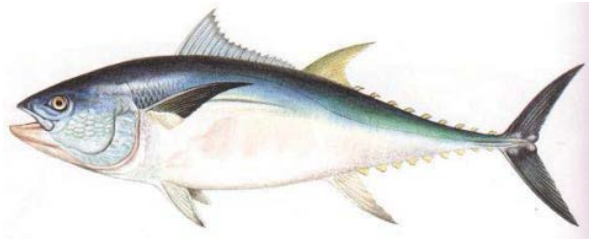
Presentation of 2020 SCRS Meeting Results and Advice

5.3

2020 Fall Meeting of the Advisory Committee to the U.S. Section to the International Commission for the Conservation of Atlantic Tunas
October 2019 (online)

Stocks Assessed in 2020



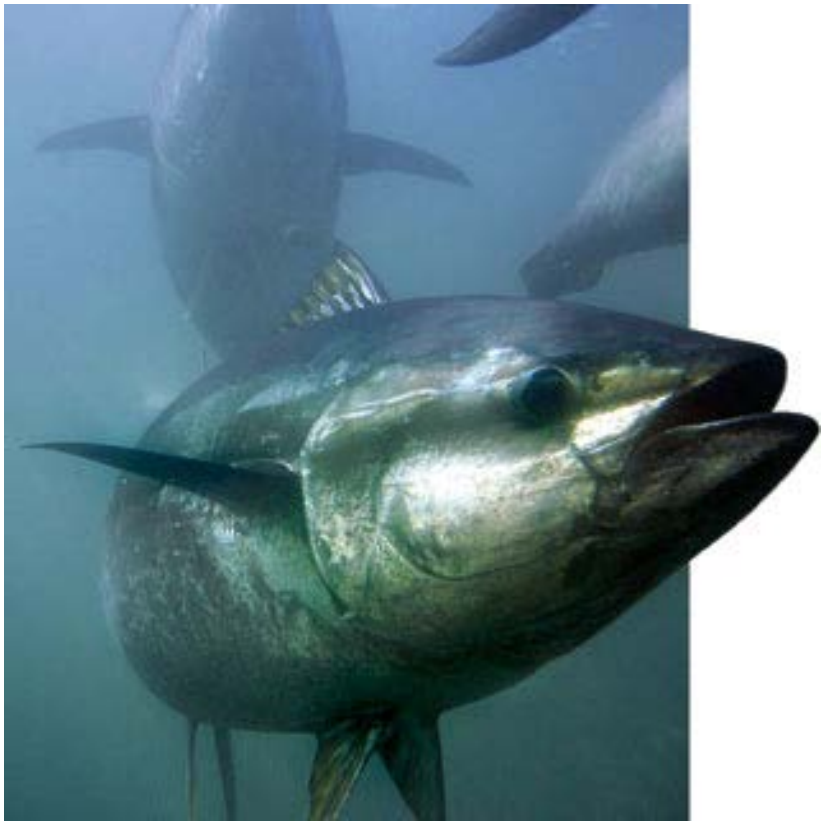
Bluefin Tuna

Porbeagle

Albacore

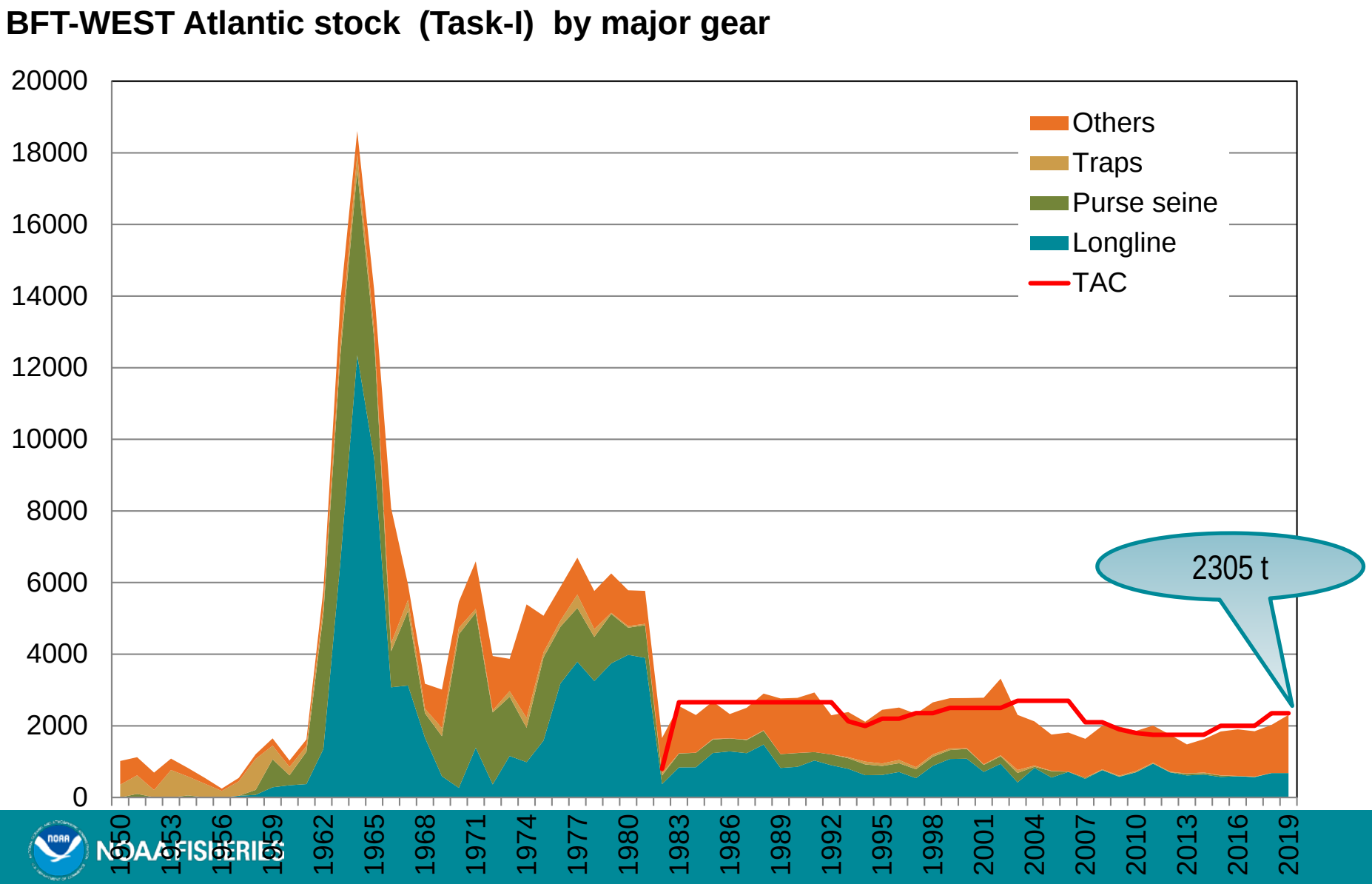
Swordfish (Mediterranean only)

Western Atlantic Bluefin

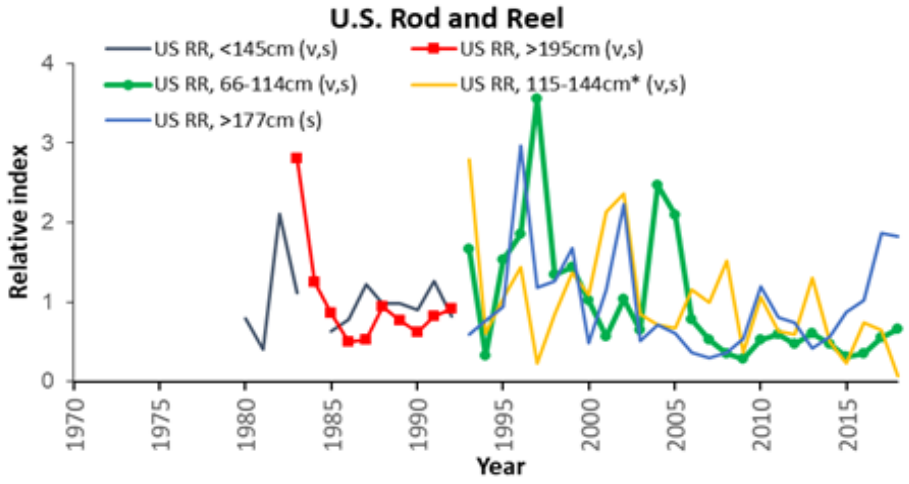


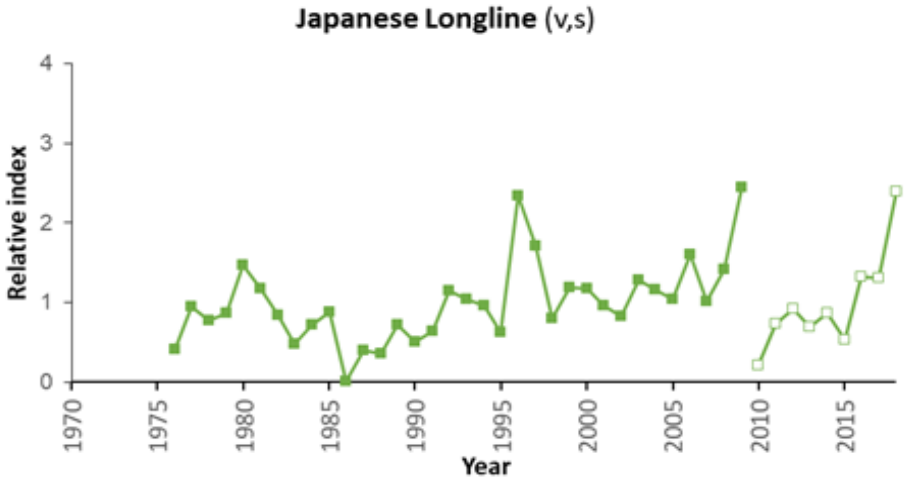
New Stock Assessment in 2020

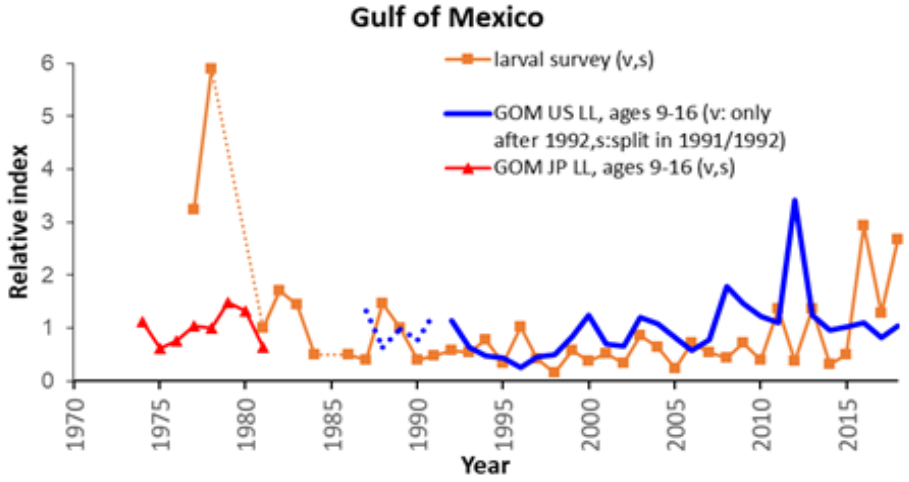
wBFT Catches

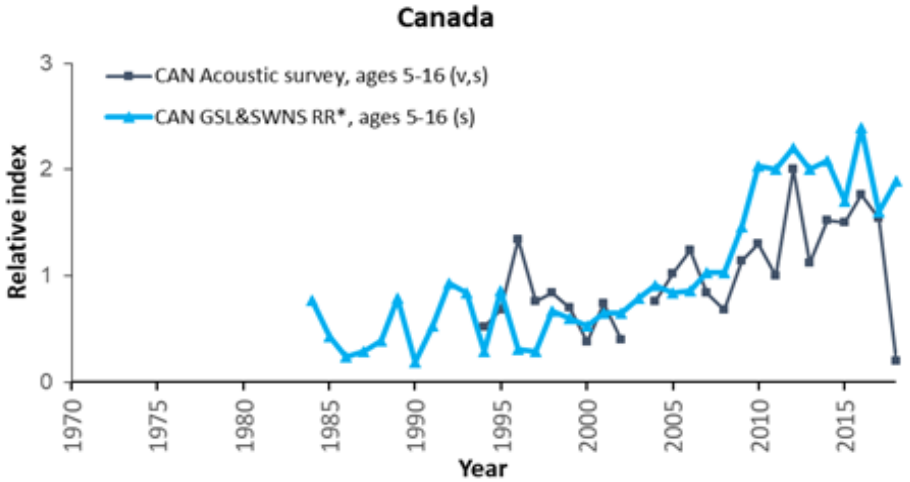


wBFT Abundance Indices



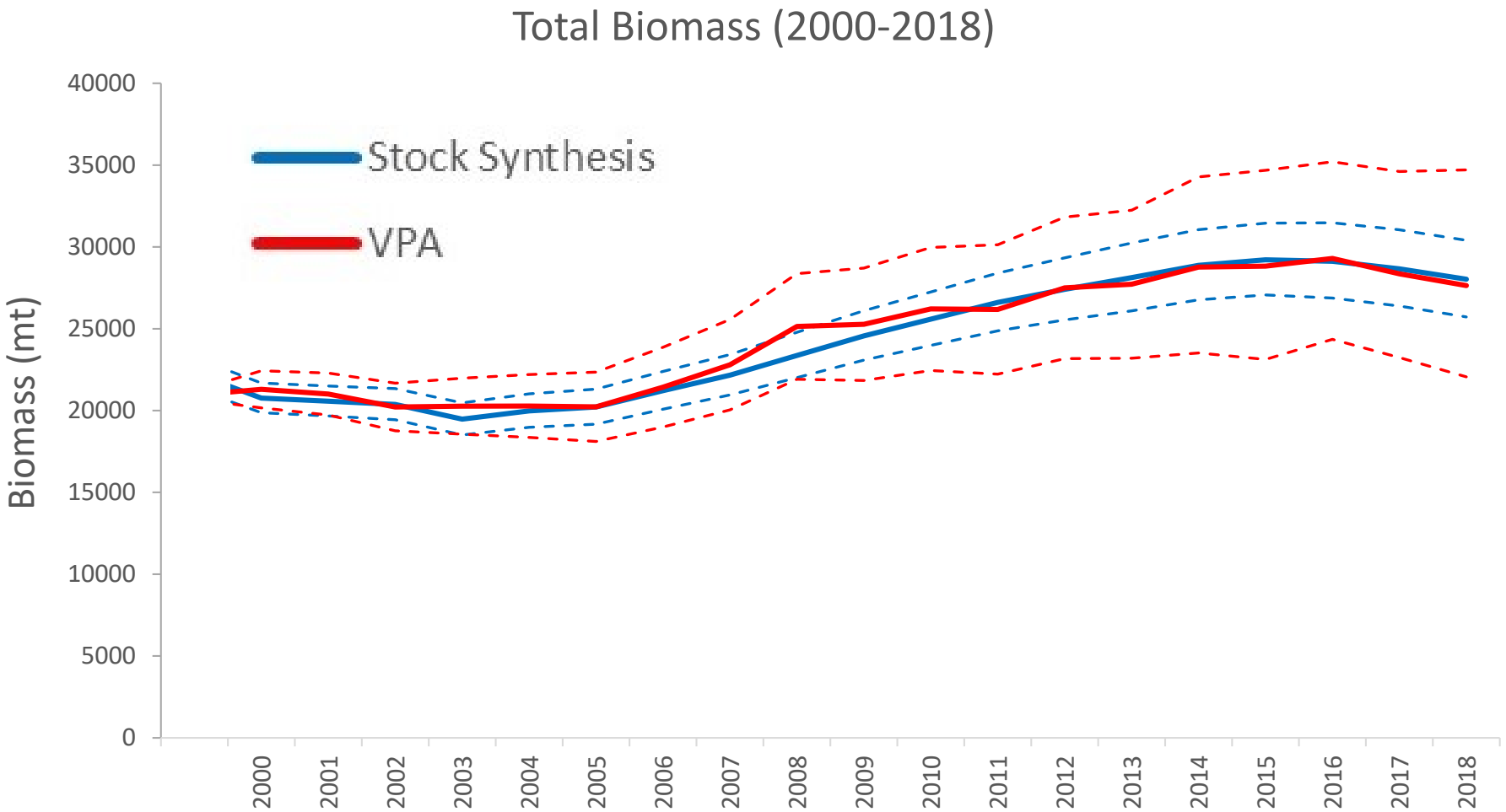






Indices of relative abundance for western bluefin tuna. Indices denoted with "*" represent revised indices rather than strict updates of indices used in the 2017 stock assessment. Indices denoted with an "s" were used in Stock Synthesis and indices with a "v" were used in VPA. The Canadian Acoustic index data point for 2018 was not used in the assessment models.

wBFT Stock Assessment Results:



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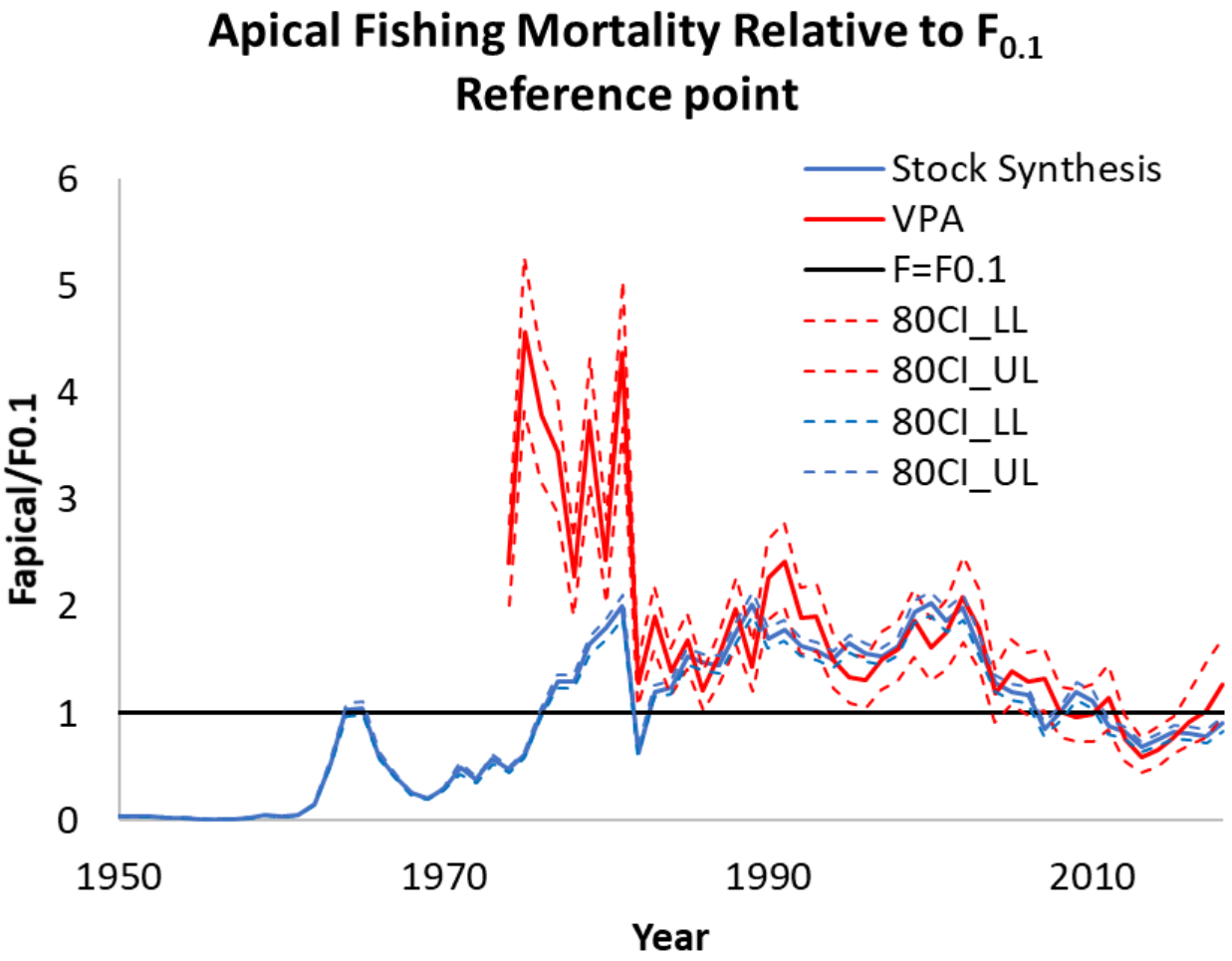
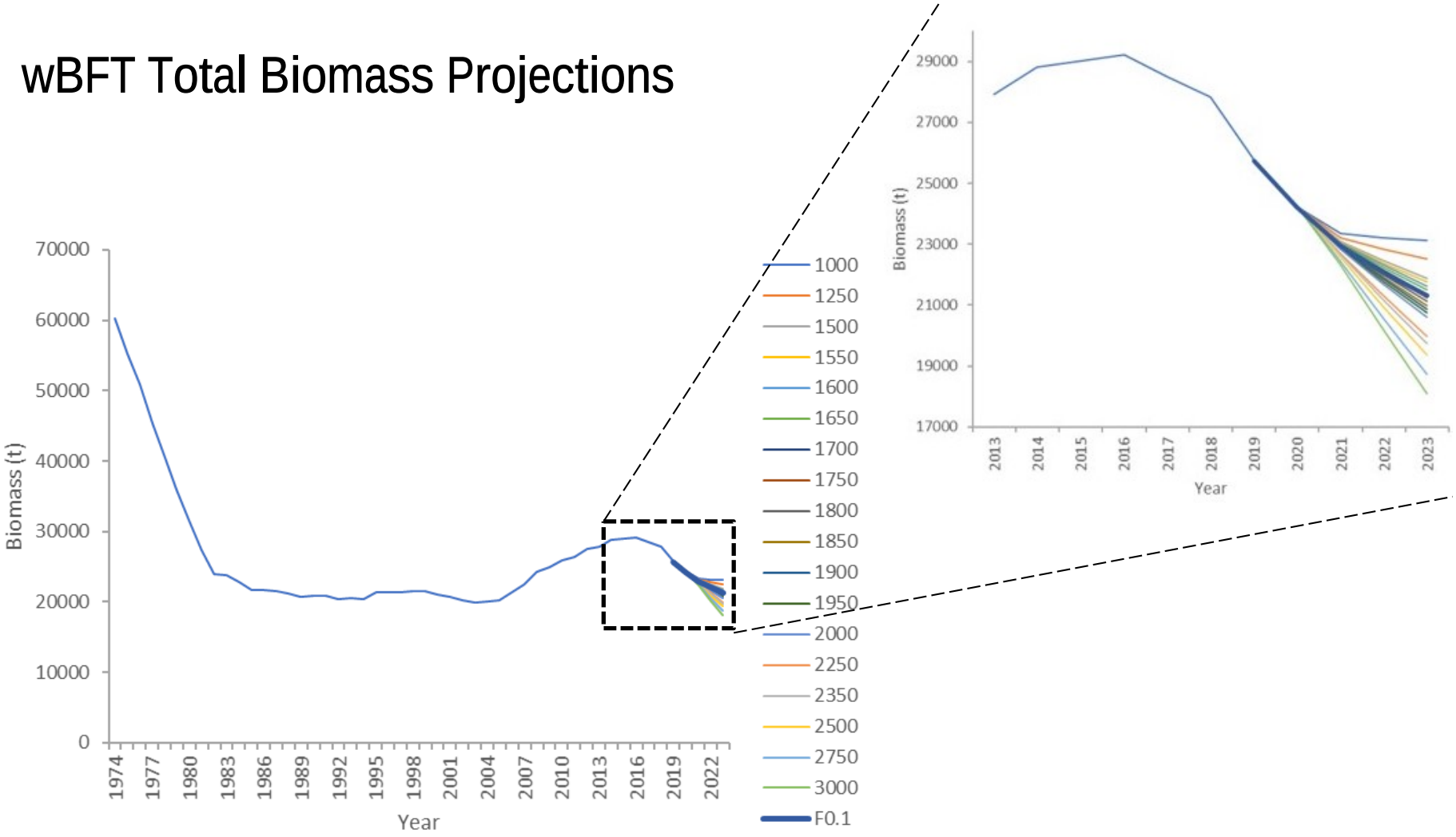


$F/F_{0.1}$ (2015-2017)	0.79 (average across both models)
Stock status[1]	Not overfishing

[1] Biomass reference points to determine stock status were not estimated in the 2020 assessment due to uncertainty in recruitment potential.

Fishing mortality relative to the F0.1 reference point as estimated by VPA (red) and Stock Synthesis (blue) for the 2020 assessment. The 80% confidence intervals are indicated with dashed lines.

wBFT Total Biomass Projections



Projected total biomass (mt) of bluefin tuna in the West Atlantic under alternative constant catch scenarios, averaged across both recruitment and maturity specifications and both Stock Synthesis and VPA.

wBFT Total Biomass Projections

Percentage change in total stock biomass at the middle of the year relative to 2020 under alternative constant catch scenarios from the 2020 assessment, based on the projections from Stock Synthesis and VPA, averaged across 2 recruitment and 2 maturity specifications.

Stock Synthesis and VPA projections come from averaging the deterministic model runs.

Catch	2021	2022	2023
1000	-4%	-4%	-4%
1250	-4%	-6%	-7%
1500	-5%	-7%	-10%
1550	-4.7%	-7.6%	-10.1%
1600	-4.8%	-7.9%	-10.7%
1650	-4.9%	-8.2%	-11.2%
1700	-5.1%	-8.5%	-11.7%
1750	-5.2%	-8.8%	-12.2%
1800	-5.3%	-9.1%	-12.7%
1850	-5.4%	-9.4%	-13.3%
1900	-5.5%	-9.8%	-13.8%
1950	-5.6%	-10.1%	-14.3%
2000	-5.7%	-10.4%	-14.8%
2250	-6.2%	-12.0%	-17.4%
2350	-6.4%	-12.6%	-18.5%
2500	-6.8%	-13.5%	-20.0%
2750	-7.3%	-15.1%	-22.7%
3000	-7.9%	-16.7%	-25.3%

wBFT Management Recommendations

Kobe II matrix giving the probability that the fishing mortality rate (F) will be less than the $F_{0.1}$ reference point (i.e. $F \leq F_{0.1}$, overfishing not occurring) over the next three years for alternative constant annual catches, based on results from the 2020 VPA and SS combined.

TAC	2021	2022	2023
0	100%	100%	100%
1000	100%	100%	99%
1250	98%	96%	94%
1500	91%	86%	80%
1550	89%	82%	75%
1600	85%	76%	67%
1650	82%	67%	56%
1700	75%	57%	45%
1750	67%	48%	35%
1800	57%	37%	27%
1850	46%	28%	21%
1900	38%	23%	17%
1950	29%	17%	13%
2000	23%	14%	12%
2250	9%	6%	6%
2350	6%	5%	4%
2500	4%	2%	2%
2750	1%	1%	0%
3000	0%	0%	0%

wBFT Management Recommendations

Scenarios for three-year TAC advice. Predicted yield (t), total stock biomass (t), % total biomass change from 2020 and probability of not overfishing, by management scenario averaged across both VPA and Stock Synthesis. Scenarios 1 and 2 come from an approximation of a 50 and 60% probability of not overfishing in each year but did not quite achieve the desired intent in the time available. All TAC scenarios reflect running projections with the prescribed TAC to accurately estimate probabilities resulting from having taken the previous year's TAC shown below.

Management Scenario	Predicted Yield (t)			Predicted (mid-year) Total Biomass (t)			Percent Change in Total Biomass (mid-year) from 2020			Probability of Not Overfishing		
	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023
1. Approximate 50% Probability of Not Overfishing or approximate Constant $F=F_{0.1}$	1831	1738	1678	22918	22000	21218	-5.3%	-9.1%	-12.4%	49%	46%	44%
2. Approximate 60% Probability Not Overfishing	1785	1684	1633	22940	22072	21342	-5.2%	-8.8%	-11.8%	58%	58%	54%
3. Rollover in 2021 to $F=F_{0.1}$	2350	1685	1632	22647	21506	20778	-6.4%	-11.2%	-14.2%	6%	50%	48%
4. 255 mt step 2021 -2023	2095	1840	1585	22780	21681	20900	-5.9%	-10.4%	-13.7%	15%	27%	56%
5. 1630 t constant	1630	1630	1630	23021	22257	21551	-4.9%	-8.1%	-11.0%	83%	71%	61%
6. 1680 t constant	1680	1680	1680	22995	22181	21424	-5.0%	-8.4%	-11.5%	78%	61%	50%

Some thoughts on key sources of uncertainty:

There are key sources of uncertainty, such as

- Abundance Indices and possible environmental influences
- Mixing and influx of eastern Atlantic population

Recruitment estimated to have been relatively low during a period 5-10 years ago, the period (following the strict update methodology) in which an average recruitment is calculated and assumed for projections. US rod and reel indices of school fish have generally been increasing in more recent years (~2016-2019). In order to reflect this potentially higher recruitment trend, a somewhat higher average recruitment from a slightly earlier time period was assumed for half of the projections. But there is some question as to whether or not this is sufficient.

Recent analyses indicate that 50-70% of the catch in the western Atlantic is of eastern stock origin.

BFT Workplan 2020-2021 addressing uncertainties

Task 2 subGroups

A. **Western Indices** to evaluate environmental factors that might affect indices including LPS and Canadian Acoustic and others and develop joint longline index with US and Mexico.

B. **Models:** evaluate alternative assessment models for Eastern stock and for mixing.

BFT Workplan 2020-2021 related to MSE 2021

1. Goal: 2022 Commission adopts Management Procedure to provide 2023 TACs

2. Late 2020: Steve Cadrin to organize MSE web-based focus group to demo the process and *possibly* develop a stakeholder originated management procedure.

3. 2021 BFT MSE workplan (*Bold are meetings with Panel 2/Commission*)
    1. Dec 1-3 Meeting to outline method for plausibility weighting
    2. **Feb/March Panel 2- SCRS Chair will brief on progress**
    3. March meeting: the 'Room' where plausibility weighting will happen
    4. Further meetings (mainly online) to 'tune' management procedures
    5. **1-day Panel 2 meeting prior to Commission focused on initial results and to refine operational management objectives***

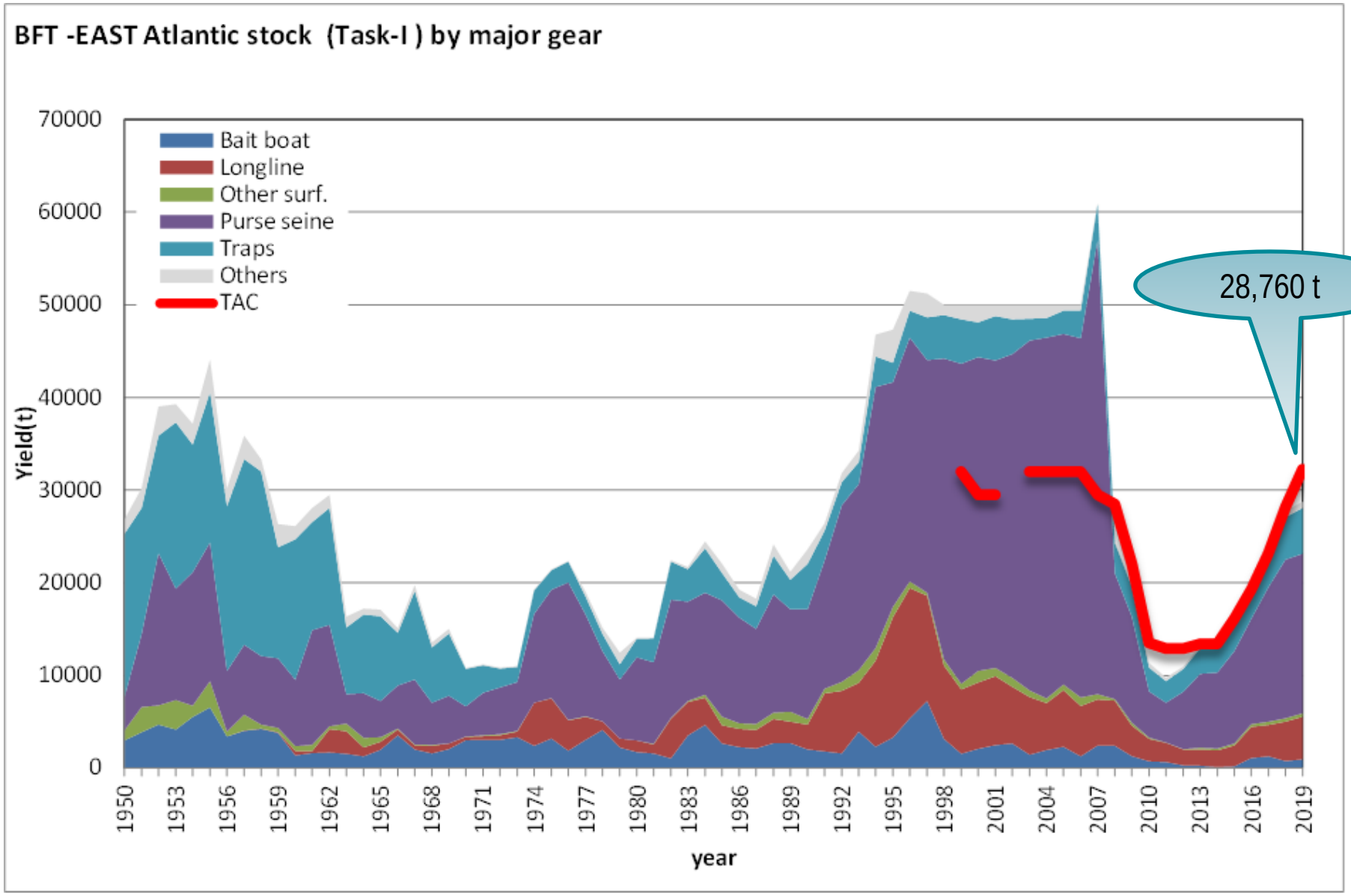
**These will be actual management procedures that will illustrate the tradeoff space and will provide critical context as to how the process will actually work*.

***2022 will then require several dialogue sessions with Panel 2 to further refine the management procedures that the Commission could adopt in 2022*

Eastern Atlantic Bluefin

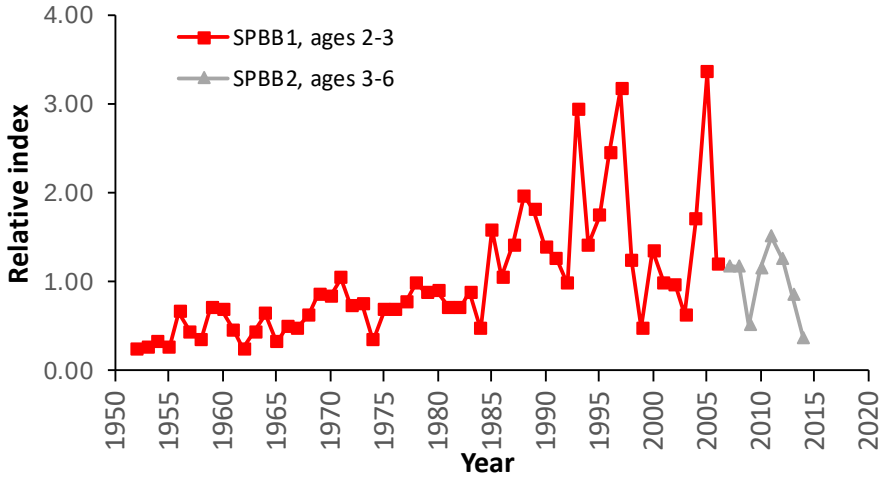
New Stock Assessment in 2020

eBFT Catches

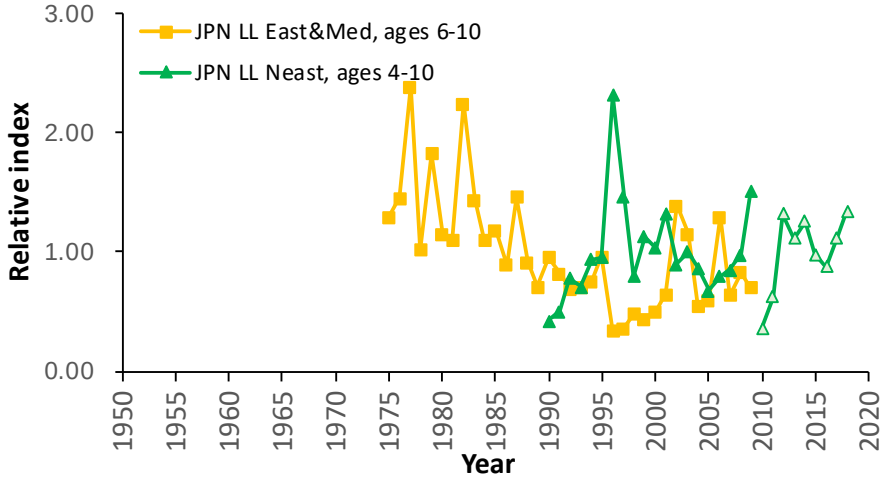


eBFT Abundance Indices

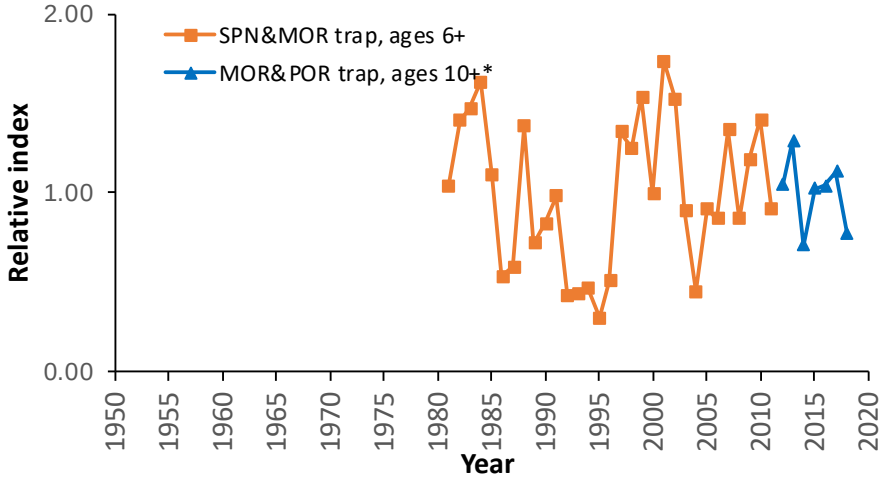
Spanish Bait boat in the Bay of Biscay



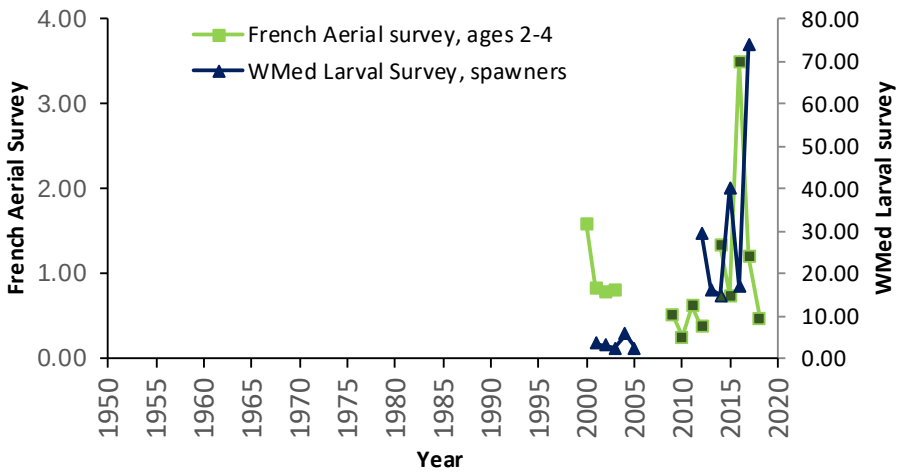
Japanese Longline



Trap



Survey



eBFT Management Recommendations

The SCRS did not consider the results of the eastern stock assessment to be suitable for the provision of TAC advice. Instead, it examined the available abundance indices and concluded that there was no evidence indicating that the current TAC could not be maintained for the short term. Below is some relevant text from the report:

"The Committee considers that recent recruitment estimates from the updated VPA assessment are highly uncertain and any short term catch advice based on F0.1 from the updated assessment would not be robust. Consequently, the Committee is not presenting new short-term projections. Due to the limited possibilities for improving the quality of the data, the Committee does not expect to be able to provide further clarity regarding future recruitment in 2021.

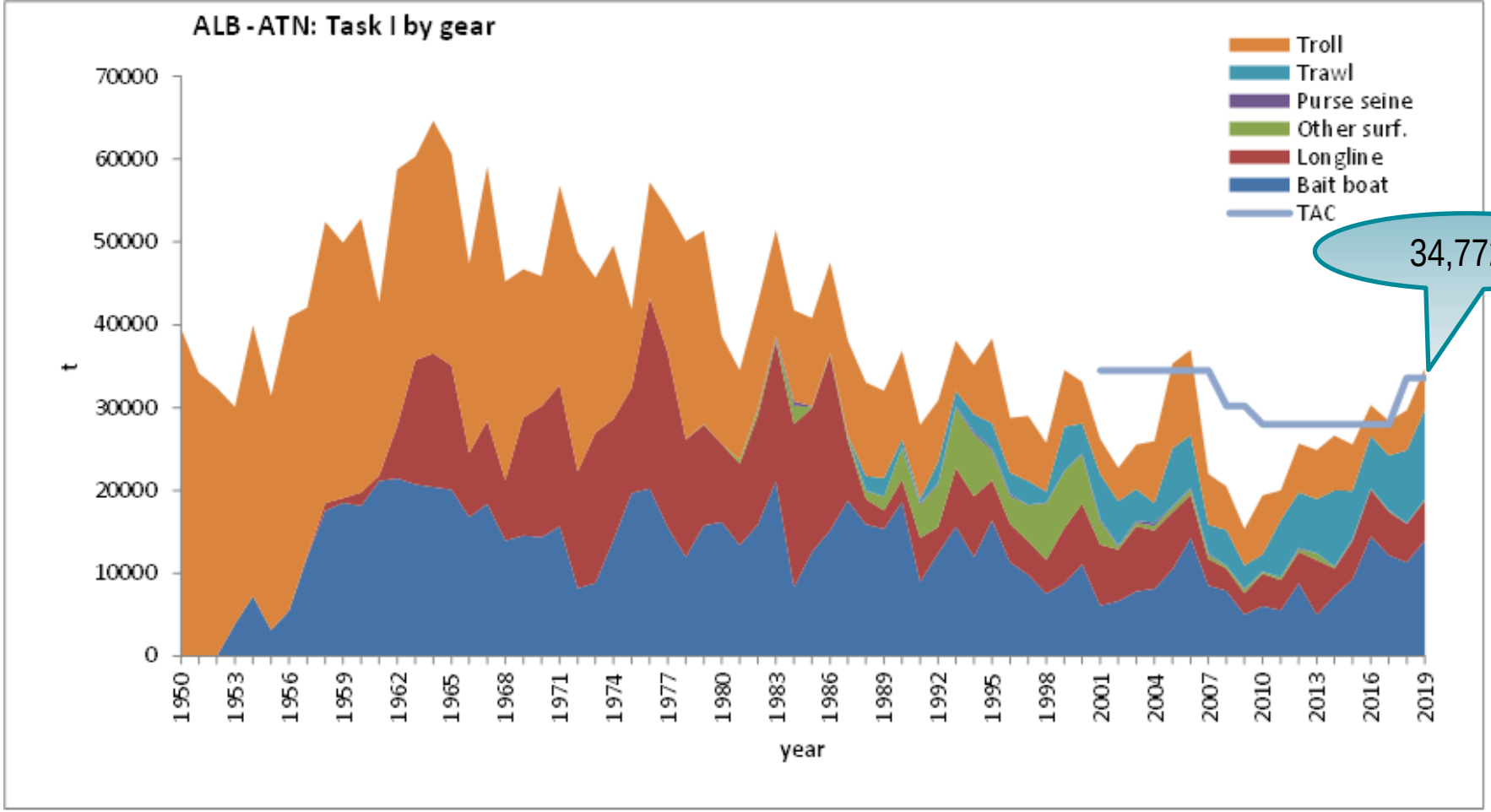
In 2018 and 2019, as requested in Rec. 18-02 the Committee evaluated whether the stock size indicators supported the TAC advice for 2019 (32,240 t) and 2020 (36,000 t), which arose from the 2017 assessment, and found that to be the case on both occasions". . .

"The Committee noted that biomass indicators did not provide any evidence to alter the current management advice originally provided in 2017. The Committee points out that the projections from the 2017 advice showed that a constant catch of 36,000 tons from 2018 onwards reflects F<F0.1 with a probability higher than 60% in 2021 and in 2022. . ..

Consequently, **the Committee recommends that the 2020 TAC [Rec 19-04 para. 5] of 36,000 t be maintained for 2021 and 2022.** However, the 2022 advice will be reviewed in 2021 based on updates of the abundance indicators as has been done in recent years."

Northern Atlantic Albacore

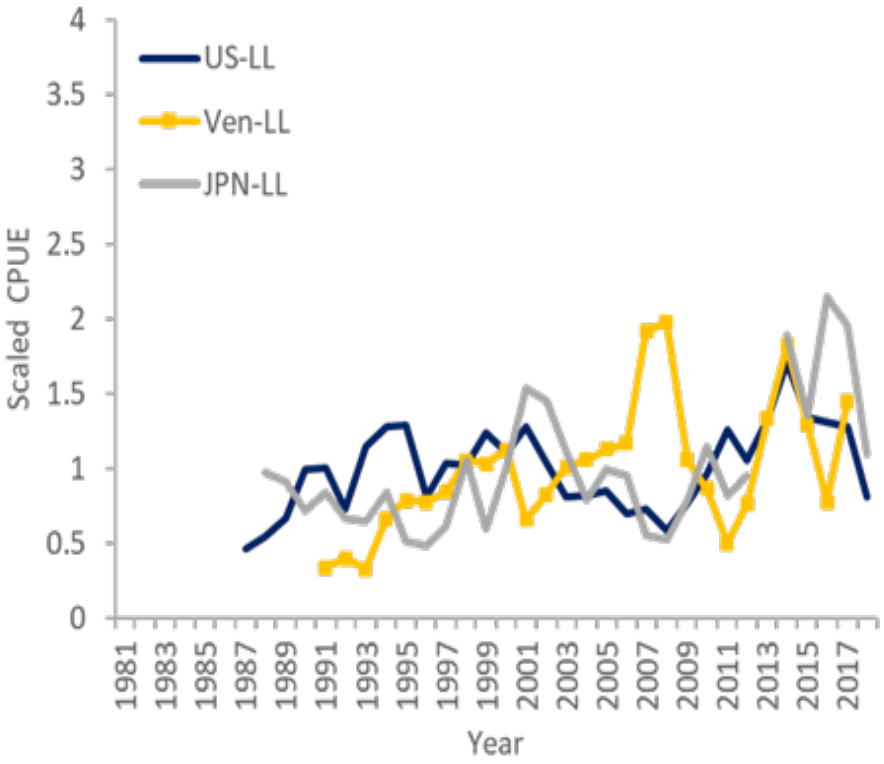
New Stock Assessment in 2020

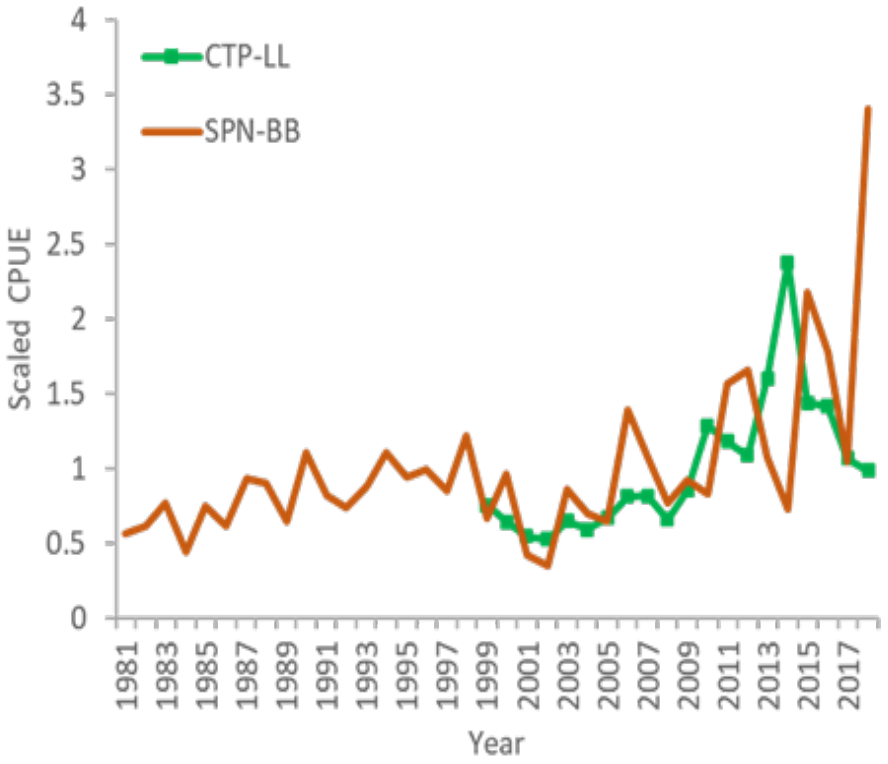


The bulk of the catch is caught by traditional surface fisheries operating in the Bay of Biscay and surrounding waters. Since the establishment of the TAC in the year 2001, catch remained substantially below the TAC in all but four years. The current TAC (33,600 t) was exceeded in 2019.

(

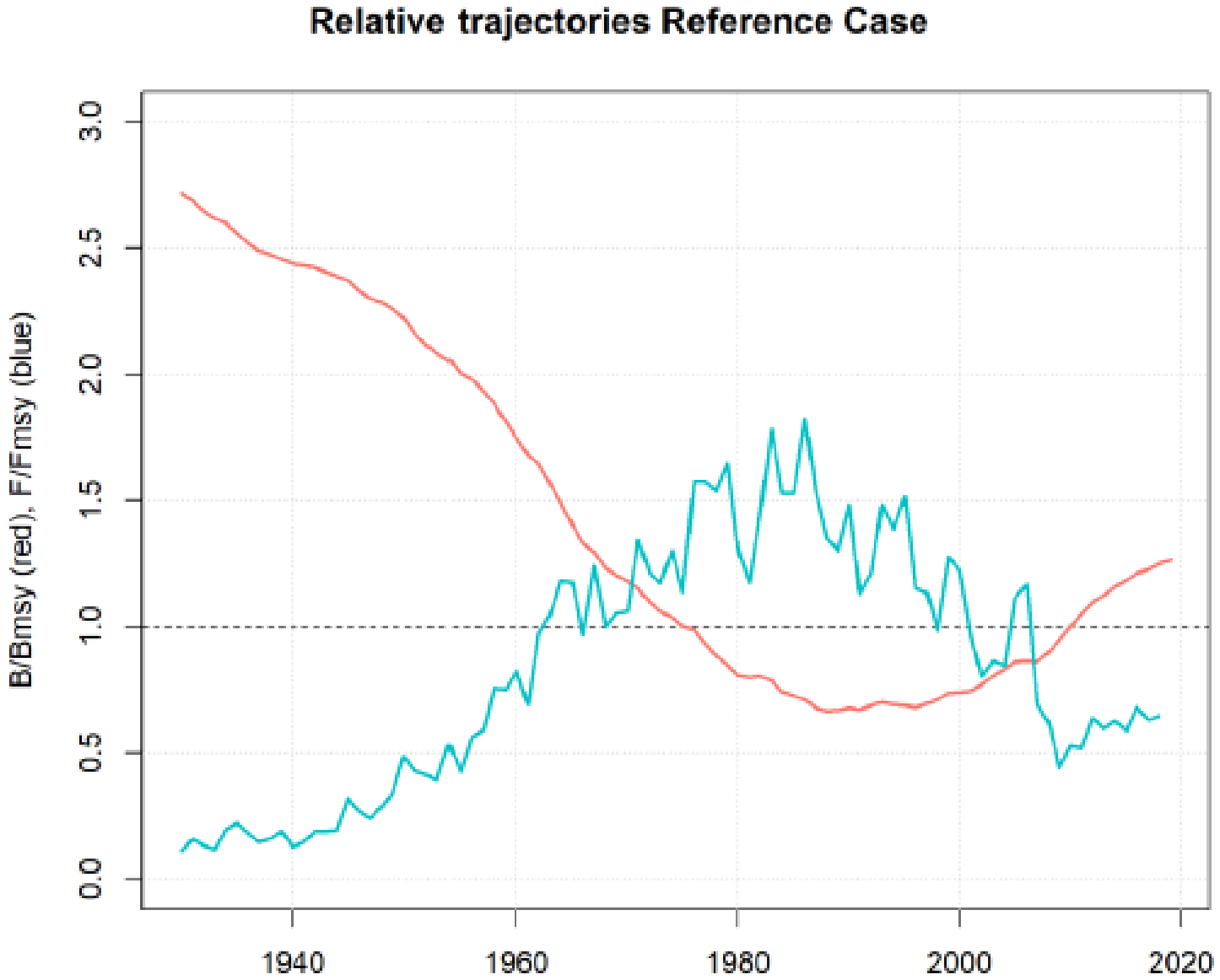
Abundance Indices





North Atlantic albacore. Standardized catch rate indices used in the 2020 stock assessment from the surface fishery (baitboat) which take mostly juvenile fish, and from the longline fisheries which take mostly adult fish.

Stock Assessment Results:



Stock Status

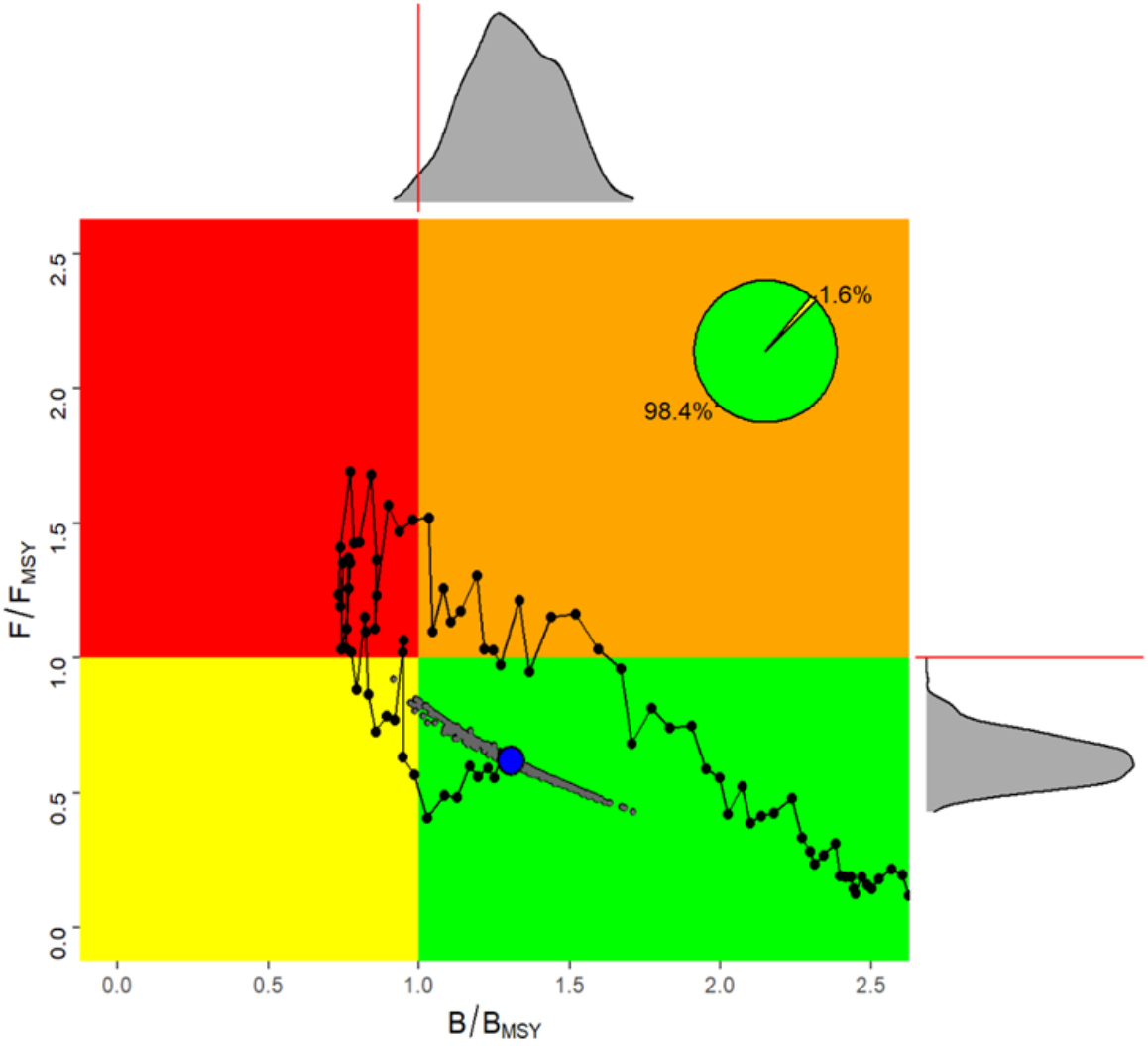
The trajectory of B/B_{MSY} and F/F_{MSY} over time is shown for 1930-2018.

F_{2018}/F_{MSY} = 0.62
B_{2018}/B_{MSY}) = 1.32

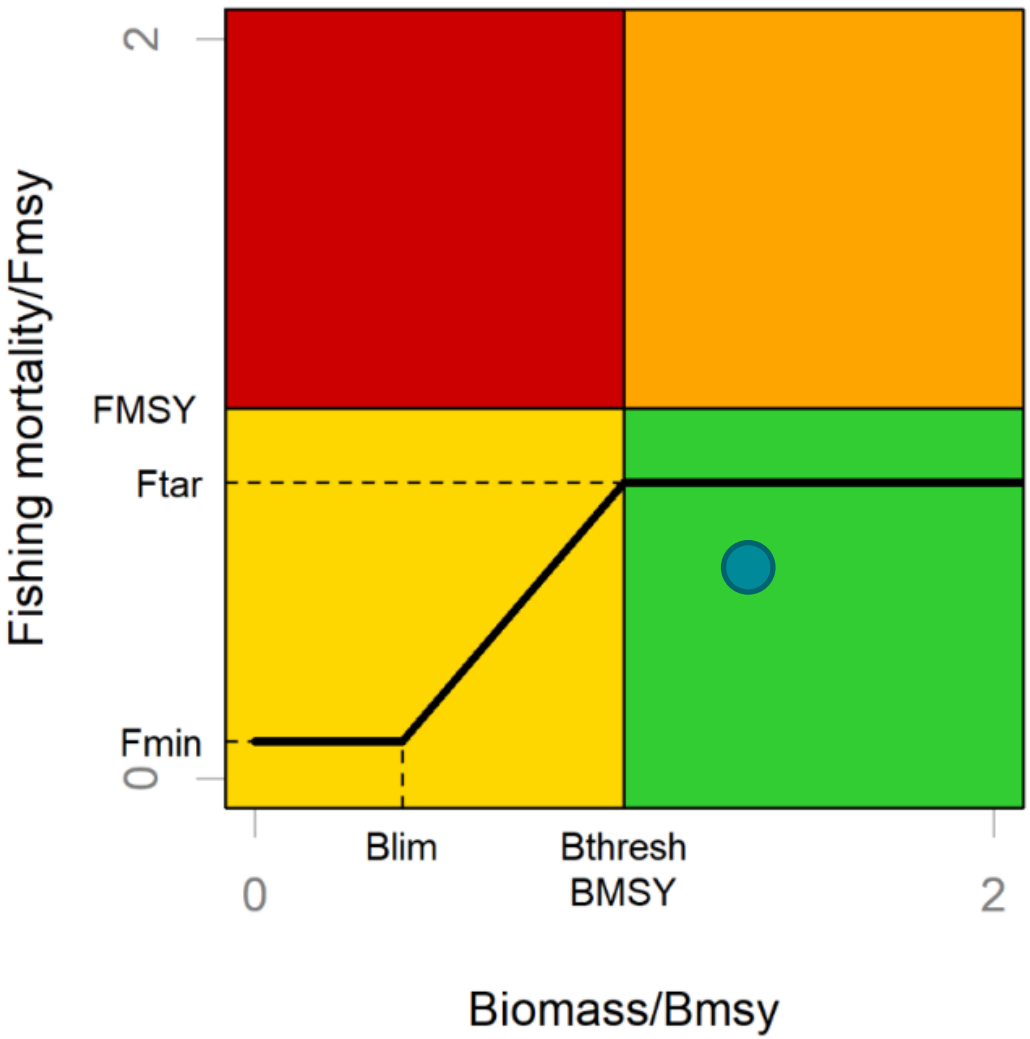
MSY=36,816 t

Yield in the last year of the assessment (2018) = 29,691 t

The pie chart displays the probabilities of being both overfished and with overfishing (red, 0%), of being neither overfished nor with overfishing (green, 98.4%), and of being overfished (yellow, 1.6%).



Application of Harvest Control Rule



Graphic form of the HCR adopted in Rec 17-04. B_{LIM} (set at $0.4B_{MSY}$) is the limit biomass reference point, B_{THRESH} (set at $B_{MSY)}$ is the point below which fishing mortality decreases linearly, F_{TAR} (set at $0.8F_{MSY}$) is the target fishing mortality rate to be applied to achieve the management objectives, and F_{MIN} (set at $0.1F_{MSY)}$ is the fishing mortality to be applied when $B<B_{LIM}$.

Recommended TAC for the period 2021-2023 as estimated following the HCR adopted in Rec. 17-04:

37,801 t

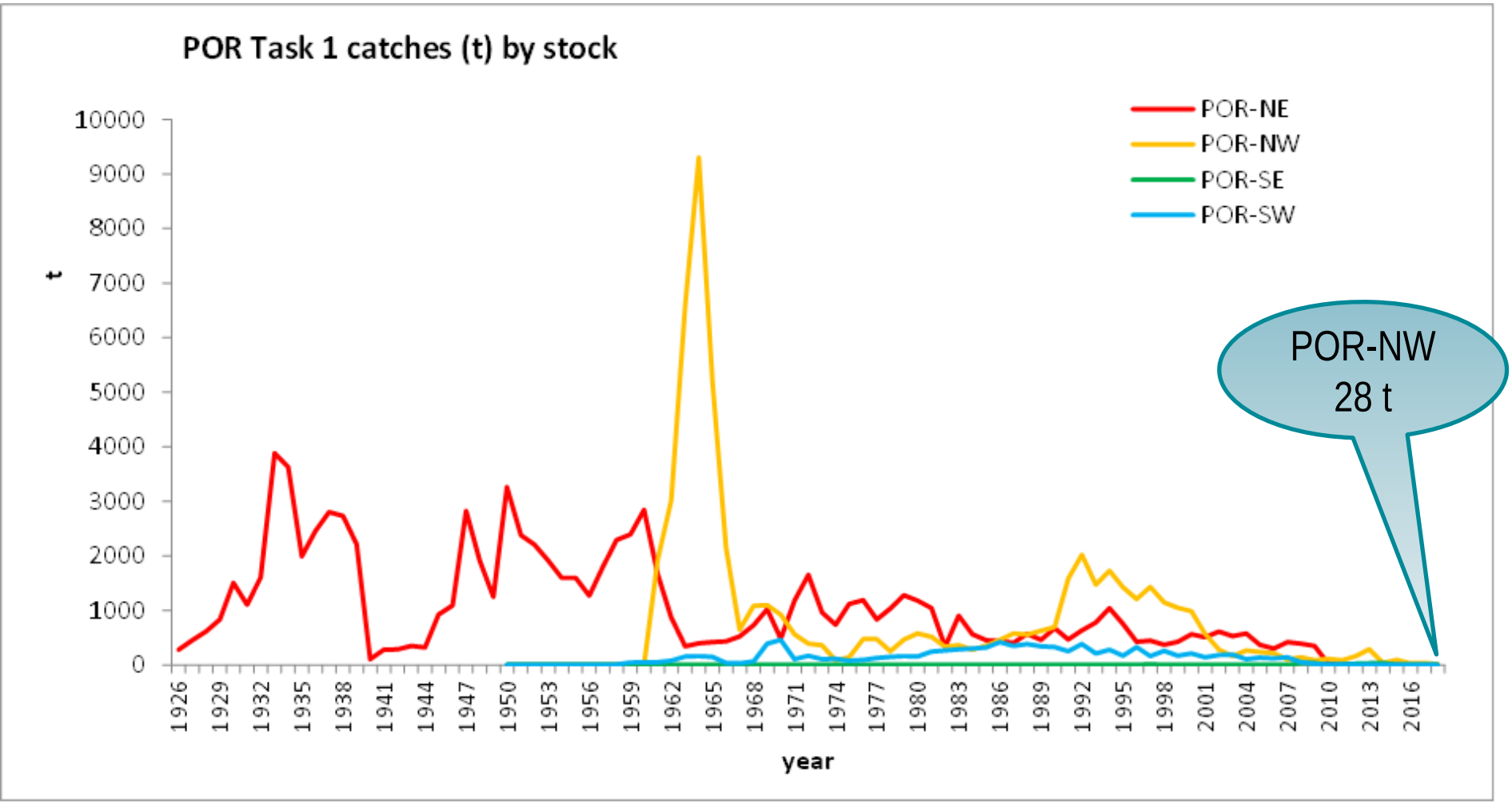
Management procedure vs Harvest Control Rule

"It should be noted that there are some differences between the 2020 stock assessment process and the MP tested within the MSE. Examples of differences include 1) the use of five indices rather than four, 2) the availability of catch and indices only until two years prior, rather than one year prior, and 3) an index evaluation process that resulted in some index values for some years being excluded based on the judgement that they were not reflective of abundance trends. However, the Committee considered that these differences were not sufficient to preclude the use of the 2020 stock assessment results to set the TAC for the next 3 years by applying the interim HCR. As discussed in the Workplan, the Committee intends to develop a new MSE that will further address these issues."

Porbeagle

New Stock Assessment in 2020

Porbeagle Catches



Northwest Porbeagle Management Recommendations

The Committee recommends that 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 removals 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.

1. The SCRS needs cooperation from all CPCs to improve catch statistics, which is critical to advancing the assessments of all porbeagle stocks.

a. Only 1 CPC has reported live discards of porbeagle. The Committee underlines that the reporting and quantification of live discards is critical, especially for a stock where all live animals must be released (Rec. 15-06); the Commission should find ways to encourage improved reporting of live discards.

b. There is a need for CPCs to strengthen their monitoring and data collection efforts, including but not limited to improved estimates of dead discards and the estimation of CPUEs using observer data.

c. The Committee requests CPCs revise their porbeagle catch series (landings, live discards, and dead discards) including incidental captures from their other non-ICCAT fisheries (gillnet, trawling, purse seiner, etc.) to allow the SCRS to incorporate all mortality sources into future assessments and reduce the uncertainty in stock status and projections.

d. In addition, the Committee recommends that the ICCAT liaise with parties (e.g. other RFMOs) and engage in data mining to determine the total capture from non-ICCAT parties.

2. The Committee notes that management recommendations for porbeagle stocks under ICCAT responsibility are drafted for ICCAT fisheries. However, porbeagle stocks are subject to mortality from CPCs' coastal fisheries and countries that are not ICCAT Parties. Therefore, the Committee recommends that CPCs implement a live release requirement for all porbeagle caught in their waters and that ICCAT develop integrated management approaches (with other countries, other Regional Fisheries Bodies, FAO) to assure the sustainability of Atlantic porbeagle stocks.

Northwest Porbeagle Management Recommendations (cont.)

3. The Committee notes that some landings and the majority of discards go unreported, meaning that total mortality of Porbeagle from all sources (i.e. landings, dead discards and live releases that subsequently die as a result of gear interactions) is underestimated. For the purposes of this assessment, the Committee estimated unreported landings and dead discards preliminarily that were 89% higher than reported, but did not estimate mortality following live release. The Commission should be aware that actual removals are higher than what is being reported and Kobe matrices will be optimistic to the extent that removals are underreported.

4. Considering the underreporting of removals, and the current low stock status of the NW Atlantic stock (B_{2018}/B_{MSY}=0.57), the Committee recommends that total removals (i.e. the sum of landings, dead discards, and post-release mortality of live releases) do not exceed current levels (including unreported removals) to allow for stock recovery. Although the Kobe matrix might suggest that some increases in total removals could allow for potential recovery in the long term, the assessment suggests that the stock is productive enough to recover in a much shorter time frame if total removals are maintained at a lower level. This is consistent with Rec. 11-13 that overfished stocks be recovered in as short a period as possible. However, the Commission should be aware that actual removals (particularly dead discards and post-release mortalities of live releases) are higher than what is being reported and the Kobe matrix is overly optimistic to the extent that removals are underreported.

NORTHWEST ATLANTIC PORBEAGLE SUMMARY

Yield (2019)		28 t[1]
Relative Biomass	B_{2018}/B_{MSY}	0.57[2]
Relative Fishing Mortality	F_{MSY}	0.049[3]
	$F_{2010\text{-}2018}/F_{MSY}$	0.413[3]
Stock Status (2018)	Overfished	Yes
	Overfishing	Not likely
Management Measures in Effect		Rec. 15-06

[1] Estimated catch for the Northwest stock as of 3 September 2020. Catch does not include all dead discards and includes no mortalities resulting from live releases.

[2] Value obtained with the ICM model. The reference point used (SPR_{MER}) is a proxy for B_{MSY}.

[3] Value obtained with the SAFE approach for the North Atlantic.

Northwest Porbeagle Management Recommendations

Animals (#)	Ton (mt)	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
0	0	2%	21%	47%	68%	83%	92%	96%	98%	99%	99%	100%
1000	31	3%	21%	44%	63%	77%	87%	92%	95%	97%	98%	99%
2000	61	2%	19%	40%	57%	71%	81%	87%	91%	94%	95%	96%
3000	92	1%	16%	35%	50%	62%	72%	79%	85%	88%	90%	92%
4000	122	2%	15%	32%	47%	58%	66%	73%	78%	82%	84%	87%
5000	153	2%	13%	27%	41%	50%	58%	64%	68%	72%	76%	78%
6000	183	1%	12%	25%	37%	45%	52%	57%	62%	65%	67%	70%
7000	214	2%	10%	22%	32%	39%	46%	50%	54%	57%	60%	62%
8000	245	2%	10%	19%	27%	34%	39%	44%	47%	50%	53%	55%
9000	275	2%	8%	17%	23%	30%	34%	38%	41%	43%	45%	47%
10000	306	2%	8%	14%	20%	25%	29%	31%	34%	36%	38%	39%
11000	336	1%	6%	13%	17%	21%	25%	27%	29%	31%	32%	33%
12000	367	2%	7%	11%	15%	18%	21%	23%	24%	26%	27%	28%
13000	398	2%	5%	9%	12%	14%	16%	18%	19%	20%	21%	22%
14000	428	2%	5%	7%	9%	12%	13%	14%	15%	16%	17%	18%
15000	459	1%	3%	5%	6%	8%	9%	10%	11%	11%	12%	12%
16000	489	2%	3%	4%	5%	6%	7%	8%	9%	9%	10%	10%
17000	520	2%	2%	3%	4%	5%	5%	6%	6%	6%	7%	7%
18000	550	2%	2%	2%	3%	3%	4%	4%	4%	5%	5%	5%
19000	581	2%	1%	2%	2%	3%	3%	3%	3%	3%	3%	4%
20000	612	2%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%
21000	642	2%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%
22000	673	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
23000	703	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24000	734	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Kobe II strategy matrix showing the probability of being above the overfished reference point (a proxy for BMSY) by 5-year time period for removals scenarios ranging from 0 to 24,000 individuals (0-734 mt) for Porbeagle in the Northwest Atlantic.

Proposed 2021 SCRS Calendar

	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE
January					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
February								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
March	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
April				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
May						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
June		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
July				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
August							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
September			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					
October					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
November	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
December			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				

Billfishes Intersessional
TT MSE**
SWO Data preparatory
Blue shark Data Preparatory
BFT Intersessional
SWO MSE**
BET Data preparatory
SC-Ecosystems
WG Stock Assess. Methods
SMT intersessional
SWO Stock Assessment
Blue shark Stock Assessment
ALB Intersessional
ALB Intersessional
BFT MSE Tech. Group**
BET Stock assessment
SCRS Species Groups*
BFT 2nd Intersessional
SCRS SG
SCRS Plenary*

(*) Meetings of ALB, BFT, BIL, SHK, SMT, SWO, TRO and SC-STATS
Free day in ICCAT
(+) SC STATS will be on 27 Sep 2021
Meeting of technical nature
++ No funding to be provided

2021 Commission and SCRS/Commission joint meetings are yet to be determined and are not shown

This calendar of the SCRS meetings for 2021, based on in-person meetings. If online meetings are needed, this schedule will necessarily be modified to account for the number of days assigned to each meeting (generally more days will be required if meetings are online) particularly in the case of those Species Groups that will carry out stock assessments.