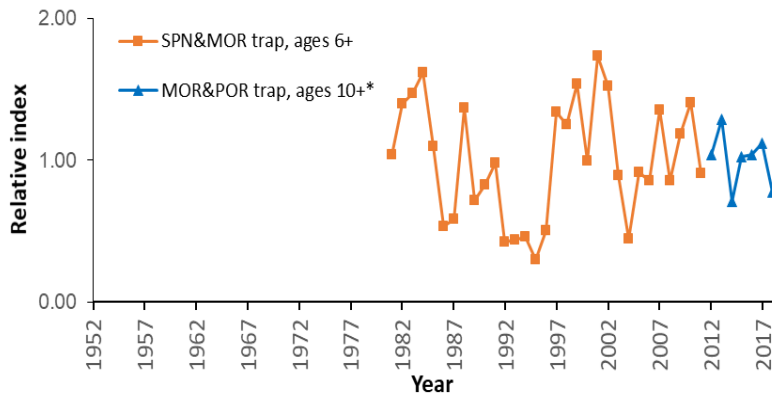
Spanish Bait boat in the Bay of Biscay



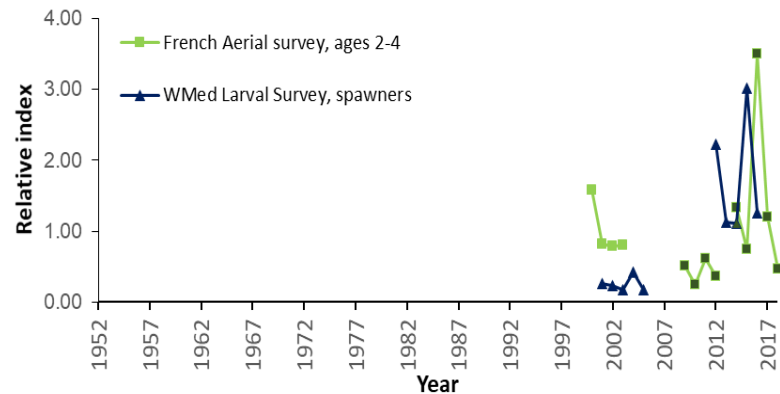
Japanese Longline



Trap



Survey





East Atlantic and Mediterranean Bluefin tuna summary in 2019

Current reported yield (2018)	27,757 t*
$F_{0.1}$	0.107 (0.103-0.120) ¹
$F_{2012-2014}/F_{0.1}$²	0.339 (0.254-0.438) ¹
Stock Status ³	Overfishing: No
Rec. 18-02 TAC 2019, 2020	32,240 36,000

1) Median and approximate 80% confidence interval from bootstrapping from the assessment.

2) $F_{2012-2014}$ refers to the geometric mean of the estimates for 2012-2014 (a proxy for recent F levels).

3) Biomass reference points to determine stock status were not estimated in the 2017 assessment due to uncertainty in recruitment potential

* As of 26 September 2019.



Projections: Kobe matrix

Kobe II Strategy matrix showing probabilities (%) of $F < F_{0.1}$ for TACs from 18,000 to 50,000 t from 2018 through 2022 assuming a future average recruitment as estimated for 2006-2011.

Constant catches up to 36,000 t have higher than 60% probability of maintaining F below $F_{0.1}$ throughout 2022

Catch (t)	2018	2019	2020	2021	2022
18,000	100	100	100	100	100
20,000	99	99	99	99	99
22,000	99	99	98	98	98
23,655	98	98	98	98	98
24,000	98	98	97	98	97
26,000	97	96	96	96	96
28,000	95	94	94	94	94
30,000	93	92	92	90	89
31,000	90	90	89	89	88
32,000	89	88	87	86	83
33,000	86	85	83	81	80
34,000	82	81	79	78	75
35,000	79	77	76	72	70
36,000	75	73	70	68	64
37,000	70	68	65	62	59
38,000	65	63	60	57	54
39,000	59	57	54	52	49
40,000	56	52	49	46	44
45,000	36	35	34	30	28
50,000	24	22	20	18	18



Executive Summary 2019 BFT

- The primary focus of the Committee for the past year has been on the Management Strategy Evaluation (MSE).
- The Committee is of the opinion that the **MSE process is likely the best means of developing management advice robust** to the complexities of bluefin tuna including stock mixing, environmental variability and other uncertainties that affect current assessment advice. However, further improvement in OMs are required.
- Therefore, the MSE process **will not be completed** in time for the 2020 Commission meeting to provide TAC advice for 2021-2023 based on a management procedure.
- Accordingly, the Committee recommends **extending the MSE process for another year** with a goal of completing the MSE process in time for the 2021.
- The Committee **recommends to provide a stock assessment in 2020** as the basis for 2021 TAC advice, a simple update of the VPA for East base on data up to 2018.



SCRS management recommendation 2019

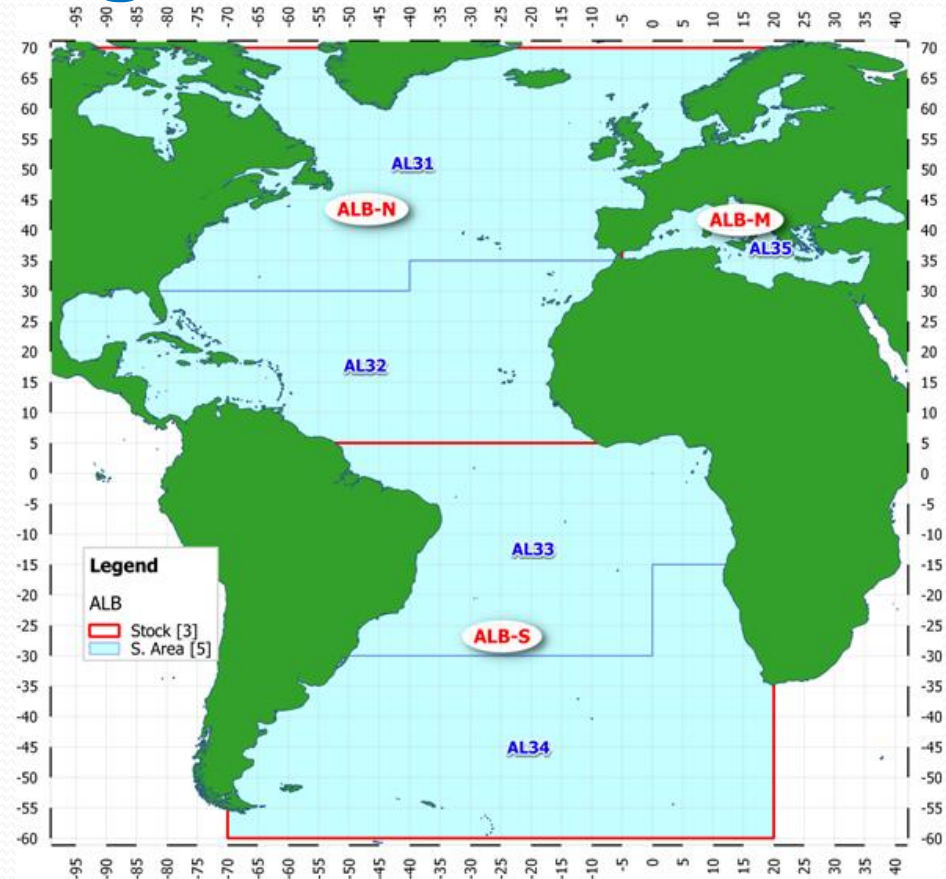
- The SCRS was requested to annually evaluate whether the indicators support the TACs outlined in Rec. 18-02. The fishery indicators did not indicate a reason to alter current management advice. Consequently, the SCRS is of the view that the stepped increase for 2020 from Rec. 18-02 can be maintained.
- TAC for 2020 is set at 36,000 t for E-BFT (East Atlantic and Mediterranean)
- The SCRS noted that reported catches are in line with recent TACs. However, the SCRS was informed of the existence of unquantified illegal catches of unknown magnitude.



MED Albacore tuna: Background information

Managed by International Commission for the Conservation of Atlantic Tunas (ICCAT):

- Three stocks (mixing occurring and sub-population within in stock, but extent not know)
- Last assessment in **June 2017**
- Management through input control measures (e.g. vessel list, temporal fisheries closures)



Objective:

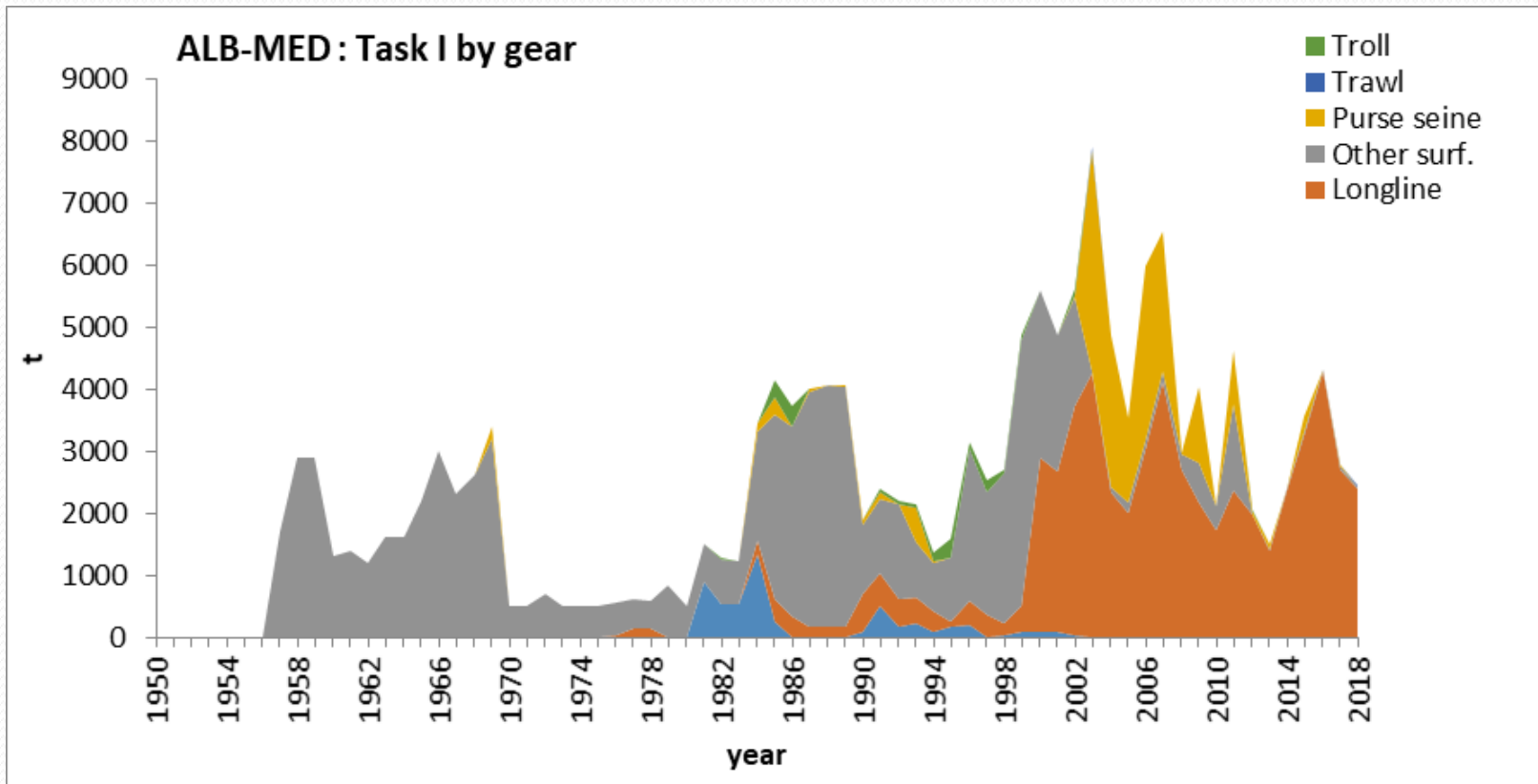
- Maintain the stocks at level which will permit maximum sustainable catch for food and other purposes



Fisheries

- Production in the Mediterranean:

- Catch peak of 7,898 t in 2003, average of 2,865 t period 2010-2018
- 4,319 t in 2016, 2,780 t in 2017 and 2,434 t in 2018.

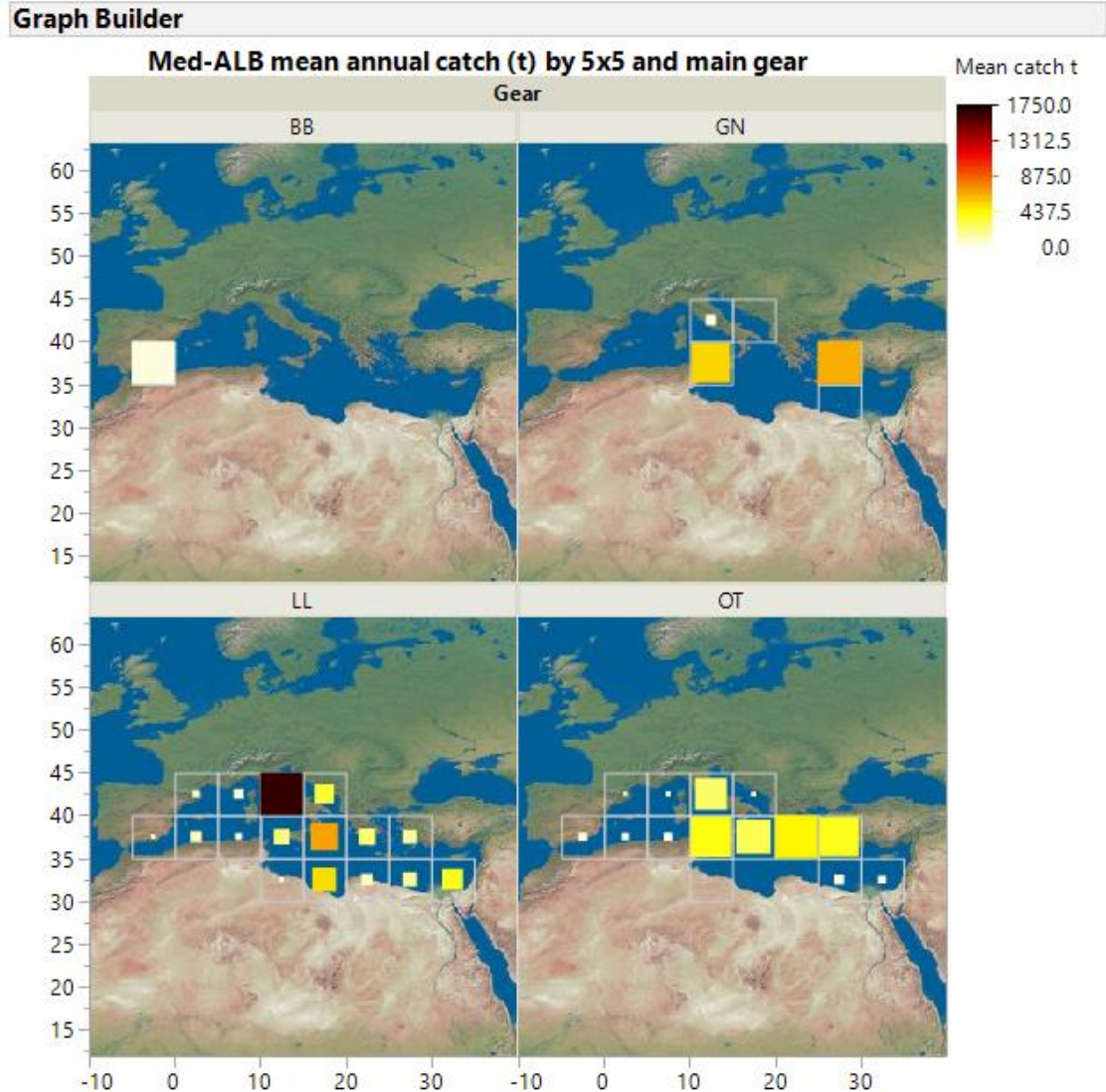




Fisheries

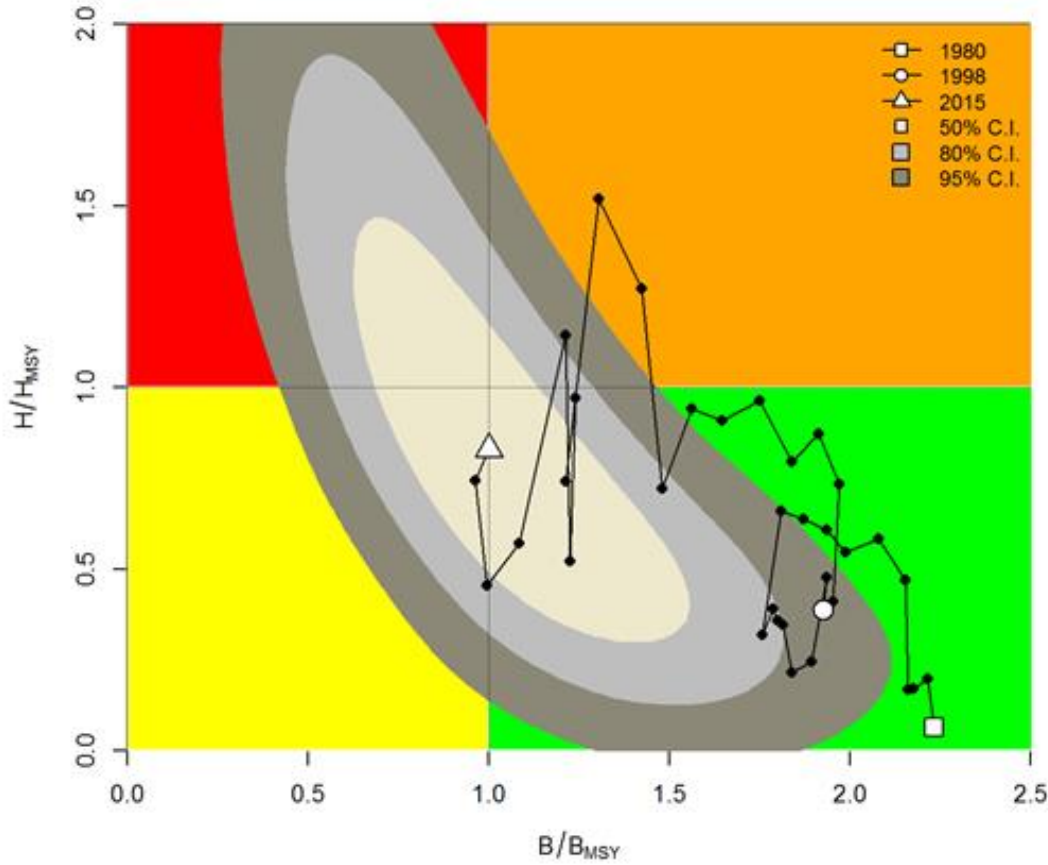
Geographic distribution of Med-Albacore catches per 5x5 degrees and per main gears from 2000 to 2017.

- Main gears:
 - LL
 - GN
 - OT (Trap Trawl Unk)
 - BB





Kobe plot – Stock status



Stock status trajectories of B/B_{MSY} and F/F_{MSY} as well as uncertainty around the current estimate (Kobe plots) for the base case JABBA model.

- Limited quantitative information is available to conduct a robust quantitative characterization on biomass status relative to MSY (Convention objectives).
- Despite the high uncertainty, the results seem to indicate that recent albacore median biomass levels are at about B_{MSY} , and median fishing mortality levels are below F_{MSY}



Probability of being overfished and overfishing (red, 36%), of being neither overfished nor overfishing (green, 48%), and of being overfished or overfishing, but not both (yellow, 16%).



Mediterranean Albacore summary in 2018

Maximum Sustainable Yield	3,419 t (2,187-7,842) ⁴
Current (2018) Yield	2,434 t
Yield in last year of assessment (2015)	2,774 t
B_{MSY}	29,168 t (17,939-65,861) ⁴
F_{MSY}	0.119 (0.072-0.192) ⁴
B₂₀₁₅/B_{MSY}	1.002 (0.456-1.760) ⁴
F₂₀₁₅/F_{MSY}	0.830 (0.223-2.194)
Stock Status	Overfished: NOT LIKELY Overfishing: NOT LIKELY
Management measures in effect:	<ul style="list-style-type: none"> • [Rec. 17-05]: Time closure of two months (1 Oct- 30 Nov) for longlines, protect Med swordfish juveniles. • A list of vessels authorized to target Mediterranean albacore implemented in 2017. • No increase of catch and effort until more accurate advice is delivered.

⁴ Median and 95% CI for the base case.



Management recommendations

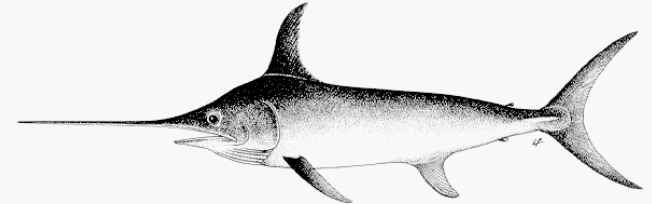
- Commission should institute management measures designed to avoid increases in catch and effort directed at Mediterranean albacore.
- The analyses suggest that catch levels as high as those in the years 2006-2007 (beyond 5,900 t) proved to be clearly unsustainable.
- Considering the high uncertainty regarding the most recent abundance trends, the Committee recommends to maintain catches below MSY at least **until the abundance trends are updated**. Level of catch depend on the level of risk the Commission is willing to take.
 - Indices of abundance no updated in 2019.



MED Swordfish: Background information

Managed by International Commission for the Conservation of Atlantic Tunas (ICCAT):

- Unique stock (limited mixing with the N. Atlantic one)
- **Next assessment scheduled for 2020**, previous SA 2016.
- Management through input control measures (e.g. TAC, vessel list, min. size/weight, fisheries closures)



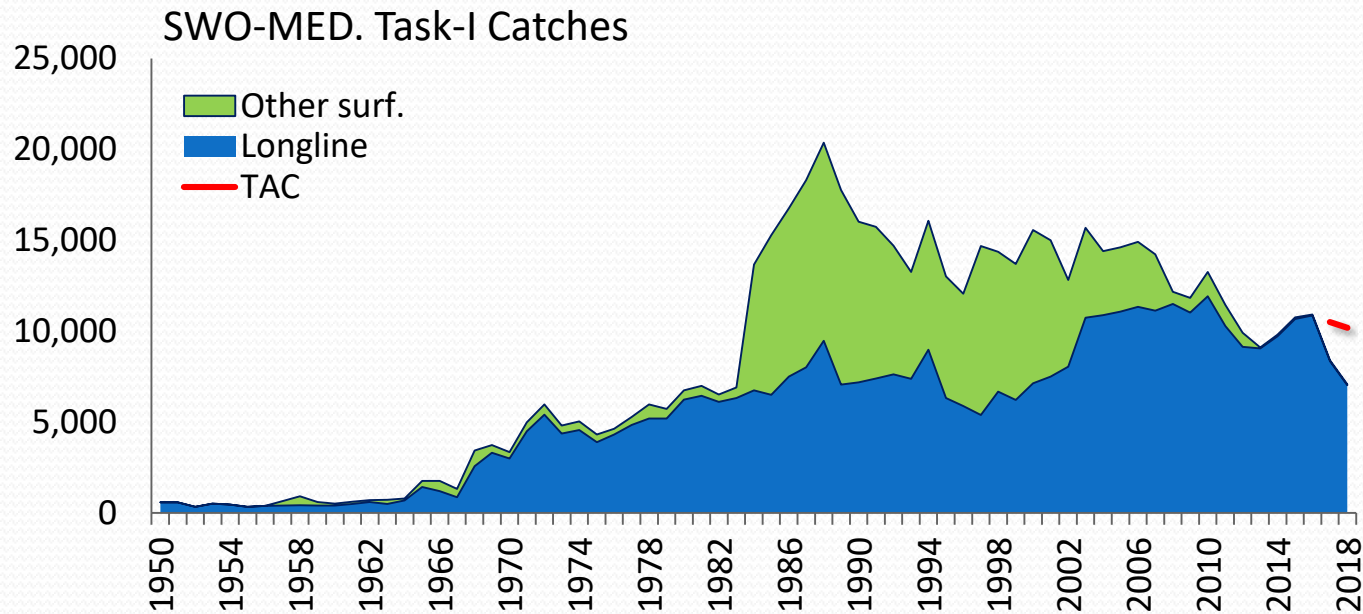
Objective:

- Maintain the stocks at level which will permit maximum sustainable catch for food and other purposes



Fisheries

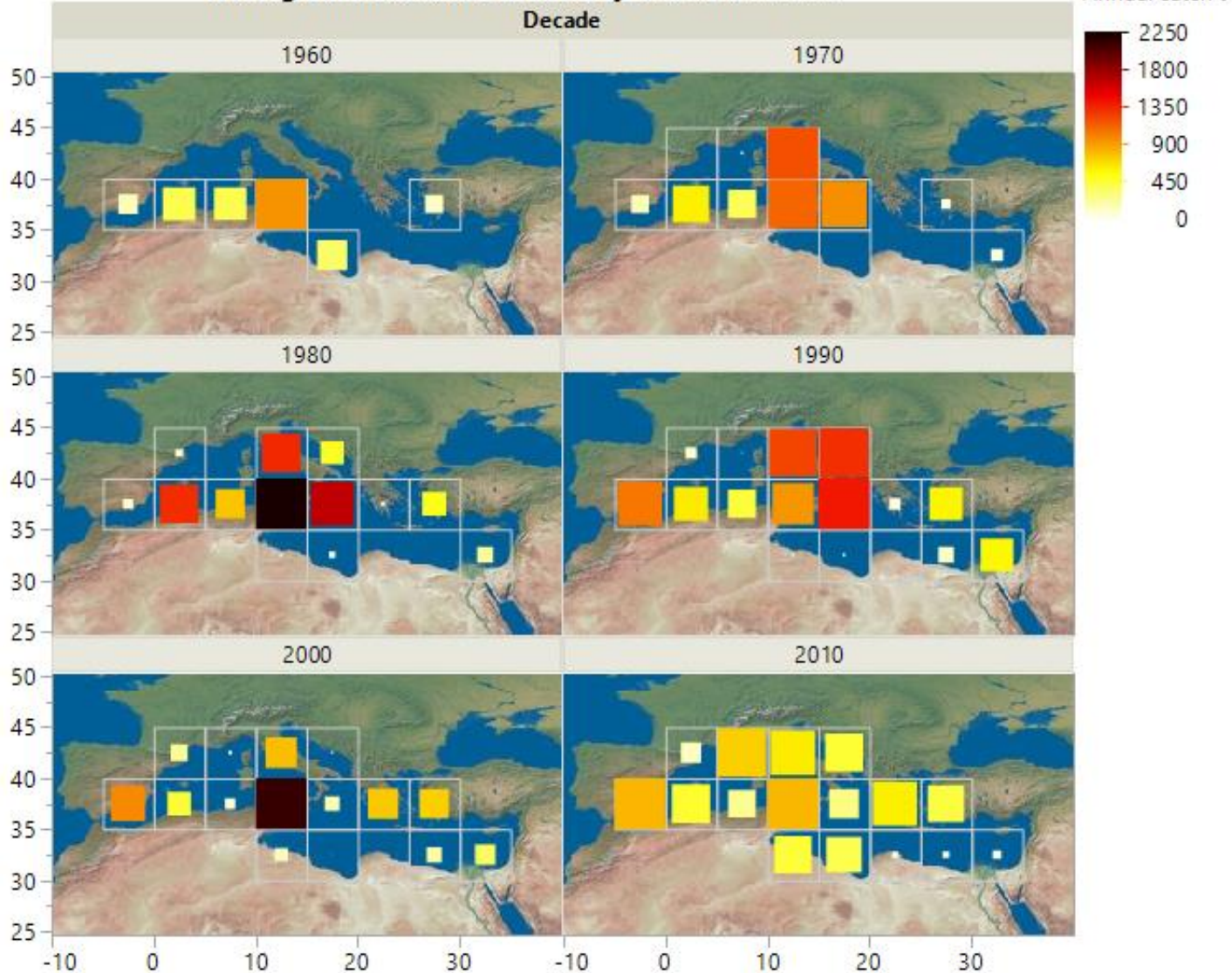
- Main gears: Longlines (surface, mesopelagic) and Gillnets (prohibited since 2012)
- Production around 10,000 t in the recent years, with a peak of 20,365 t in 1988
- Major fisheries (2003-2017): Italy (38%), Spain (20%), Greece (11%), Morocco and Tunisia (8%)



Task I swordfish catches (t) in the Mediterranean by major gear types, for the period 1950-2018. Non-reporting may occur in the earlier period (up to the middle 1980s).

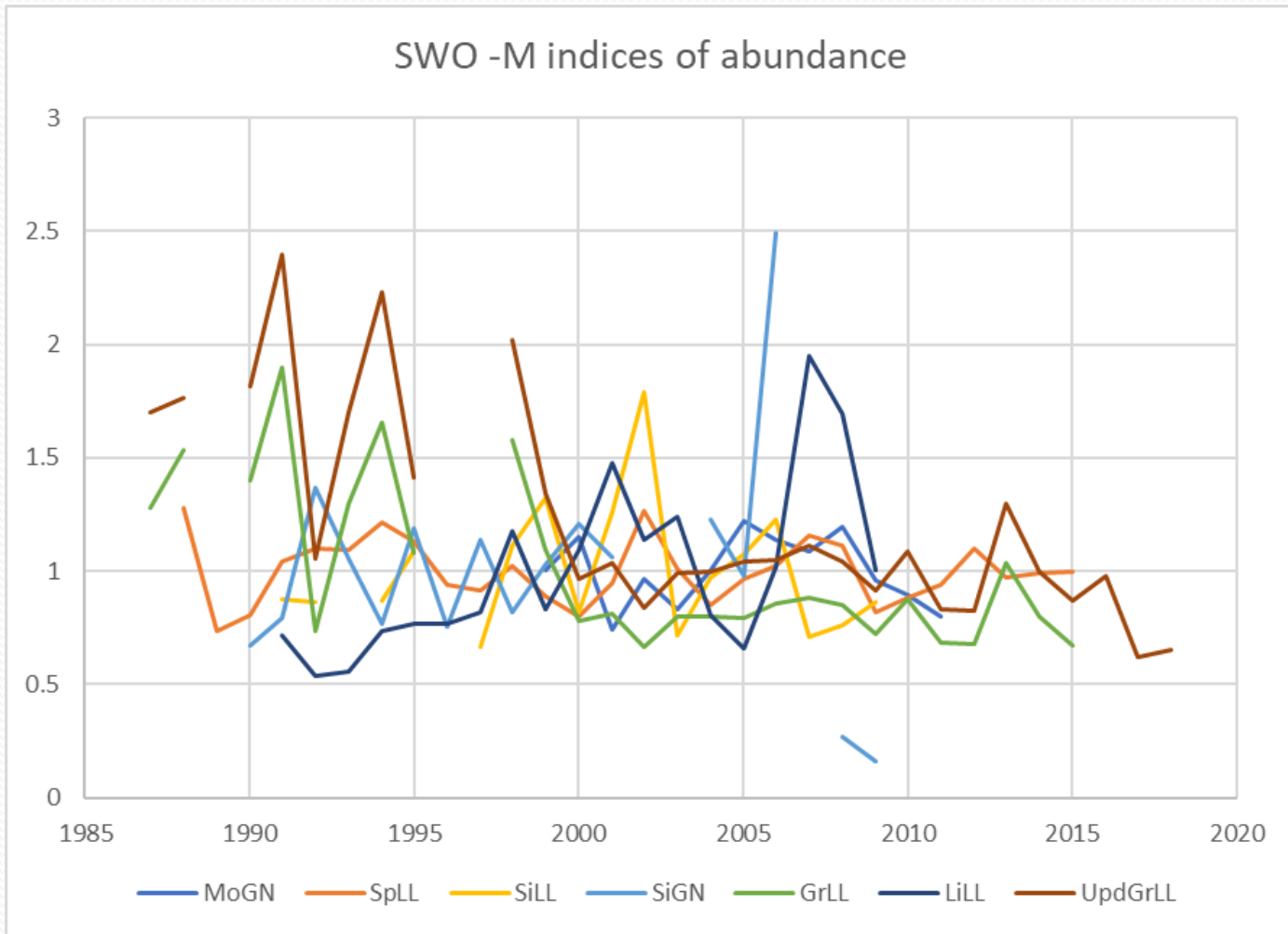


Average annual catch M-SWO by 5x5 and decade



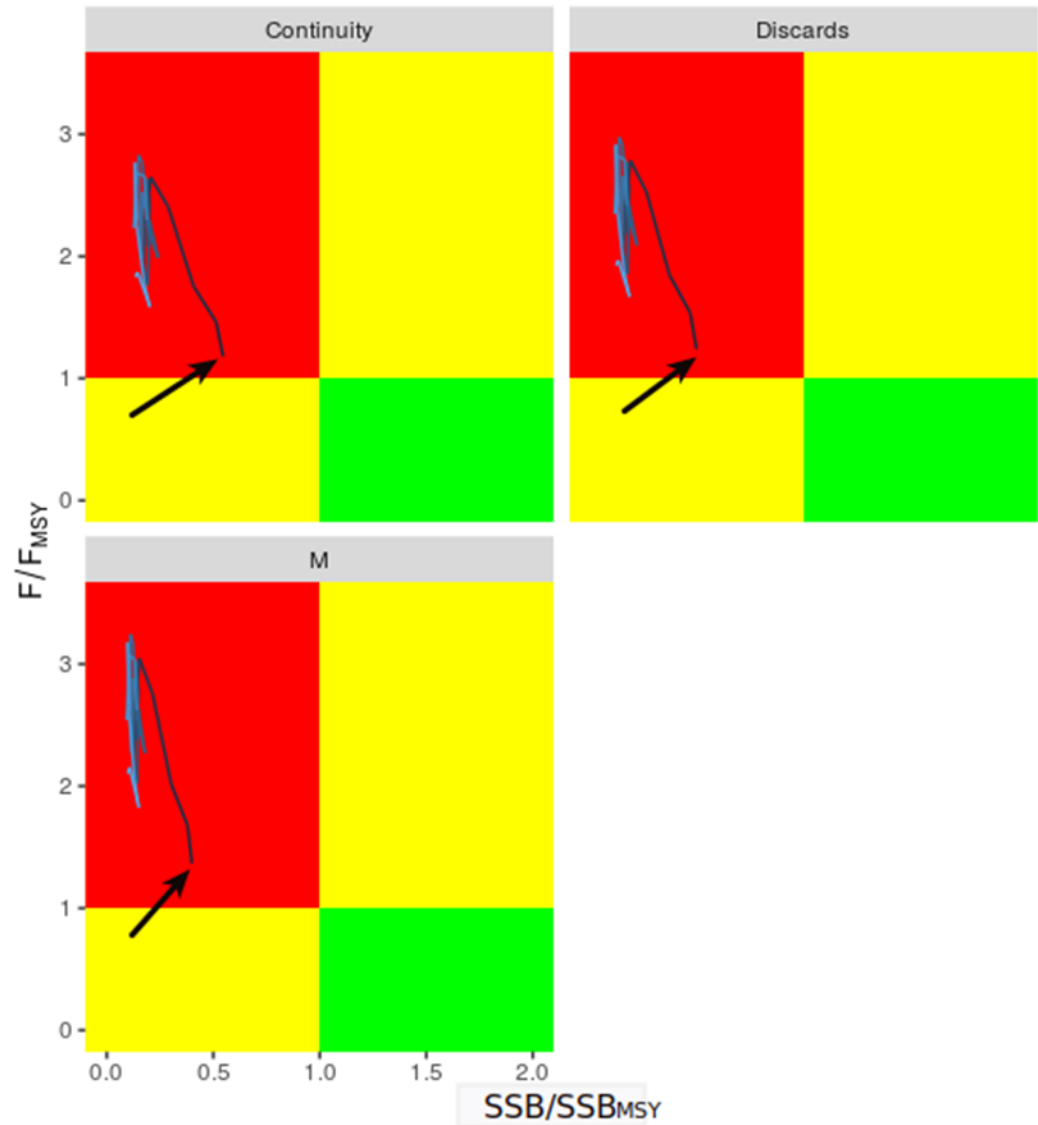


SWO-M indices of abundance 2016 and updates 2018





SWO-M
Stock status
(2015) from the
results of stock
assessment
models selected
for management
advice in 2016





Mediterranean Swordfish summary in 2018

Maximum Sustainable Yield	19,683 t
Current (2018) Yield	7,079 t ²
SSB _{MSY}	63,426 t ¹
F _{MSY}	0.25 ¹
Relative Spawning Biomass (SSB ₂₀₁₅ /SSB _{MSY})	0.12 ¹
Relative Fishing Mortality F ₂₀₁₅ /F _{MSY}	1.85 ¹
F ₂₀₁₅ /F _{0.1}	2.64 ¹
Stock Status (2015)	Overfished: Yes ¹ Overfishing: Yes ¹
Management Measures in Effect:	Driftnet ban [Rec. 03-04] Three-month fishery closure, gear specifications (number and size of hooks and length of gear), minimum catching size, regulations, list of authorized vessels, fishing capacity restrictions, TAC 10,500 t in 2017 [Rec. 16-05], <u>corresponding to 10,185 t in 2018 (3% annual reduction).</u>

¹ Estimates based on the age structured model and equilibrium analyses (see text for details).

² Estimates for 2018 are considered preliminary, including dead discards reports.



SWO-Med Management recommendations 2016

- Assessment of stock status and reference points were done under the assumption that recruitment levels can come back up to the levels seen in the past (1980s and 1990s).
- Under such assumption the **stock is currently overfished and suffering overfishing.**
- In order for rebuilding to start taking place there will be a need for substantial reductions in harvest (**SWO-MED-Tables 2-3**).
- **Current TACs correspond to fishing mortality levels that are higher than F_{MSY} .**
- Increase monitoring of landings and discards, taking into account that since the establishment of minimum size regulations, the discard levels of undersized swordfish have increased.



Mediterranean Swordfish Recovery Plan

Rec. 16-05

Rec. [16-05] Multi annual Recovery plan 2017 – 2031
TAC 10,500 t 2017.

- Reduction of TAC 2018-2022 by 3% each year
- Capacity reduction and limitation
 - Limit to the average number of vessels 2013-2016
- Fishing countries to submit **Fishing Plans** to ICCAT yearly.
- Closed fishing season(s) Jan 1st – Mar 31st / Oct 1st – Nov 30th
- Gear restrictions hook size/ length LL 100 cm LJFL/11.4 kg.
- Sport – recreational fisheries restrictions.



2019 SCRS Recommendations Mediterranean ICCAT species

Mediterranean Albacore

- The SCRS recommended the CPCs predominantly fishing in this area (EU-Greece, EU-Cyprus and Turkey) make a concerted effort to generate, and submit, standardized CPUE data.
- The SCRS supports the continuation of larval index data collection in the Balearic Sea and other spawning areas.
- The SCRS recommends conducting a review and collation of all the available data on Age-length from the various studies that have estimated age from spines to update the estimate of the growth curve for Mediterranean albacore.



2019 SCRS Recommendations Mediterranean ICCAT species ...

Mediterranean swordfish

Recently adopted management measures may have increased discard levels, therefore the Committee noted:

- Participating countries should improve their estimates of discards of juvenile swordfish, not only from the swordfish targeting fisheries but also from the albacore ones, and submit such information to the ICCAT Secretariat.

To the SCRS and the ICCAT Commission on allowing sampling of undersized swordfish during commercial fishing operations (e.g., vertebrae, tissue, reproductive tracts, stomachs). Sampling would proceed if:

- Specimens are dead at the haulback;
- Samples are collected by a fishery observer, and
- Biological samples are taken in the framework of a research project notified, endorsed and carried out within the priorities of the Swordfish Species Group and the SCRS.



2019 SCRS Recommendations Mediterranean ICCAT species ...

Mediterranean Billfish

- The SCRS requested that Billfish Working Group review the Mediterranean billfish catches and develop a workplan to evaluate the status of these species in particular Mediterranean spearfish (*Tetrapterus belone*).

Workplan 2020

- Stock assessment **Bluefin tuna East** and West stocks for providing 2021 TAC advise April 2020.
- Stock assessment **Mediterranean Swordfish** May 2020 Crete, Greece.
- **Mediterranean Albacore**: improved monitoring of stock status, including update of the CPUE series used in the assessment (EU-Spain longline, EU-Italy longline, Balearic larval survey) to confirm recent stock trends;



Visit also the ICCAT 2019 meeting webpage
(Report of the Meeting of the Standing Committee on Research and Statistics, SCRS)

<https://www.iccat.int/en/assess.html>

Thanks for your attention