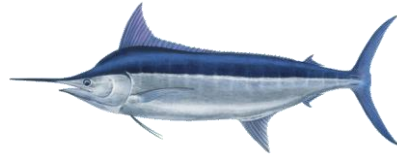
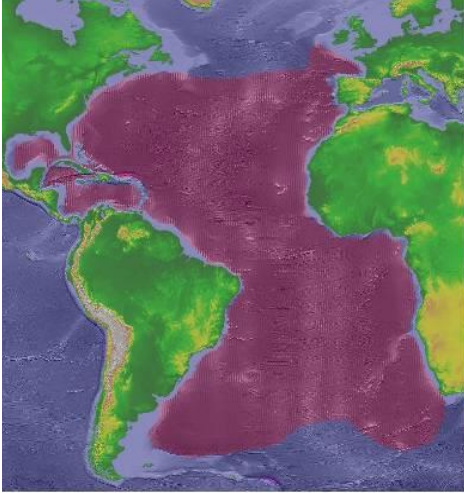


- Detailed results of BUM Assessment
- For all other stocks reminders of
 - stock status
 - management recommendations
- Responses to the Commission (Two for BIL)
- Recommendations with financial implications
- MSE (N SWO)

ICCAT CICTA CICAA **2018 assessment of Blue Marlin (BUM)**



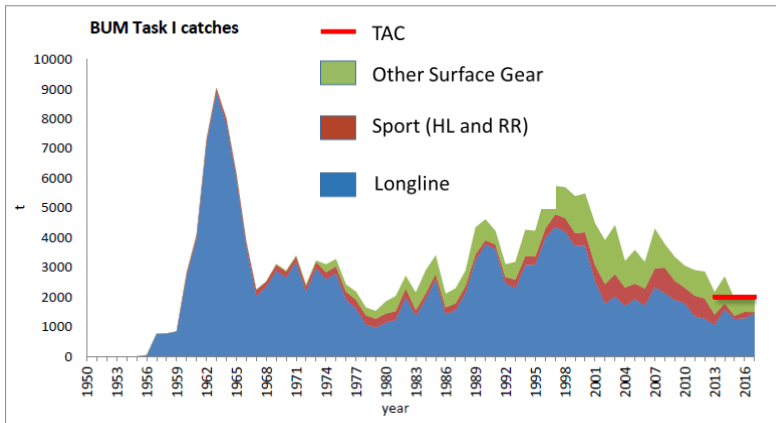
Data preparatory meeting,
Madrid (12-16 March, 2018)

Stock Assessment meeting,
Miami, (18-22 June, 2018)

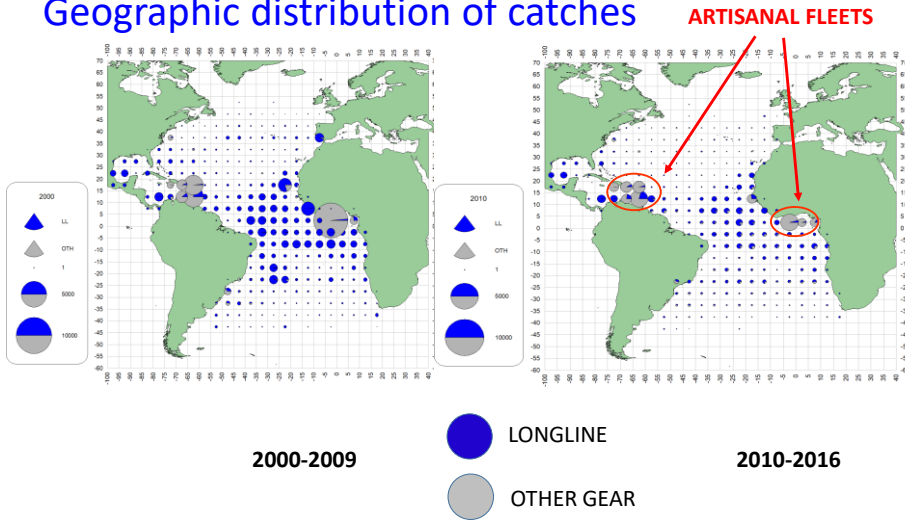
ICCAT CICTA CICAA **BUM Fishery Indicators**

Annual catch by gear

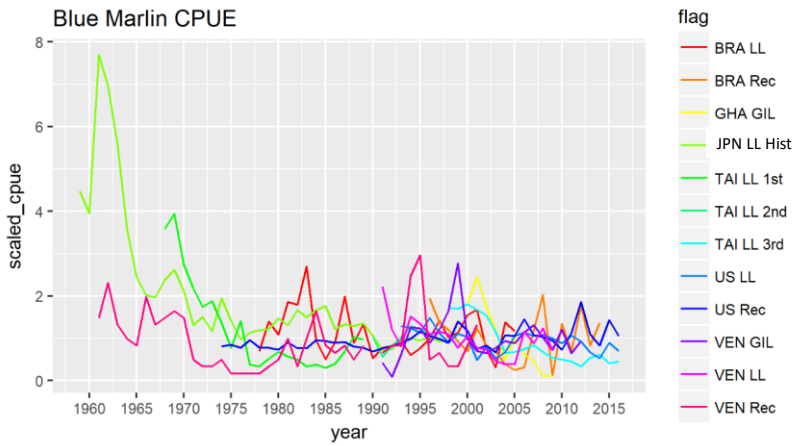
Catch (2017) 1,987 t
TAC(2017) 2,000 t



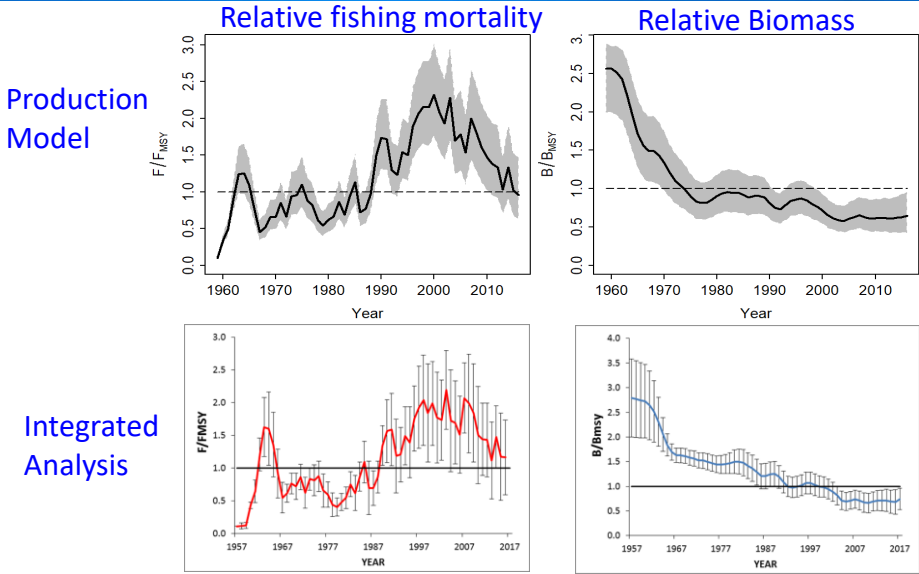
Geographic distribution of catches



12 índices de abundancia



ICCAT CICTA CICA **BUM State of the Stocks**

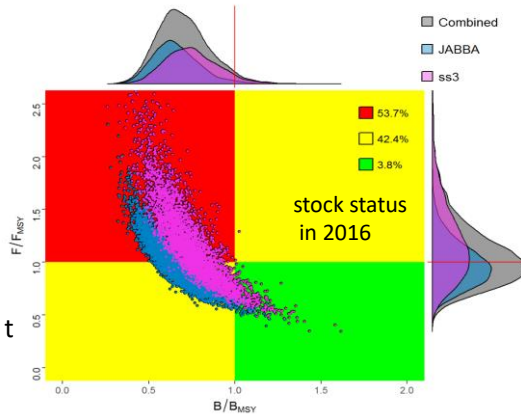


ICCAT CICTA CICA **BUM State of the Stocks**

The results of the 2018 assessment indicated that ...the current stock status is overfished and undergoing overfishing.

The estimated MSY was determined to be 3,001 t with 10% and 90% confident limits of 2,399 to 3,537 t

However, the Committee recognizes the high uncertainty with regard to data and the productivity of the stock.



Combined Kobe plot from production model (JABBA blue colour) and integrated analysis (SS pink colour)

ICCAT CICTA CICA **BUM Summary Table**

ATLANTIC BLUE MARLIN SUMMARY

Maximum Sustainable Yield	3,056 t (2,384 – 3,536 t) ¹
Current (2017) Yield	1,987 t ²
Relative Biomass (SSB ₂₀₁₆ /SSB _{MSY})	0.69 (0.52 – 0.91) ¹
Relative Fishing Mortality (F ₂₀₁₆ /F _{MSY})	1.03 (0.74 -1.50) ¹
Stock Status (2016)	Overfished: Yes Overfishing: Yes
Conservation and Management Measures in Effect:	Recommendation [Rec. 15-05]. Reduce the total harvest to 2,000 t in 2016, 2017, and 2018.

¹ Combined Bayesian surplus production model and age structured assessment model results. Values correspond to median estimates, 80% confidence interval values are provided in parenthesis.
² 2017 yield should be considered provisional.

ICCAT CICTA CICA **BUM Outlook**

Kobe II matrices

Catch (t)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
0	100	100	100	100	100	100	100	100	100	100
1000	98	98	98	98	98	98	98	98	98	98
1250	92	93	93	93	93	94	94	94	94	94
1500	84	85	85	86	87	87	87	88	88	89
1750	73	74	76	77	78	79	80	80	80	81
2000	60	62	64	66	67	69	70	71	72	73
2250	45	48	51	53	55	57	58	59	61	62
2500	33	36	38	40	42	44	46	48	49	51
2750	23	25	27	29	31	32	34	35	37	39
3000	15	17	18	20	21	23	24	26	27	30
3250	9	10	10	11	12	13	15	17	19	22
3500	6	7	7	7	9	10	12	14	17	19

Catch (t)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
0	11	21	34	47	59	68	75	80	84	86
1000	11	18	26	35	43	51	57	63	68	71
1250	11	16	24	31	39	46	52	57	61	66
1500	11	16	22	28	34	40	46	51	56	60
1750	11	15	20	26	31	36	41	46	49	53
2000	11	14	19	24	28	32	36	40	43	46
2250	11	14	17	21	24	27	31	34	37	39
2500	11	13	16	18	21	24	27	29	31	33
2750	11	12	14	17	18	20	21	23	24	26
3000	11	12	13	14	16	17	18	19	19	20
3250	11	11	12	12	13	14	14	14	15	15
3500	11	11	11	11	11	11	11	11	11	11

Probability

F < F_{MSY}

Probability

B > B_{MSY}



Probability of being in the green quadrant of the Kobe plot

Probability that $F < F_{MSY}$ and $B > B_{MSY}$

Catch (t)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
0	11	21	34	47	59	68	75	80	84	86
1000	11	18	26	35	43	51	57	63	68	71
1250	11	16	24	31	39	46	52	57	61	66
1500	11	16	22	28	34	40	46	51	56	60
1750	11	15	20	26	31	36	41	46	49	53
2000	11	14	19	24	28	32	36	40	43	46
2250	11	14	17	20	24	27	31	34	36	39
2500	11	13	15	18	20	23	26	28	30	32
2750	11	12	13	15	17	19	20	22	23	25
3000	11	10	12	12	14	15	16	17	18	18
3250	9	8	8	9	10	10	11	11	12	12
3500	6	6	6	6	7	7	7	7	8	8

According to these projections the current TAC of 2,000 will only provide a 47% probability of being in the green quadrant by 2028. In contrast, a TAC of 1,750 t will allow the stock to rebuild with more than 50% probability by the year 2028



On effects of current TAC

- (Rec. 06-09) established reductions in the annual amounts to be harvested by pelagic longline and purse seine vessels. Furthermore, (Rec. 12-04) and (Rec. 15-05) placed a TAC of 2,000 t for blue marlin for 2013-2018 and other measures to limit mortality of blue marlin. However, the catches from 2013, 2014 and 2016 were above the recommended TAC.
- Current assessment results indicate that catches need to be reduced below 2,000 in order to recover the blue the stock according to Commission objectives.
- The Committee is concerned with the significant increase in the contribution from non-industrial fisheries...and that the landings from these fisheries are not fully accounted for. This is a serious concern for future assessments and ... impairs any analysis of the current regulations.



On effects of circle hooks

- Currently, four ICCAT Contracting Parties ... mandate or encourage the use of circle hooks on their pelagic longline fleets. Recent research has demonstrated that in some longline fisheries the use of non-offset circle hooks resulted in a reduction of billfish mortality, while the catch rates of several of the target species remained the same or were greater than the catch rates observed with the use of conventional J hooks or offset circle hooks.

On effects of live releases

- More countries have started reporting data on live releases since 2006. Additional information has come about, for some fleets, regarding the potential for modifying gears to reduce the by-catch and increase the survival of marlins. Such studies have also provided information on the rates of live releases for those fleets. However there is not enough information on the proportion of fish being released alive for all fleets, to evaluate the effectiveness of the ICCAT recommendation relating to the live release of marlins.

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- The 2018 assessment confirms the advice provided in 2011 that catches of 2,000 t (current TAC) would have allowed the stock to increase in size. Because the catches have generally exceeded 2,000 t, the stock has not increased. The Committee recommends that the Commission should find ways to make sure that the catches are not allowed to exceed established TACs. Because the stock has not rebuilt catches need to be lower than the current TAC. Catches of 1,750 t or less are expected to provide at least a 50% chance of rebuilding by 2028.
- The Committee recommends that if the Commission wants to further reduce fishing mortality and to reduce the chance of exceeding any established TAC, the Commission could consider doing so by modifying Rec. 15-05 (paragraph 2) so that fishermen are always required to release all marlins that are alive at haul back through methods that maximize their survival.

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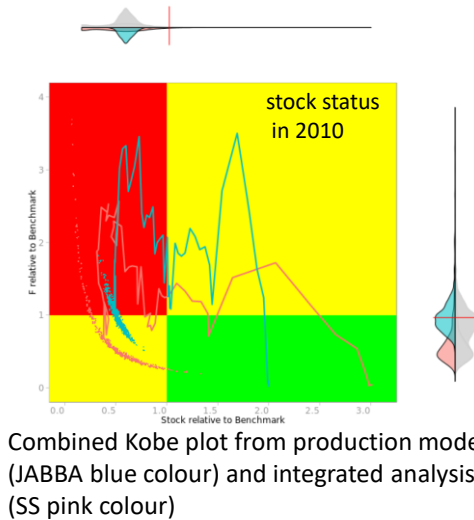
15

ICCAT CICTA CICAA **WHM State of the Stocks**

The results of the 2012 assessment indicated that ...the stock status in 2010 was overfished but not undergoing overfishing.

The estimated 10% and 90% confident limits of MSY were 874 to 1,604 t

There is considerable uncertainty in these results.



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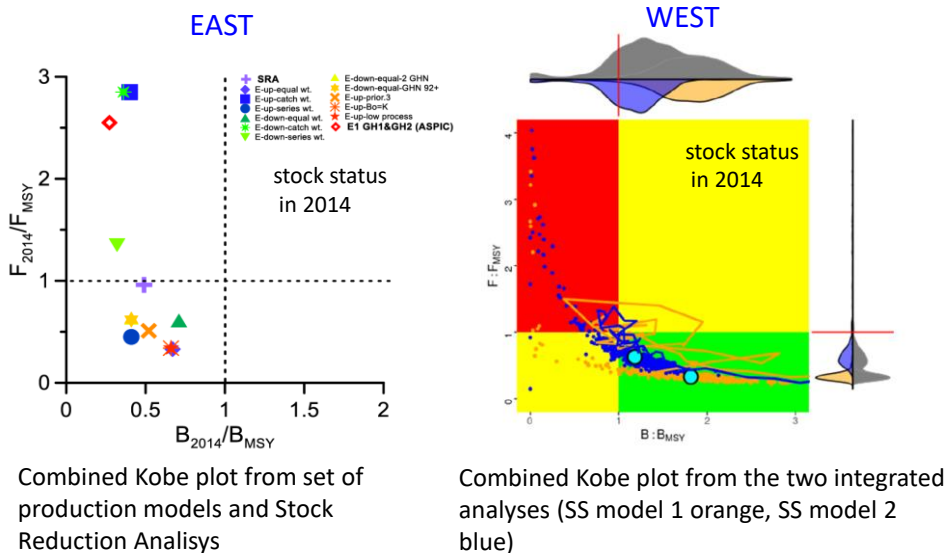
ICCAT CICTA CICAA **WHM Management recommendations**

- The Committee expressed its concern on the effectiveness of Rec. 15-05 in light of the misidentification of spearfishes in the white marlin catches, which causes uncertainty in stock assessment results and enforcement related problems.
- The Committee notes that if catches continue to exceed the TAC, as was the case for 2015 and 2016, the rebuilding of the stock will proceed more slowly.

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East Atlantic

- The Commission recommended at a minimum that catches should not exceed 1,271 t [Rec. 16-11]. Considering the increase in catch levels during 2016 and 2017, the Commission may consider alternative management measures to prevent further increases in catch levels.

West Atlantic

- Although current catches are well below MSY, the results of the assessment were highly uncertain, and therefore the Committee recommends that the western Atlantic sailfish catches should not exceed current levels.

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19.11 Review the data on dead and live discards submitted by CPCs to determine the feasibility of estimating fishing mortality by commercial fisheries, recreational, and artisanal fisheries. Rec. 15-05 paragraph 10

- since 2006, only two CPCs (Mexico and U.S.A.) have consistently reported dead and live discards for all major billfish species throughout the time period revised (2006-2015). The rest of the seven CPCs that report DD and DL, do not have discard information for the complete time period reviewed. This situation... does not allow the Committee to determine the feasibility of estimating fishing mortality by commercial, recreational, and artisanal fisheries.
- CPCs should establish discard estimation procedures, and review the adequacy of their observer programmes (in terms of coverage, and type of data collected) to provide the requested data. CPCs are reminded that the Working Group and the By-catch Coordinator at the ICCAT Secretariat can help to develop such procedure. CPCs will be requested to provide estimate of discards and the methodology used at the next white marlin data preparatory meeting.

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19.12 Develop a new data collection initiative as part of the ICCAT Enhanced Program for Billfish Research to overcome gaps in fisheries catching billfish, particularly in artisanal fisheries. Rec. 15-05 paragraph 10 and Rec. 16-11 paragraph 3

A comprehensive study of strategic investments related to artisanal fisheries data collection in the Latin America/Caribbean region was completed in 2018 (a similar one done in 2014 for the western African regions). The magnitude of catches is still difficult to estimate due to several reasons, mostly related to the lack of comprehensive sampling and monitoring of these fleets.

In 2019 the SCRS will review these reports and will make a work plan for new data collection initiatives aiming to improve the estimations of catches from the artisanal fisheries considering the recommendations presented in the studies.

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BILL Recommendations with financial implications

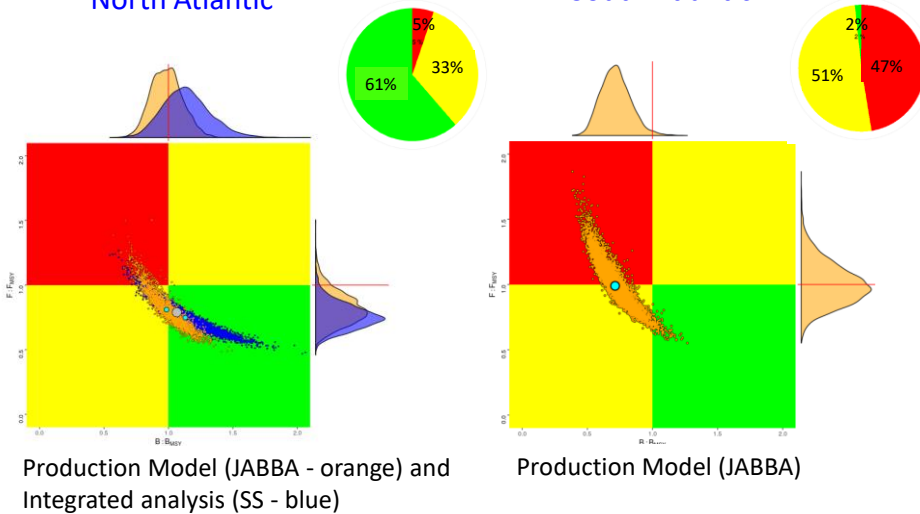
- Continue the financial support for data collection initiatives aiming to improve the estimations of catches from the artisanal fisheries
- The Group recommends to continue with the financial support for the biological sampling of billfish in the eastern Atlantic for age and growth and maturity.
- Also the Group recommends a study, with financial support, that will provide photographic and biological sampling evidence to confirm sex determination in samples from the western Gulf of Mexico longline fisheries

ICCAT CICTA CICAA **SWO State of the Stocks**

Kobe plots from 2017 assessment

North Atlantic

South Atlantic





Delay MSE progress as shown in the proposed MSE roadmap

Highlights for 2018:

- First meeting of the Swordfish Species Group focused on MSE,
- ICCAT awarded a contract for operating model and management procedure development to an expert team.
- First interactions between expert team and SWO WG
- A participant of the capacity building courses in MSE provided in 2018 by ICCAT, has developed her own example of an Operating Model for North Atlantic swordfish.

Future plans

- further develop the preliminary OM until December 2018.
- In 2019 finalization of the OM and start development of management procedures.

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19.6 The SCRS should continue to monitor and analyze the effects of the minimum size/weight measure on the mortality of immature swordfish. Rec. 17-02 paragraph 10 (N-SWO) and Rec. 17-03 paragraph 7 (S-SWO)

An answer to these requests was provided by the Committee in 2017, referring to Recommendations [16-03, paragraph 10] and [16-04, paragraph 7]. At this time the Committee does not have any further updates.

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SWO Management recommendations

- The current TACs established by the Commission through Rec 17-02 and Rec 17-03 should ensure both stocks have at least a 50% probability of being in the green with more than 50% probability by 2028.
- The Committee also recognizes that the above advice does not account for removals associated with the actual mortality of unreported dead and live discards, quota carryovers ... nor quota transfers across the North and South stock management boundaries. The Committee emphasizes the importance of this uncertainty...

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SWO Recommendations with financial implications

- Continue funding for biology and stock structure (this recommendation applies to both the North and South Atlantic and Mediterranean stocks) for at least the next two years and is provided with financial support (€295,000).
- For work on MSE for 2019 (€80,000).

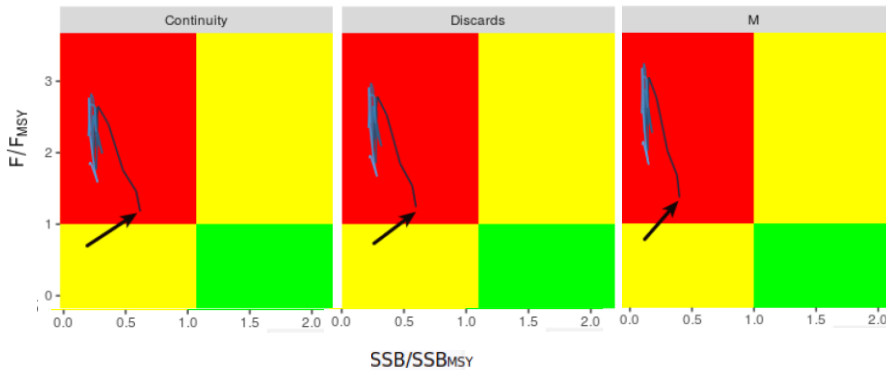
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SWO Mediterranean State of the Stock

Kobe plots from 2016 assessment



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SWO Mediterranean Management recommendations

- The level of the stock to be rebuilt, is contingent on the assumption on future recruitment which is highly uncertain. ... to reduce it... there will be a need to increase monitoring of landings and discards, ... account that ... the discard levels of undersized swordfish may have increased.
- In order for rebuilding to start taking place there will be a need for substantial reductions in harvest. Current quotas correspond to fishing mortality levels that are higher than FMSY.
- Further information regarding differences in the exploitation pattern among the different longline gears is also essential for improving assessment estimates and management scenario evaluations.

Commission responded [Rec. 16-05] by increasing catching size, fishing capacity limitations, reductions in TACs [10,500 t in 2017] and a seasonal closure of the albacore fishery to reduce juvenile swordfish by-catches.

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SWO Med Recommendations with financial implications

- Data recovery plan (€10,000.)
- Size and age at maturity: As there are ecological differences between the East and West Mediterranean, the Committee recommended that future work is conducted to explore possible differences in swordfish life-history at the spatial scale.
- Habitat use and availability to the different gears: The Group recommended the use of satellite tagging to provide information on habitat use to compare the availability of swordfish in the various fisheries, including comparisons between traditional and mesopelagic longlines.

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ICCAT CICTA CICAA

Small Tunas



BLF



LTA



SSM



BON



BLT



FRI

The 13 species of small tuna can reach high levels of catches and values in some years and have a very high relevance from a social and economic point of view, because they are important for many coastal communities in all areas and a main source of food. Their social and economic value is often not evident because of the underestimation of the total landing figures, due to the difficulties in data collection...

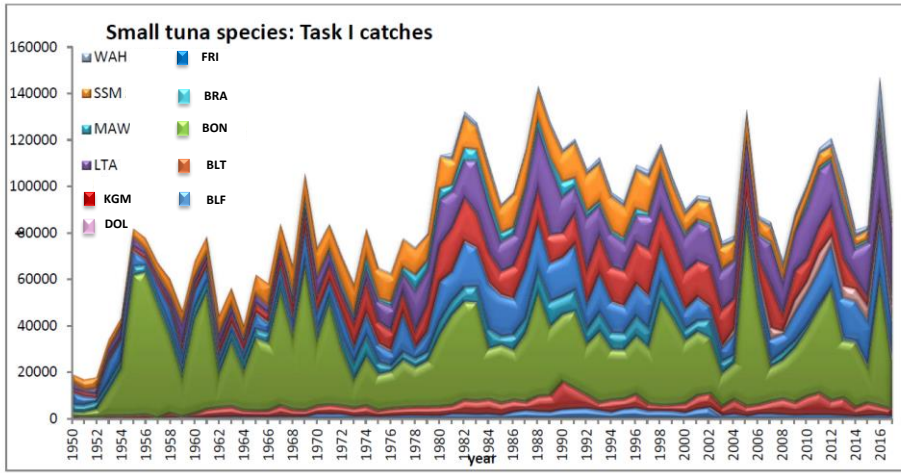
...and 7 more species

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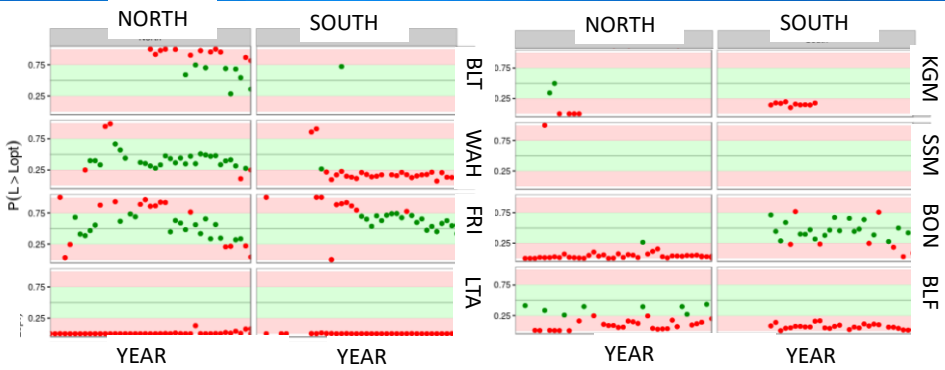
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ICCAT CICTA CICA *Small Tunas Fishery Indicators*



ICCAT CICTA CICA *SMT State of the Stocks*



Proportion of length distributions greater than *Lopt* by species and Atlantic region. 50 is used as a target reference point and so catches where the proportions of individuals greater than *Lopt* is >75% and <75% are coloured green.



Small tunas Outlook & Management recommendations

- As part of its 2019 workplan, the Committee will identify potential management procedures and management performance measures for high-priority small tuna stocks ...
- The provision of robust management advice by the SCRS relies on accurate reporting of Task I and II data. However, due to the nature of small tuna fisheries (i.e. multi-gear, multi-species, artisanal fisheries, etc.), information on fisheries data is difficult to collect, however proper monitoring programs should be implemented by the CPCs.

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SMT Recommendations with financial implications

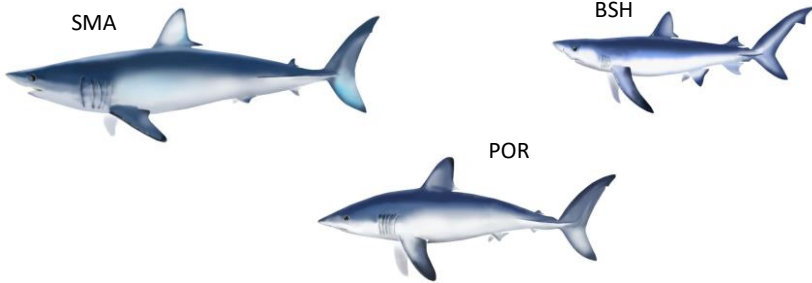
- Continuing with the ICCAT SMTYP research programme activities in 2018-2019 to further improve the biological information (growth, maturity and stock identification) for the species/areas prioritized
- A 2019 workshop on the application of data-limited methods be scheduled to increase the participation of national scientist in the evaluations of small tuna species.

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ICCAT CICTA CICAA **Sharks**



Blue shark, shortfin mako and porbeagle are large pelagic sharks that the SCRS has assessed with traditional fishery assessment models. The SCRS has conducted an Ecological Risk Assessment for these and another 13 Atlantic shark species (a total of 20 stocks).

ICCAT CICTA CICAA **Sharks Stock Status**

ECOLOGICAL RISK ASSESSMENT (2012)

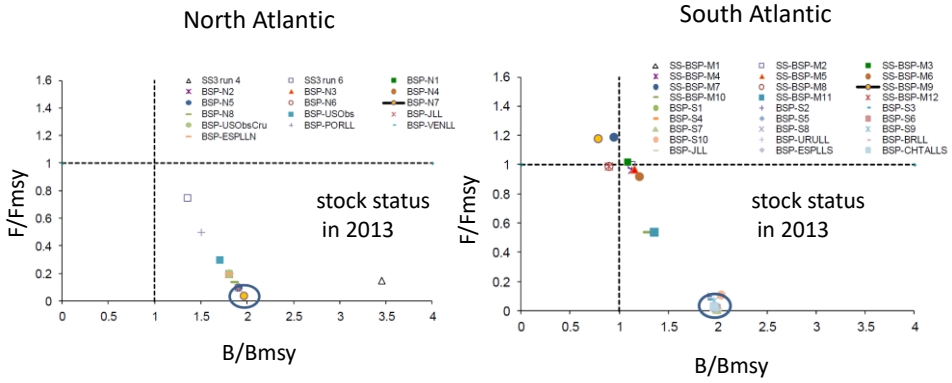
As Vulnerability ranks for 20 stocks of pelagic sharks calculated with three methods A lower rank indicates higher risk. Stocks listed in decreasing risk order according to the sum of the three indices. Red highlight indicates risks scores 1-5; yellow, 6-10; blue, 11-15; and green, 16-20.

Bigeye thresher, longfin and shortfin makos, porbeagle, and night sharks were the most vulnerable stocks. Scalloped hammerheads, smooth hammerhead, and pelagic stingray had the lowest vulnerabilities.

Stock	V ₁	V ₂	V ₃
BTH	3	1	1
LMA	5	3	2
SMA	1	8	2
POR	2	7	4
CCS	11	4	5
FAL SA	12	5	6
CCP	15	2	6
OCS	4	13	8
FAL NA	8	11	8
ALV	9	14	11
BSH NA	6	19	10
DUS	17	6	12
SPK	14	10	13
BSH SA	7	20	14
TIG	10	16	15
PLS SA	18	9	16
SPL NA	16	12	16
SPZ	13	17	18
SPL SA	19	15	19
PLS NA	20	18	20

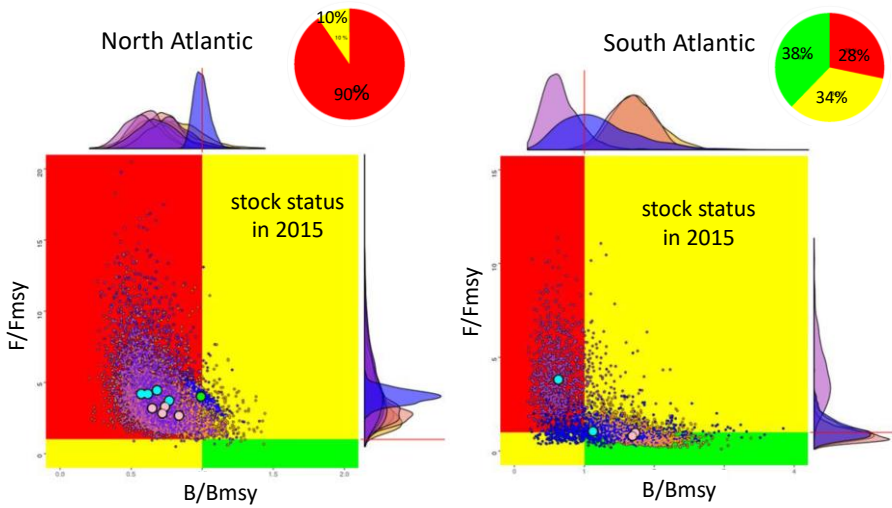
ICCAT CICTA CICAA **BSH Stock Status**

from production models and integrated analysis (SS)

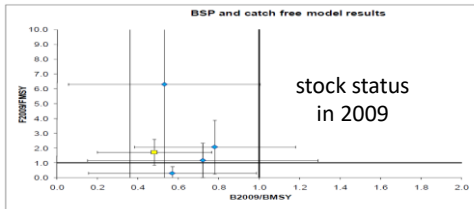
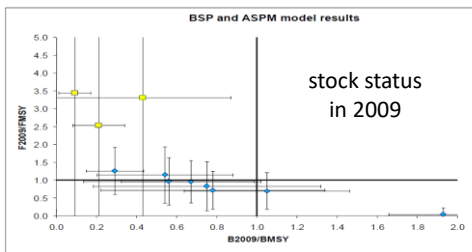
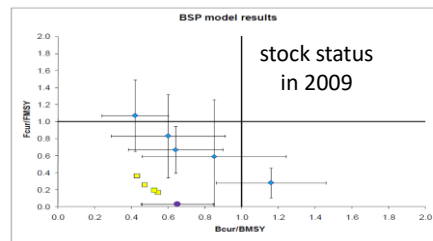


ICCAT CICTA CICAA **SMA Stock Status**

from production models and integrated analysis (SS)




 ICCAT CICTA CICAA **POR Stock Status**

Southwest Atlantic

Northeast Atlantic

Northwest Atlantic


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Sharks Management recommendations


- Precautionary management measures should be considered particularly for stocks where there is the greatest biological vulnerability and conservation concern
- CPCs to provide ... statistics, including discards (dead and alive), of all ICCAT fisheries, including recreational and artisanal fisheries...
- The magnitude of shark entanglements in FADs should be investigated. Methods for mitigating shark by-catching fisheries also need to be investigated and applied.

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BSH Management recommendations



South Atlantic stock

- the Committee strongly recommends that the Commission considers a precautionary approach for this stock.

North Atlantic stock

- uncertainty in the data inputs and model structural assumptions was high enough to prevent the Committee from reaching a consensus on a specific management recommendation.



SMA Management recommendations and 2019 workplan



North Atlantic stock

- to stop overfishing and start rebuilding, the constant annual catch should be reduced to 500 t or less. The Commission adopted Rec. 17-08, which aims to reduce the fishing mortality to end overfishing.
- SCRS will conduct projections in 2019 for SMA based on the 2017 stock assessment, but incorporating projections with Stock Synthesis. Projections can include several of the provisions contemplated in Rec. 17-08 (100 t intervals, 2 generation times; effectiveness of circle hooks, effect of minimum sizes

South Atlantic stock

- catch levels should not exceed the minimum catch in the last five years of the assessment (2011-2015; 2,001 t with catch scenario C1).

POR Management recommendations



- The Commission work with countries catching porbeagle and relevant RFMOs to ensure recovery of North Atlantic porbeagle stocks (e.g. ICES, NAFO). In particular, porbeagle fishing mortality should be kept at levels in line with scientific advice and with catches not exceeding the current level. New targeted porbeagle fisheries should be prevented, porbeagles retrieved alive should be released following best handling practices to increase survivorship, and all catches should be reported.
- Management measures and data collection should be harmonized as much as possible among all relevant RFMOs dealing with these stocks, and ICCAT should facilitate appropriate communication.

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SHK Recommendations with financial implications

- Provide funding for the SRDCP for Year 5 (€115,000) to complete work on shortfin mako genetics, continue work on the reproductive biology of porbeagle and shortfin mako, and start work on movement and habitat characterization of silky and other ICCAT priority species through satellite tagging.

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