REPORT OF THE SECOND INTERSESSIONAL MEETING OF PANEL 2 ON BLUEFIN TUNA MANAGEMENT STRATEGY EVALUATION (BFT MSE)

(Online, 9-10 May 2022)

1. Opening of the meeting and meeting arrangements

The meeting was opened by the Chair of Panel 2, Mr. Shingo Ota (Japan).

2. Nomination of Rapporteur

Mr. Mathieu Pellerin (Canada) was appointed as Rapporteur.

3. Adoption of Agenda

The SCRS suggested to add an item of discussion regarding how to obtain feedback from the CPCs to the SCRS to inform finalization of Candidate Management Procedures (CMPs) development in good time before the September meeting of the BFT Technical Sub-group on MSE. However, the agenda did not need amendment and this topic was discussed in Agenda item 8 (Other matters). The Agenda was adopted and is included in **Appendix 1**.

The List of Participants is included in **Appendix 2**.

4. Update on BFT MSE framework and Candidate Management Procedure (CMPs) by SCRS
5. CMP performance, refinement and selection

These Agenda items were discussed together.

Dr. John Walter (Rapporteur for the West Atlantic bluefin tuna stock) presented an update on the BFT-MSE framework, including CMPs development, performance, refinement and selection. There are currently 8 candidate CMPs remaining that are under development by 6 different developers. All of them currently assume a 2-year management cycle and calculate separate total allowable catches (TACs) for the West and East management areas. The SCRS rigorously reviewed all western and eastern indices, resulting in two indices being deemed not usable in their present condition by the MSE. After this, the choice of indices used in each CMP has been at the discretion of developers with emphasis placed on whether the indices perform well in the CMPs.

SCRS responses to feedback provided at the March 4 Panel 2 meeting

With regards to the B_{LIM} statistic, representing the biomass limit reference point of stock size below which recruitment and yield would likely be impaired, the SCRS proposed a value of 0.4 dynamic SSB_{MSY}. Panel 2 will need to decide on the percentage probability risk of falling below B_{LIM}, using the Lowest Depletion (LD*) performance statistic over projection years 11-30 (e.g., LD^*_5, LD^*_{10} or LD^*_{15}). The SCRS Chair noted that while this management objective expresses the intention of the Panel regarding ensuring stock safety, the MSE operating models have been intentionally designed to cover a wide range of plausible scenarios, including scenarios that depict the stocks in a depleted state at the start of the 30-year projection period. In light of this, for purposes of analysis and evaluation, time is provided for the CMPs to operate. In this case, therefore, the LD* value will be evaluated across the years 11-30 in the projection.

At the Intersessional Meeting of Panel 2 (including BFT MSE) (1-4 March 2022), CPCs expressed different point of views on % TAC change limits between management cycles. The requested scenarios to be tested were: +20%/-30%; +20%/-20%; +20%/-10% and no limits. Through their testing, the developers found that increased performance can be achieved when allowing the TAC to be reduced by more than 20% between management cycles, as this allows adjustment of the TAC more quickly in response to a drop in the stock indicators. The +20%/-10% scenario did not allow the CMPs to stay over B_{LIM} 0.4 using LD^*_{15}. Based on testing done to date, the SCRS recommends the +20%/-30% scenario as it allows faster reaction, and it provides both adequate safety and acceptable stability in yield.

Panel 2 previously requested additional statistics to evaluate performance, including an F statistic representing the probability of being above dynamic SSB_{MSY} for each projection year and after 30 years. The SCRS suggested using the statistic U/U_{MSY}. U (exploitation rate in biomass) is annual catch divided by the total annual biomass. U_{MSY} is the fishing rate that achieves SSB_{MSY} in equilibrium. This can then be used to calculate other related statistics such as probability of being in the Kobe green quadrant (neither overfished nor overfishing), probability of not being in the red Kobe quadrant (both overfished and overfishing), and overfished trend. Panel 2 agreed to move forward with U/U_{MSY} as the F statistic. One CPC requested having a time series graph showing U/U_{MSY} to see what years the stock is being overfished, and the SCRS mentioned that this is under development and should be available very soon.

As requested at the previous meeting, the SCRS looked at the possibility of producing spider plots (also known as radar plots) in addition to quilt plots but noted that there are currently too many dimensions considering the number of CMPs under development, which makes these plots very difficult to interpret. The SCRS suggested that spider plots could be produced after the process of culling CMPs.

Process of CMPs development/performance tuning and culling

The SCRS proposed a two-step process for CMPs development and performance tuning. In step 1 which is development tuning, CMPs are tested on a common Br30 performance level (currently 1.0, 1.25 or 1.5, for each stock). The SCRS will give advice on ordering CMPs across performance statistics corresponding to yield, status, safety, and stability objectives. Panel 2 will then need to evaluate relative performance of CMPs in order to cull underperforming CMPs. At this point, development tuning is nearly complete.

In step 2, the top performing CMPs that have been selected in step 1 will be performance tuned. All CMPs include at least one adjustable setting to determine how heavily or lightly it applies fishing pressure to achieve desired performance on the risk-reward trade-off for both the eastern stock and western stock, which allows tuning to achieve higher yields while also meeting safety, status, and stability objectives. Performance tuning has not yet begun and will occur following the process of culling CMPs.

With regard to the culling process, Panel 2 will first need to agree on a set of performance statistics and minimum standards to evaluate CMPs performance. Then, the SCRS will review CMPs and compare them to the previously established performance standards. CMPs deemed by the SCRS to not perform satisfactorily may be culled by the SCRS and not recommended to Panel 2, with results and rationale provided. The SCRS will use scientific rationale (e.g., lack of performance across robustness tests and substantially low ranking across performance statistics) for any decisions to cull CMPs. CMP developers may also withdraw CMPs if they are not performing as desired. At its October meeting, Panel 2 may first select a CMP and then select from within a range of tested performance tuning settings.

6. Key decisions
7. Feedback and guidance on trade-offs and additional changes to CMPs by PA2 to the SCRS

These Agenda items were discussed together.

Decision point #1: Agreement on operational management objectives percentages, timeframes and performance statistics

For the consideration of the Panel, the United States submitted the, "Working Document for proposed Panel 2 guidance to the SCRS on Bluefin Tuna Management Objectives for MSE Testing". Following the discussion as set forth below, the document was revised (**Appendix 3**) to further refine the interim operational management objectives to support the next step in the MSE process.

a) Status

On the % probability of keeping the stock in the green quadrant of the Kobe matrix, 60% remains the functional minimum threshold for testing, which does not preclude selection of a higher threshold later. In particular, one CPC recommended keeping both 60% and 70% on the table since development tuning is not completed for all CMPs. The SCRS noted that they can currently keep both targets of 60% and 70% without excluding one or another. One CPC noted that "60% or greater" would include "70% or greater" and thus

are functionally the same. Panel 2 thus agreed to keep both targets of 60% and 70% of the stock remaining in the green quadrant of the Kobe matrix after 30 years for the time being.

b) Safety

Panel 2 endorsed the proposed B_{LIM} statistic of 0.4 dynamic SSB_{MSY} and using a percentile of LD* falling below that value as a measure of success on this objective. However, Panel 2 did not reach consensus on the percentile to use between LD^*_5, LD^*_{10} or LD^*_{15} over projection years 11-30. Therefore, Panel 2 agreed to go forward with LD^*_{15} at this stage for the purpose of comparing CMPs performance. Some CPCs expressed a preference for LD^*_5 and LD^*_{10}. One CPC suggested that while performance tuning proceeds at LD^*_{15} level as a minimum standard, preference could be given to CMPs that succeed at LD^*_{10} and those CMPs could be ranked higher, but there was no consensus to proceed in this way at this time. In a later step (before the 3rd Intersessional Meeting of Panel 2 on BFT MSE (14 October 2022), Panel 2 will need to decide on the percent probability of breaching B_{LIM} to be included as the final operational management objective.

United States had suggested the following text for the operational management objective guidance on Safety in their document:

- There should be no more than a 15% probability of the stocks falling below B_{LIM} at any point during the 30-year projection period.

- The SCRS will provide to Panel 2 relevant performance statistics to support evaluation of the likelihood of each stock falling below B_{LIM}. Key statistics are the lowest depletion statistics LD5%, LD10%, LD15% across years 11-30 in the projection period. The LD value is evaluated relative to the SCRS-adopted B_{LIM} (40% of dynamic SSB_{MSY}). Based on this analysis, Panel 2 will decide on the percent probability to be included as the final operational management objective.

During the discussion, some CPCs raised concern that the lowest depletion statistics would only be considered across years 11-30 rather than the full 30-year projection period, noting that this seemed inconsistent with how the text of the management objective was written. The United States suggested that a footnote be inserted to explain the apparent discrepancy between the aspirational nature of the text of the management objective and the practical approach needed to evaluate performance. The proposed footnote read as follows:

> "While this management objective expresses the intention of the Panel regarding ensuring stock safety, the MSE operating models have been intentionally designed to cover a wide range of plausible scenarios, including scenarios that depict the stocks in a depleted state at the start of the 30-year projection period. In light of this, for purposes of analysis and evaluation, time is provided for the CMPs to rebuild such stocks before beginning an evaluation of a relative biomass status performance statistic (such as LD). In this case, therefore, the LD value will be evaluated across the years 11-30 in this projection period."

The Panel took note of this matter but decided against including such a footnote in the revised document. Instead, it was agreed that the explanation of this issue would be included in the meeting report and that the apparent discrepancy in the language of the management objective and how it would be evaluated should be addressed by adding the phrase "in principle" to the management objective reflected in the revised document, as follows:

- There should be no more than a 15% probability of the stocks falling below B_{LIM} at, in principle, any point during the 30-year projection period.

c) Stability

On stability and in light of the SCRS recommendation to use the +20%/-30% scenario for TAC variation, some CPCs noted a preference for the scenario of +20%/-20%, while indicating that they could support the SCRS recommendation. One CPC mentioned that supporting +20%/-30% would be easier with a 3-year management cycle. However, the SCRS noted that testing or adopting a CMP with a 3-year management cycle would imply changing these percentages to more conservative values in order to achieve the same results. The SCRS said they would continue testing based on the range of views expressed and did not need a final agreement at this time. Panel 2 agreed to request the SCRS to conduct testing using a two-by-two

matrix consisting of 2 and 3 year management cycles with +20%/-30% and +20%/-20% TAC variation scenarios, as shown in the table below. A limited number of CMPs to be selected by the SCRS in consultation with CMP developers will be tested in accordance with the matrix to see if the same testing should be conducted for other CMPs.

	2 year management cycle	*3 year management cycle*
TAC variation: +20%/-20%	2 year management cycle with +20%/-20% TAC variation scenario	3 year management cycle with +20%/-20% TAC variation scenario
TAC variation: +20%/-30%	2 year management cycle with +20%/-30% TAC variation scenario	3 year management cycle with +20%/-30% TAC variation scenario

The SCRS also noted that several CMPs indicate possible initial decreases in TAC which may be due to how CMPs are structured and how they behave during the transition period, and often not a result of underlying stock declines. Therefore, the SCRS suggested a phase-in approach for the first two management cycles of the MSE, during which limits for TAC change of +20%/-10% may be desirable as constraints to build into CMPs. Most CPCs supported the phase-in approach, but no final decision was made during the meeting.

Decision point #2: Does Panel 2 approve the proposed two-step process for CMPs development and performance tuning?

Recognizing that SCRS will not cull CMPs without appropriate Panel 2 input, there was no opposition from Panel 2 members with regard to the two-step process for CMPs development and performance tuning proposed by the SCRS and described in this report under item 5 above. The SCRS noted that performance tuning after the 3rd Intersessional Meeting of Panel 2 on BFT MSE (14 October 2022) would be difficult, but that they would be able to perform some final tuning on selected CMPs.

Decision point #3: Does Panel 2 approve the process for narrowing (culling) of CMPs?

Panel 2 agreed with the culling process proposed by the SCRS and described in this report under item 5. However, Panel 2 also agreed to not cull any CMPs at the May meeting since the development of CMPs is not completed yet.

For CMPs comparison purposes, there were various performance statistics on which Panel 2 agreed and the SCRS will produce a list of these performance statistics. Panel 2 also agreed to request the SCRS to add a column in the quilt plot showing the number of surveys and CPUE indices of each CMPs. The SCRS suggested that this could be used as a factor after the CMPs comparison is made, to exclude CMPs that perform similarly.

Decision point #4: Relative weighting of key performance statistics

To facilitate discussion, the SCRS provided three examples of weighting schemes for the key performance statistics of the primary quilt plot as shown in the table below. The ultimate decision to use one of the three examples, to apply all three and compare among them, and/or to consider the use of other weighting schemes to help with the final selection of an MP is up to Panel 2 and is a question to be considered in the future. PGK is not weighted as the CMPs are tuned to achieve a common Status objective (Br30). The purpose of the relative weightings is to facilitate decision making but is not intended to be the sole criterion for CMP selection.

There was general support from Panel 2 members for maintaining the default weighting scheme (equal weighting of yield, stability, and safety) for ranking CMP performance at this point in the process, but the approach to ranking could be revisited later in the process. For instance, once CMPs that fail the safety management objective are eliminated, a process of weighting could be valuable to help in the final selection among top performing CMPs. One CPC asked if it would be possible to have different weighting schemes for East and West stocks, and the SCRS answered that these elements will surface later during performance tuning. A representative of the SCRS noted the general support by the Panel for the default weighting scheme at this stage of the process and indicated that this was all the direction SCRS needed at this time. In that regard, SCRS would see if CMP results are sensitive to the default weighting scheme.

Examples of weighting schemes	*Status PGK (mean)*	*Yield AvC10 (50%)*	*Yield AvC30 (50%)*	*Stability VarC (50%)*	*Safety LD* (%TBD)*
Default: Equal across yield, stability, and safety	0	0.5	0.5	1	1
Sensitivity 1: Double weighting of safety	0	0.25	0.25	0.5	1
Sensitivity 2: Double weighting of yield	0	1	1	1	1

PGK: Probability of Green Kobe ($SSB > SSB_{MSY}$ & $U < U_{MSY}$) after 30 projected years
AvC10: Mean catches over first 10 projected years
AvC20: Mean catches over first 20 projected years
VarC: Average annual variation in catches

8. Other matters

After the meeting, the initial calendar only included one remaining meeting of Panel 2 to take place before the Commission Plenary, scheduled for 14 October 2022. Based on the work remaining, it was decided to organize another 1-day online meeting of Panel 2 during the week of 11 July (ideally late in the week) as an additional feedback point for the SCRS and decision point for Panel 2. The ICCAT Secretariat will coordinate with the SCRS to propose timing for this meeting

A key aspect of the refinement of CMPs after this meeting will involve making adjustments to the CMPs to provide anticipated future TAC trajectories in line with stakeholder preferences, both for short-term stability and longer-term trends and variability. This will require dialogue on how best to provide feedback from CPCs and their industry to the SCRS to inform finalization of CMPs development. This process is to be discussed in more detail before and at the additional July meeting.

9. Adoption of Report and closure

The Chair thanked all participants for their work and adjourned the meeting. The meeting report was adopted by correspondence.

Appendix 1

Agenda

1. Opening of the meeting and meeting arrangements
2. Nomination of Rapporteur
3. Adoption of Agenda
4. Update on BFT MSE framework and Candidate Management Procedure (CMPs) by SCRS
    a) SCRS responses to feedback provided at the March PA2 meeting (+20%/-30%; +20%/-20%; +20%/ -10% and no limit TAC change explorations, index evaluation table)
    b) Additional requested statistics (F, probability of being above dynamic SSB_{MSY} for each projection year and after 30 years and statistics requested simply for reporting)
    c) SCRS to provide a proposal for a B_{LIM} value solely within the MSE framework for the purposes of CMP selection, PA2 to discuss and eventually select an associated probability (see section 6 under key decisions)
5. CMP performance, refinement and selection
    a) Process of development tuning and performance tuning described further
    b) PA2 will see complete set of existing CMPs which will illustrate performance tradeoffs and facilitate decisions in section 7
    c) PA2 will see BFT Species Group recommendations for the process to select a limited set of top performing CMPs
6. Key decisions
    a) Final operational management objectives and performance statistics
    b) PA2 approval of process for development tuning and performance tuning
    c) Approval of process for narrowing (culling) of CMPs to retain a reduced subset for further consideration
7. Feedback and guidance on trade-offs and additional changes to CMPs by PA2 to SCRS
    a) PA2 provides further feedback on trade-off preferences
    b) Possible 'phase-in' period for management procedures
8. Other matters
9. Adoption of report and closure

Appendix 2

List of participants[1,2]

CONTRACTING PARTIES

ALGERIA

Kouadri-Krim, Assia
Sous-Directrice infrastructures, industries et services liés à la pêche, Ministère de la Pêche et des Productions Halieutiques, Direction du développement de la pêche, Route des Quatre Canons, 1600
Tel: +213 558 642 692, Fax: +213 214 33197, E-Mail: assiakrim63@gmail.com; assia.kouadri@mpeche.gov.dz

CANADA

Waddell, Mark[1]
Director General, Fisheries and Oceans Canada, 200 Kent Street, Ottawa ON K1A0E6
Tel: +1 613 897 0162, E-Mail: mark.waddell@dfo-mpo.gc.ca

Atkinson, Troy
Nova Scotia Swordfisherman's Association, 155 Chain Lake Drive, Suite #9, Halifax, NS B3S 1B3
Tel: +1 902 499 7390, E-Mail: hiliner@ns.sympatico.ca

Couture, John
Oceans North, 74 Bristol Drive, Sydney NS B1P 6P3
Tel: +1 902 578 0903, E-Mail: jcouture@oceansnorth.ca

Elsworth, Samuel G.
South West Nova Tuna Association, 228 Empire Street, Bridgewater, NS B4V 2M5
Tel: +1 902 543 6457, E-Mail: sam.fish@ns.sympatico.ca

Hanke, Alexander
Research Scientist, Fisheries and Oceans Canada, 531 Brandy Cove Road, St. Andrews, NB E5B 2L9
Tel: +1 506 529 5912, E-Mail: alex.hanke@dfo-mpo.gc.ca

Kay, Lise
Policy Advisor, Fisheries and Oceans Canada, 200 Kent Street, Ottawa, ON K1A 0E6
Tel: +1 343 542 1301, E-Mail: Lise.Kay@dfo-mpo.gc.ca

Pellerin, Mathieu
Resource Manager, Fisheries and Oceans Canada, 104 Rue Dalhousie, QC G1K 7Y7
Tel: +1 418 572 9957, E-Mail: mathieu.pellerin@dfo-mpo.gc.ca

Ramsay, Laura
Prince Edward Island Fishermen's Association, Suite 102, 420 University Avenue, Charlottetown, P.E.I C1A 7Z5
Tel: +1 902 393 2281; +1 902 566 4050, E-Mail: laura@peifa.org; researchpeifa@eastlink.ca

Schleit, Kathryn
Oceans North, 1533 Barrington Street, Suite 200, Halifax, NS B3J 1Z6
Tel: +1 902 488 4078, E-Mail: kschleit@oceansnorth.ca

CHINA (P.R.)

Feng, Ji
Shanghai Ocean University, 999 Hucheng Huan Rd, 201306 Shanghai
Tel: +86 159 215 36810, E-Mail: fengji_shou@163.com; 276828719@qq.com; f52e@qq.com

Huang, Yucheng
Shanghai Ocean University, 999 Hucheng Huan Road, Shanghai, 201306
Tel: +86 177 989 21637, E-Mail: yuchenhuang0111@163.com

[1] Head Delegate.

[2] Some delegate contact details have not been included following their request for data protection.

Yang, Shiyu
Shanghai Ocean University, 999 Hucheng Huan Road, Shanghai, 201306
Tel: +86 185 021 91519, E-Mail: yangshiyu_shou@163.com

Zhang, Fan
Shanghai Ocean University, 999 Hucheng Huan Rd, 201306 Shanghai
Tel: +86 131 220 70231, E-Mail: f-zhang@shou.edu.cn

EGYPT

Atteya, Mai
Production Research Specialist, 210, area B - City, 5th District Road 90, 11311 New Cairo
Tel: +201 003 878 312, Fax: +202 281 117 007, E-Mail: janahesham08@gmail.com

Badr, Abdelrazek Mohamed
Fisheries Specialist, 210, area B - City, 5th District Road 90, 11311 New Cairo
Tel: +201 228 708 220, Fax: +202 281 117 007, E-Mail: abdelrazek.mohamed004@gmail.com

Badr, Fatma Elzahraa
Fish Production Specialist, Agreements Administration, Lakes and Fish Resources Protection and Development Agency, 210, area B - City, 5th District Road 90, 11311 New Cairo
Tel: +201 092 348 338, Fax: +202 281 117 007, E-Mail: fatima.elzahraa.medo@gmail.com

Fahim, Reda Magdy
Naval Academy St. Abu Qir - Alexandria, 21937 New Cairo
Tel: +202 100 257 6734, Fax: +202 281 17007, E-Mail: reda_fahim2010@yahoo.com

EUROPEAN UNION

Jessen, Anders [1, 2]
Deputy Director, Head of Unit - European Commission, DG Mare B 2, B-1049 Brussels, Belgium

Aláez Pons, Ester
International Relations Officer, European Commission - DG MARE - Unit B2 - RFMOs, Rue Joseph II - 99 03/057, 1049 Brussels, Belgium
Tel: +32 2 296 48 14; +32 470 633 657, E-Mail: ester.alaez-pons@ec.europa.eu

Biagi, Franco
Senior Expert Marine & Fishery Sciences, Directorate General for Maritime Affairs and Fisheries (DG-Mare) - European Commission, Unit C3: Scientific Advice and Data Collection, Rue Joseph II, 99, 1049 Brussels, Belgium
Tel: +322 299 4104, E-Mail: franco.biagi@ec.europa.eu

Costica, Florina
DG Mare, Rue Joseph II, 99, 1040 Brussels, Belgium
Tel: +32 493 540 902, E-Mail: florina.costica@ec.europa.eu

Howard, Séamus
European Commission, DG MARE, Rue Joseph II 99, 1000 Brussels, Belgium
Tel: +32 229 50083; +32 488 258 038, E-Mail: Seamus.HOWARD@ec.europa.eu

Khalil, Samira
European Commission, DG Maritime Affairs and Fisheries, Unit B-1 "International Affairs, Law of the Sea and RFOs", J II - 99 3/74, Brussels, Belgium
Tel: +32 2 298 03 39; +32 229 11111, E-Mail: samira.khalil@ec.europa.eu

Malczewska, Agata
European Commission DG MARE, JII-99 4/073, 1000 Belgium, Belgium
Tel: +32 229 6761; +32 485 853 835, E-Mail: agata.malczewska@ec.europa.eu

Andonegi Odriozola, Eider
AZTI, Txatxarramendi ugartea z/g, 48395 Sukarrieta, Bizkaia, Spain
Tel: +34 661 630 221, E-Mail: eandonegi@azti.es

Attard, Nolan
Fisheries Research Unit Department of Fisheries and Aquaculture, 3303 Marsa, Malta
Tel: +356 795 69516; +356 229 26894, E-Mail: nolan.attard@gov.mt

Battez, Carmen
Organisation de Producteurs Du Sud - France, Quai Commandant Méric Criée aux Poissons des Pays d'Agde, BP 926, 34300, France
Tel: +33 631 390 520, E-Mail: opdusud.med@gmail.com

Conte, Fabio
Dipartimento delle Politiche Europee e Internazionali, Ministero delle Politiche Agricole Alimentari, Forestali e Del Turismo, Direzione Generale della Pesca Marittima e dell'Acquacoltura - PEMAC III, Via XX Settembre, 20, 00187 Rome, Italy
Tel: +39 06 4665 2838, Fax: +39 06 4665 2899, E-Mail: f.conte@politicheagricole.it

Cosnard, Nolwenn
OP Sathoan - France Mediterranée, 34200 Séte Hérault, France
Tel: +33 646 592 386, E-Mail: nolwenn@sathoan.fr; nolwenn.sathoan@gmail.com

Crespin, Rosalie
Comité National des Pêches Maritimes et des Elevages Marins, 134 avenue Malakoff, 75116 Paris, France
Tel: +33 172 711 814, E-Mail: rcrespin@comite-peches.fr

Eliasen, Peter Jørgen
Senior consultant, Ministry of Food, Agriculture and Fisheries, Sustainable Fisheries, Fisheries Policy, Slotholmsgade 12, 1216 Copenhagen, Denmark
Tel: +452 261 5937, E-Mail: pejoel@mfvm.dk

García García, Beatriz
Inspectora de Pesca, Ministerio de Agricultura, Pesca y Alimentación. Secretaría General de Pesca, S.G. Control e Inspección, C/ Velázquez, 147 - 3ª planta, 28002 Madrid, Spain
Tel: +34 680 574 382, E-Mail: bggarcia@mapa.es

Gatt, Mark
Ministry for Agriculture, Fisheries, Food and Animal Rights Fort San Lucjan, Triq il-Qajjenza, Department of Fisheries and Aquaculture, Malta Aquaculture Research Centre, Fort San Lucjan, MRS 3303 Marsaxlokk, Malta

Gordoa, Ana
Senior Scientist, Centro de Estudios Avanzados de Blanes (CEAB - CSIC), Acc. Cala St. Francesc, 14, 17300 Blanes, Girona, Spain
Tel: +34 972 336101; +34 666 094 459, E-Mail: gordoa@ceab.csic.es

Guerin, Benoît
1407 Chemin des Maures, 83400 St Raphaël, France
Tel: +33 632 02 68 15, E-Mail: bgseaconsulting@gmail.com

Hénissart-Souffir, Clara
CRPMEM PACA, Op du Levant 26 quai de rive neuve, 13008 Marseille, France
Tel: +33 688 253 818, E-Mail: contact@opdulevant.fr; crpmem.paca@wanadoo.fr

Houlihan, Julie Marie
Department of Agriculture, Food and the Marine, National Seafood Centre, Clogheen, Clonakilty, P85 TX47 Cork, Ireland
Tel: +353 870 604 148, E-Mail: juliemarie.houlihan@agriculture.gov.ie

Lanza, Alfredo
Ministero delle Politiche Agricole Alimentari, Forestali e Del Turismo, Direzione Generali della Pesca Maritima e dell'acquacoltura - PEMAC VI, Via XX Settembre, 20, 00187 Rome, Italy
Tel: +39 331 464 1576; +39 646 652 843, Fax: +39 646 652 899, E-Mail: a.lanza@politicheagricole.it

Lintanf, Philippe
Chef du BAEI, Ministère de la mer - Direction Générale des Affaires Maritimes, de la Pêche et de l'Aquaculture (DGAMPA), Tour Séquoia - 1 place Carpeaux, 92055 Paris-La Défense, France
Tel: +33 1 40 81 68 05, E-Mail: philippe.lintanf@agriculture.gouv.fr

Males, Josip
Institute of Oceanography and Fisheries, Šetalište I. Meštrovića 63, 21000 Split, Croatia
Tel: +385 214 08000, Fax: +385 213 58650, E-Mail: josip-males@hotmail.com; males@izor.hr

Maxwell, Hugo
Marine Institute, Furnance, Newport, County Mayo, F28EV18, Ireland
Tel: +353 894 836 530; 877 621 337, E-Mail: hugo.maxwell@marine.ie

Milly, David
Directeur de l'OP Pêcheurs D'Aquitaine, membre des Commissions thon rouge et thon blanc du CNPMEM, Quai Pascal Elissalt BP 328, 64500 Ciboure, France
Tel: +3305 5947 1939; +33 0617 29 90 56, Fax: +33 05 59478113, E-Mail: david.milly@pecheursdaquitaine.eu

Monteiro de Barros, Vanessa
DGRM, Avenida de Brasilia, 1449-030 Lisbon, Portugal
Tel: +351 914 692 038, E-Mail: vbarros@dgrm.mm.gov.pt

Paumier, Alexis
Ministère de la mer - Direction Générale des Affaires Maritimes, de la Pêche et de l'Aquaculture (DGAMPA), Tour Sequoia, 75000 Paris, France
Tel: +33 687 964 560, E-Mail: alexis.paumier@agriculture.gouv.fr

Rodríguez-Marín, Enrique
Ministerio de Ciencia e Innovación. Centro Nacional Instituto Español de Oceanografía (CNIEO) del Consejo Superior de Investigaciones Científicas (CSIC)., C.O. de Santander, Promontorio de San Martín s/n, 39004 Santander, Cantabria, Spain
Tel: +34 942 291 716, Fax: +34 942 27 50 72, E-Mail: enrique.rmarin@ieo.es

Rouyer, Tristan
Ifremer - Dept Recherche Halieutique, B.P. 171 - Bd. Jean Monnet, 34200 Sète, Languedoc Rousillon, France
Tel: +33 782 995 237, E-Mail: tristan.rouyer@ifremer.fr

Rueda Ramírez, Lucía
Ministerio de Ciencia, Innovación y Universidades, Instituto Español de Oceanografía Málaga, Puerto pesquero s/n, 29640 Fuengirola Málaga, Spain
Tel: +34 952 197 124, E-Mail: lucia.rueda@ieo.es

Sarricolea Balufo, Lucía
Secretaría General de Pesca, Ministerio de Agricultura, Pesca y Alimentación, Calle Velázquez, número 144, 28006 Madrid, Spain
Tel: +34 913 476 170; +34 618 330 518, E-Mail: lsarricolea@mapa.es

Teixeira, Isabel
Chefe de Divisão de Recursos Externos da Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos, DGRM, Avenida Brasilia, 1449-030 Lisbon, Portugal
Tel: +351 919 499 229, E-Mail: iteixeira@dgrm.mm.gov.pt

FRANCE (ST. PIERRE & MIQUELON)

Monneau, Marianna[1]
Chargée de mission, Bureau des affaires européennes et internationales, Direction Générale des Affaires Maritimes, de la Pêche et de l'Aquaculture (DGAMPA), Ministère de l'Agriculture et de l'Alimentation, Tour Séquoia - 1 Place Carpeaux, 92055 La Défense, Cedex
Tel: +33 140 819 038, E-Mail: marianna.monneau@agriculture.gouv.fr

JAPAN

Ota, Shingo[1]
Japan's Commissioner to ICCAT, Advisor to the Minister of Agriculture, Forestry and Fisheries, 1-2-1 Kasumigaseki, Chiyoda-Ku, Tokyo 100-8907
Tel: +81 3 3502 8460, Fax: +81 3 3504 2649, E-Mail: shingo_ota810@maff.go.jp

Daito, Jun
Manager, Japan Tuna Fisheries Co-operative Association, 31-1, Eitai 2-Chome, Koto-ku, Tokyo 135-0034
Tel: +81 356 462 382, Fax: +81 356 462 652, E-Mail: daito@japantuna.or.jp

Fukuda, Hiromu
Head of Group, Highly Migratory Resources Division, Fisheries Stock Assessment Center, Fisheries Resources Institute, Japan Fisheries Research and Education Agency, 2-12-4 Fukuura, Kanazawa, Yokohama, 234-8648
Tel: +81 45 788 7936, E-Mail: fukudahiromu@affrc.go.jp

Fukuda, Takumi
Counsellor, Resources Management Department, Fisheries Agency of Japan, 1-2-1 Kasumigaseki, Tokyo Chiyoda-Ku 100-8907
Tel: +81 3 350 28460, E-Mail: takumi_fukuda720@maff.go.jp

Miura, Nozomu
Assistant Director, International Division, Japan Tuna Fisheries Co-operative Association, 2-31-1 Eitai Koto-ku, Tokyo 135-0034
Tel: +81 3 5646 2382, Fax: +81 3 5646 2652, E-Mail: miura@japantuna.or.jp; gyojyo@japantuna.or.jp

Nakatsuka, Shuya
Deputy Director, Highly Migratory Resources Division, Fisheries Resources Institute, Japan Fisheries Research and Education Agency, 2-12-4, Fukuura, Kanazawa Kanagawa, 236-8648
Tel: +81 45 788 7950, E-Mail: snakatsuka@affrc.go.jp

Tsukahara, Yohei
Scientist, Highly Migratory Resources Division, Fisheries Stock Assessment Center, Fisheries Resources Institute, Japan Fisheries Research and Education Agency, 2-12-4, Fukuura, Kanagawa, Yokohama, Shizuoka Shimizu-ku 236-8648
Tel: +81 45 788 7937, Fax: +81 54 335 9642, E-Mail: tsukahara_yohei35@fra.go.jp; tsukahara_y@affrc.go.jp

Uozumi, Yuji
Adviser, Japan Tuna Fisheries Co-operation Association, Japan Fisheries Research and Education Agency, Tokyo Koutou ku Eitai 135-0034

KOREA (REP.)

Yang, Jae-geol
Policy Analyst, Korea Overseas Fisheries Cooperation Center, 6th FL, S Building, 253, Hannuri-daero, 30127 Sejong
Tel: +82 44 868 7364, Fax: +82 44 868 7840, E-Mail: jg718@kofci.org

MOROCCO

Abid, Noureddine
Chercheur et ingénieur halieute au Centre Régional de recherche Halieutique de Tanger, Responsable du programme de suivi et d'étude des ressources des grands pélagiques, Centre régional de l'INRH à Tanger/M'dig, B.P. 5268, 90000 Drabed, Tanger
Tel: +212 53932 5134; +212 663 708 819, Fax: +212 53932 5139, E-Mail: nabid@inrh.ma; noureddine.abid65@gmail.com

Bensbai, Jilali
Chercheur, Institut National de Recherche Halieutique à Casablanca - INRH/Laboratoires Centraux, Ain Diab près du Club équestre OULAD JMEL, Rue Sidi Abderrhman / Ain Diab, 20100 Casablanca
Tel: +212 661 59 8386, Fax: +212 522 397 388, E-Mail: bensbaijilali@gmail.com

Haoujar, Bouchra
Cadre à la Division de Durabilité et d'Aménagement des Ressources Halieutiques, Département de la Pêche Maritime, Nouveau Quartier Administratif, BP 476, 10150 Haut Agdal, Rabat
Tel: +212 253 768 8121, Fax: +212 537 688 089, E-Mail: haoujar@mpm.gov.ma

Hassouni, Fatima Zohra
Chef de la Division de Durabilité et d'Aménagement des Ressources Halieutiques, Département de la Pêche maritime, Nouveau Quartier Administratif, Haut Agdal, B.P.: 476 Rabat
Tel: +212 537 688 122/21, Fax: +212 537 688 089, E-Mail: hassouni@mpm.gov.ma

NORWAY

Sørdahl, Elisabeth
Ministry of Trade, Industry and Fisheries, Department for Fisheries and Aquaculture, Kongensgate 8, Postboks 8090 Dep., 0032 Oslo
Tel: +47 22 44 65 45, E-Mail: elisabeth.sordahl@nfd.dep.no

Brix, Maja Kirkegaard Rodriguez
Directorate of Fisheries, Strandgaten 229, Postboks 185 Sentrum, 5804 Bergen
Tel: +47 416 91 457, E-Mail: mabri@fiskeridir.no; Maja-Kirkegaard.Brix@fiskeridir.no

Nottestad, Leif
Principal Scientist, Institute of Marine Research, Research Group on Pelagic Fish, P.O. Box 1870 Nordnesgaten, 33, 5817 Bergen, Hordaland county
Tel: +47 5 99 22 70 25, Fax: +47 55 23 86 87, E-Mail: leif.nottestad@hi.no

Sandberg, Per
Director, Statistics Department, Directorate of Fisheries, Postboks 185 Sentrum, 5804 Bergen
Tel: +47 03495, Fax: +47 55 23 8090, E-Mail: per.sandberg@fiskeridir.no

Selbekk, Kari
Kongens gate 8, 0153 Oslo
Tel: +47 911 95712, E-Mail: Kari.selbekk@nfd.dep.no

SENEGAL

Ndiaye, El Hadji
Direction des Pêches maritimes, 20000 Dakar
Tel: +221 77 543 6301, E-Mail: elhandiaye@yahoo.fr

Sèye, Mamadou
Ingénieur des Pêches, Chef de la Division Gestion et Aménagement des Pêcheries de la Direction des Pêches maritimes, Sphère ministérielle de Diamniadio Bâtiment D., 1, Rue Joris, Place du Tirailleur, 289 Dakar
Tel: +221 77 841 83 94, Fax: +221 821 47 58, E-Mail: mdseye@gmail.com; mdseye1@gmail.com; mdouseye@yahoo.fr

TUNISIA

Zarrad, Rafik
Chercheur, Institut National des Sciences et Technologies de la Mer (INSTM), BP 138 Ezzahra, Mahdia 5199
Tel: +216 73 688 604; +216 972 92111, Fax: +216 73 688 602, E-Mail: rafik.zarrad@gmail.com

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

Holdsworth, Kathryn[1]
Head of International Fisheries, Department for Environment, Food and Rural Affairs (DEFRA)
Tel: +44 7557 177 559, E-Mail: Kathryn.Holdsworth@defra.gov.uk

Fletcher, Fiona
Department for Environment, Food & Rural Affairs - DEFRA, Horizon House, Deanery Rd, Bristol BS1 5AH
Tel: +44 771 742 2562, E-Mail: Fiona.Fletcher@defra.gov.uk

King, Thomas
International Fisheries Policy Officer, Department for Environment, Food and Rural Affairs (Defra), Marine & Fisheries Directorate, First Floor, Seacole Wing, 2 Marsham Street, London SW1P 4DF
Tel: +44 777 661 5108, E-Mail: Thomas.King@defra.gov.uk

Pace, Matthew
Centre for Environment, Fisheries and Aquaculture Science - CEFAS, Lowestoft Suffolk NR33 0HT
Tel: +44 1502 521369, E-Mail: matthew.pace@cefas.co.uk

Wilson, Henry
Advisor, Turks & Caicos
E-Mail: HWilson@gov.tc

UNITED STATES

Kryc, Kelly[1]
U.S. Federal Government Commissioner to ICCAT and Deputy Assistant Secretary for International Fisheries, National Oceanic and Atmospheric Administration (NOAA), 1401 Constitution Ave, Washington, DC 20230
Tel: +1 202 961 8932; +1 202 993 3494, E-Mail: kelly.kryc@noaa.gov

Blankenbeker, Kimberly
Foreign Affairs Specialist, Office of International Affairs, Trade, and Commerce (F/IATC), NOAA, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring Maryland 20910
Tel: +1 301 427 8357, Fax: +1 301 713 1081, E-Mail: kimberly.blankenbeker@noaa.gov

Blankinship, David Randle
Chief, Atlantic Highly Migratory Species Management Division, NOAA - National Marine Fisheries Service, 263 13th Ave South, Saint Petersburg, Florida 33701
Tel: +1 727 824 5313, Fax: +1 727 824 5398, E-Mail: randy.blankinship@noaa.gov

Bogan, Raymond D.
Alternate U.S. Recreational Commissioner, Sinn, Fitzsimmons, Cantoli, Bogan, West and Steuerman, 501 Trenton Avenue, P.O. Box 1347, Point Pleasant Beach, Sea Girt New Jersey 08742
Tel: +1 732 892 1000; +1 732 233 6442, Fax: +1 732 892 1075, E-Mail: rbogan@lawyernjshore.com

Brown, Craig A.
Chief, Highly Migratory Species Branch, Sustainable Fisheries Division, Southeast Fisheries Science Center, NOAA, National Marine Fisheries Service, 75 Virginia Beach Drive, Miami, Florida 33149
Tel: +1 305 586 6589, E-Mail: craig.brown@noaa.gov

Delaney, Glenn Roger
Alternate U.S. Commercial Commissioner, 601 Pennsylvania Avenue NW Suite 900 South Building, Washington, D.C. 20004
Tel: +1 202 434 8220, Fax: +1 202 639 8817, E-Mail: grdelaney@aol.com

Golet, Walter
School of Marine Sciences, The University of Maine/Gulf of Maine Research Institute, 350 Commercial Street, Portland, Maine 04101-4618
Tel: +1 207 228 1671, E-Mail: walter.golet@maine.edu

Keller, Bryan
Foreign Affairs Specialist, Office of International Affairs and Seafood Inspection (F/IASI), NOAA, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, Maryland 20910
Tel: +1 202 897 9208; +1 301 427 7725, E-Mail: bryan.keller@noaa.gov

Lauretta, Matthew
Fisheries Biologist, NOAA Fisheries Southeast Fisheries Center, 75 Virginia Beach Drive, Miami, Florida 33149
Tel: +1 305 361 4481, E-Mail: matthew.lauretta@noaa.gov

Loughran, Tyler
NOAA, Herbert C. Hoover Building 1401 Constitution Avenue NW, Washington 20230
Tel: +1 206 920 4847, E-Mail: tyler.loughran@noaa.gov

McLaughlin, Sarah
Management and Program Analyst, NOAA - National Marine Fisheries Service, Highly Migratory Species Management Division, 55 Great Republic Drive, Gloucester, Massachusetts 01930
Tel: +978 281 9260, Fax: +978 281 9340, E-Mail: sarah.mclaughlin@noaa.gov

Miller, Shana
The Ocean Foundation, 1320 19th St., NW, 5th Floor, Washington, DC 20036
Tel: +1 631 671 1530, E-Mail: smiller@oceanfdn.org

Peterson, Cassidy
NOAA Fisheries, 101 Pivers Island Rd, Miami, FL 28516
Tel: +1 910 708 2686, E-Mail: cassidy.peterson@noaa.gov

Schalit, David
President, American Bluefin Tuna Association, P.O. Box 854, Norwell, Massachusetts 02061
Tel: +1 917 573 7922, E-Mail: dschalit@gmail.com

Sissenwine, Michael P.
Marine Policy Center, Woods Hole Oceanographic Institution, 39 Mill Pond Way, East Falmouth Massachusetts 02536
Tel: +1 508 566 3144, E-Mail: m.sissenwine@gmail.com

Walline, Megan J.
Attorney- Advisor, NOAA Office of General Counsel, Fisheries & Protected Resources Division, U.S. Department of Commerce, 1315 East-West Highway SSMC-III, Silver Spring Maryland 20910
Tel: +301 713 9695, Fax: +1 301 713 0658, E-Mail: megan.walline@noaa.gov

Walter, John
Research Fishery Biologist, NOAA Fisheries, Southeast Fisheries Center, Sustainable Fisheries Division, 75 Virginia Beach Drive, Miami, Florida 33149
Tel: +305 365 4114; +1 804 815 0881, Fax: +1 305 361 4562, E-Mail: john.f.walter@noaa.gov

Weiner, Christopher
PO Box 1146, Wells, Maine 04090
Tel: +1 978 886 0204, E-Mail: chrisweiner14@gmail.com

OBSERVERS FROM NON-GOVERNMENTAL ORGANIZATIONS

ASSOCIAÇAO DE CIENCIAS MARINHAS E COOPERAÇAO - SCIAENA

Blanc, Nicolas
Incubadora de Empresas da Universidade do Algarve, Campus de Gambelas, Pavilhão B1, 8005-226 Faro, Portugal
Tel: +351 917 018 720, E-Mail: nblanc@sciaena.org

PEW CHARITABLE TRUSTS - PEW

Galland, Grantly
Officer, Pew Charitable Trusts, 901 E Street, NW, Washington, DC 20004, United States
Tel: +1 202 540 6953; +1 202 494 7741, Fax: +1 202 552 2299, E-Mail: ggalland@pewtrusts.org

Samari, Mona
Pew Charitable Trusts, 248A Marylebone Rd, Marylebone, London NW1 6JZ, United Kingdom
Tel: +44 751 582 8939, E-Mail: monasamari@outlook.com

Tak, Paulus
Senior Officer, Government Relations, Pew Charitable Trusts, Avenue des Arts 40, 1040 Brussels, Belgium
Tel: +32 478 24 13 32, E-Mail: ptak@pewtrusts.org

THE OCEAN FOUNDATION

Aalto, Emilius
The Ocean Foundation, 120 Ocean View Blvd, CA Pacific Grove 93950, United States
Tel: +1 203 809 6376, E-Mail: aalto@cs.stanford.edu

Levontin, Polina
Consultant, Renewable resources Assessment Group Imperial College of Science, Technology & Medicine, Center of Environmental Science and Technology, 13 Chalcot Gardens, London NW3 4YB, United Kingdom
Tel: +44 794 707 8739, E-Mail: levontin@hotmail.com

Pipernos, Sara
The Ocean Foundation, 1320 19th St. NW, Washington DC 20036, United States
Tel: +1 860 992 6194, E-Mail: spipernos@oceanfdn.org; sarapipernos@gmail.com

WORLDWIDE FUND FOR NATURE – WWF

Buzzi, Alessandro
WWF Mediterranean, Via Po, 25/c, 00198 Roma, Italy
Tel: +39 346 235 7481, Fax: +39 068 413 866, E-Mail: abuzzi@wwfmedpo.org

SCRS CHAIRMAN
Melvin, Gary
St. Andrews Biological Station - Fisheries and Oceans Canada, Department of Fisheries and Oceans, 285 Water Street, St. Andrews, New Brunswick E5B 1B8, Canada
Tel: +1 506 652 95783; +1 506 651 6020, E-Mail: gary.d.melvin@gmail.com; gary.melvin@dfo-mpo.gc.ca

SCRS VICE-CHAIRMAN
Arrizabalaga, Haritz
Principal Investigator, SCRS Vice-Chairman, AZTI Marine Research Basque Research and Technology Alliance (BRTA), Herrera Kaia Portualde z/g, 20110 Pasaia, Gipuzkoa, Spain
Tel: +34 94 657 40 00; +34 667 174 477, Fax: +34 94 300 48 01, E-Mail: harri@azti.es

INVITED EXPERT
Butterworth, Douglas S.
Emeritus Professor, Department of Mathematics and Applied Mathematics, University of Cape Town, Rondebosch, 7701 Cape Town, South Africa
Tel: +27 21 650 2343, E-Mail: doug.butterworth@uct.ac.za

*****

ICCAT Secretariat
C/ Corazón de María 8 – 6th floor, 28002 Madrid – Spain
Tel: +34 91 416 56 00; Fax: +34 91 415 26 12; E-mail: info@iccat.int

Manel, Camille Jean Pierre
Neves dos Santos, Miguel
Ortiz, Mauricio
Palma, Carlos
Kimoto, Ai
Taylor, Nathan
Mayor, Carlos
Alemany, Francisco
De Andrés, Marisa
Campoy, Rebecca
Donovan, Karen
García-Orad, María José
Motos, Beatriz
Peyre, Christine
Pinet, Dorothée
Samedy, Valérie
Peña, Esther

ICCAT INTERPRETERS
Baena Jiménez, Eva J.
Faillace, Linda
Fleming, Jack
Herrero Grandgirard, Patricia
Liberas, Christine
Linaae, Cristina

Appendix 3

Working Document for proposed Panel 2 guidance to the SCRS on Bluefin Tuna Management Objectives for MSE Testing

Status (of stocks, East and West)

Res. 18-03: Conceptual Management Objective (MO):

- The stock should have a greater than [__]% probability of occurring in the green quadrant of the Kobe matrix.

2019 Panel 2 Operational MO guidance:

- There should be a 60% or greater probability of being in the green zone of the Kobe plot.

- The SCRS will present results of the simulation in plots with a trajectory so that managers can evaluate the status of the stock (F relative to F_{MSY} and B relative to B_{MSY}) at intermediate points between zero and 30 years, and at the end of the 30-year period.

2022 Panel 2 Operational MO guidance:

- There should be a 60% or greater probability of each stock being in the green quadrant of the Kobe plot.

- SCRS will provide to Panel 2 relevant performance statistics (including Br30, PGK, U/U_{MSY}, Br20, AvgBr, POF, PNRK, and OFT) together with relevant graphs reflecting the yearly U/U_{MSY}, Br, and PGK statistics to support evaluation of the projected status of the stocks (F relative to F_{MSY} and SSB relative to SSB_{MSY}) for each year between 1 and 30 years, as well as at the end of the 30-year period.

Safety (of stocks, East and West)

Res. 18-03: Conceptual Management Objective (MO):

- There should be a less than [__]% probability of the stocks falling below B_{lim} at any point during the 30 year evaluation period.

2019 Panel 2 Operational MO guidance:

- There should be no more than a 15% chance of the stock falling below B_{LIM} at any point during the 30-year evaluation period.

- A definition of B_{LIM} should be recommended by SCRS.

2022 Panel 2 Operational MO guidance:

- There should be no more than a 15% probability of the stocks falling below B_{LIM} at, in principle, any point during the 30-year projection period.

- The SCRS will provide to Panel 2 relevant performance statistics to support evaluation of the likelihood of each stock falling below B_{LIM}. Key statistics are the lowest depletion statistics LD5%, LD10%, LD15% across years 11-30 in the projection period. The LD value is evaluated relative to the SCRS BFT Species Group - proposed B_{LIM} (40% of dynamic SSB_{MSY}) and endorsed by Panel 2. Based on this analysis, Panel 2 will decide on the percent probability to be included as the final operational management objective.

- Yield (of catch by area, East and West)

Res. 18-03: Conceptual Management Objective (MO):

– Maximize overall catch levels

2019 Panel 2 Operational MO guidance:

– Evaluate outcomes related to maximizing mean catch levels with respect to each management area over the short, medium, and long-term.

2022 Panel 2 Operational MO guidance:

– Maximize overall catch levels

– SCRS will provide relevant performance statistics (including AvC10, AvC20, AvC30, and C1) to support evaluation of catch levels over projected years in the short, medium, and long term.

Stability (of catch by area, East and West)

Res. 18-03: Conceptual Management Objective (MO):

– Any increase or decrease in TAC between management periods should be less than [__]%.

2019 Panel 2 Operational MO guidance:

– Evaluate outcomes of 20%, 30%, and 40% as well as no limitation on the change in TAC between management periods.

2022 Panel 2 Operational MO guidance:

– Any change in TAC between management periods should be no more than a 20% increase or a [20%][30%] decrease, except during the application of the MP in the first two management periods (e.g., 2023-24 and 2025-26), where any TAC change shall not exceed a 20% increase or a 10% decrease.

A limited number of CMPs to be selected by the SCRS in consultation with CMP developers will be tested in accordance with the matrix below to see if the same testing should be conducted for other CMPs.

	+20%/-20%	**+20%/-30%**
Two-year management period		
Three-year management period		

Appendix

The performance statistics to be used for testing CMPs are:
(List of performance statistics to be produced by the SCRS)