PROPOSAL ON GROWTH RATE OBSERVED IN BLUEFIN TUNA FARMED IN EASTERN ATLANTIC AND THE MEDITERRANEAN

(submitted by Japan)

Explanatory Note for the revised version:
As a result of consultation with interested/concerned CPCs, Japan decides:
i) withdraws the element of setting benchmark and pay back the excessing weight from the benchmark
ii) maintain the current import-CPC's monitoring on growth rates
iii) add some flexibility on the schedule of updating the growth table

1. Revised proposed text for amending Recommendation 21-08

27. ~~The SCRS, on the basis of a standardized protocol to be established by the SCRS for the monitoring of recognizable individual fish, shall undertake trials to identify growth rates including in weight and size gains during the fattening period.~~ Based on new available scientific information, including where relevant the result of the trials on Artificial Intelligence referred to in paragraph 166, the SCRS should consider ~~shall~~ reviewing and updating the growth table published in 2022 ~~2009~~, as soon as possible, ~~and the growth rates utilized for farming the fish referred to under paragraph 34 (c),~~ and present those results at the latest to the ~~2022~~ 2024 annual meeting of the Commission. ~~In updating the growth table, the SCRS should invite independent scientists who have appropriate expertise to review the analysis. The SCRS shall also consider the difference among geographic areas (including Atlantic and Mediterranean) in updating the table. Farm CPCs shall ensure that the scientists tasked by the SCRS for the trials can have access to and, as required by the protocol, assistance to carry out the trials.~~

27bis. Farm CPCs shall endeavor to ensure that the growth rates derived from the eBCDs are coherent with the growth rates published by the SCRS in 2022. If significant discrepancies are found between the 2022 SCRS tables and growth rates observed, that information should be sent to the SCRS for analysis. Import CPCs shall endeavor to monitor the growth rates and send the information in case of significant discrepancies to the concerned farm CPCs and Panel 2. For this purpose, farm CPCs should cooperate with import CPCs by providing all the relevant data to import CPCs, notwithstanding applicable rules on the protection of personal data, to monitor the growth rates in a comprehensive manner.

27ter. A functionality within the eBCD system to automatically monitor growth rates shall be considered by the eBCD TWG in 2023.

166. CPCs with active bluefin tuna farms and the SCRS are encouraged to participate in trials using Artificial Intelligence (AI), including under the framework established by Resolution 2022-XX, for the analysis of stereoscopic camera footages, with a view to automating the determination of the number and/or weight of caged tuna, in order to reduce workloads and avoid possible human bias.

2. The original proposal is attached for reference.

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PROPOSAL ON GROWTH RATE OBSERVED IN BLUEFIN TUNA FARMED IN EASTERN ATLANTIC AND THE MEDITERRANEAN

(submitted by Japan)

1. Background

Paragraph 27 of ICCAT Recommendation 21-08 says, "Farm CPCs shall endeavor to ensure that the growth rates derived from the eBCDs are coherent with the growth rates published by the SCRS." Notwithstanding this paragraph, Japan has continued to identify many cases where growth rates are higher than those established by the SCRS.

Japan has a serious concern on the recurring high growth rates in farmed BFT because this might be caused by the underestimation of the weight of fish caught and caged for farming purposes. In other words, there is a risk that more BFT in weight are actually caught than reported, thereby undermining the conservation efforts by ICCAT.

In the paper submitted by Japan to the 2019 Annual meeting (PA2-607/2019), Japan identified three potential causes of this problem: i) the SCRS Growth table established in 2009 does not take into account regional differences in the growth rates, ii) the current length-weight relationship recommended by the SCRS (SCRS 2016) tends to underestimate the weight of fish in some regions, and iii) the sampling bias in length measurements from stereoscopic camera's video footage.

In order to resolve these scientific and technical difficulties, Japan requested the SCRS to update the growth table and length-weight relationship and explained the possibility of introducing AI systems to analyze stereoscopic camera footage without human bias. Regarding the above three potential causes, the length-weight relationship has been already updated (Appendix 10, Report of the Intersessional Meeting of Panel 2 in March 2022) and applied from the 2022 fishing/farming season, and the SCRS has also updated the growth table for the adoption at this 2022 annual Commission meeting (Table 17.16.1 of 2022 SCRS report). With regard to the third point, Morocco conducted a pilot study for using AI technology in estimating fish length at caging from stereoscopic camera footage, and its preliminary report was submitted to the 2022 SCRS (SCRS/2022/158).

2. Analysis of recent growth rate based on the updated growth table

Japan compared the weight at harvest calculated by using the updated growth rate table with the mean harvest weight recorded in eBCD for cages where the highest growth rate was observed in each CPC from 2019 to 2021. Japan found that for all CPCs, mean weights of harvested BFTs recorded in eBCDs are within the upper 95% confidence interval of the weight calculated based on the updated growth table.

However, Japan would like to draw attention to the preliminary result of the pilot study for automatic fish length estimation system in Morocco (SCRS/2022/158), in which it was indicated that the length of BFT estimated by human was smaller than that estimated by the automatic system. While further study is needed to determine whether manual measurement is underestimating or automatic measurement is overestimating, it is worth noting the possibility that weight at caging data, which were used to update the growth rate table, may have been underestimated. The SCRS document (SCRS/2022/178) also cautions that "[t]his analysis started with the premise that the BFT-ROP monitoring of roughly 20% of the farming operations, is representative of the overall farming activities, is ***unbiased***, reports random samples of harvested fish, and the collection of data is reliable. ***Otherwise, violations of these premises will invalidate the present results***" (emphasis added).

Therefore, Japan would like to emphasize the necessity of further updating the growth table using more reliable data while the updated growth table can be used tentatively in growth rate monitoring. For this purpose, Japan urges farming CPC and the SCRS to reanalyze past stereo camara video footages by the automatic length estimation system and compare them with the results of manual estimation conducted in the past. Furthermore, Japan strongly encourages farming CPCs to conduct pilot studies on AI technology in collecting caging information and provide such results to the SCRS so that the SCRS would be able to update the growth table with more reliable data.

3. Comprehensive monitoring on growth rates

Since the SCRS has now updated both the length-weight relationship and growth rate table, Japan would like to propose an introduction of comprehensive ICCAT level growth rate monitoring (see also Appendix) as follows:

(1) When all BFT in a cage is harvested, farm CPC shall produce a growth calculation sheet (GCS) of the cage and submit it to a regional observer. If the mean weight of harvested in that cage is higher than the benchmark (i.e., 110% of the upper 95% confidence interval of the expected weight based on the updated growth table), the CPC shall release the excessing weight of BFTs or pay back its next year's quota equivalent to the excessing weight back-calculated by the updated growth rate.

(2) Farm CPCs are encouraged to introduce the automatic fish length estimation system from stereoscopic camera video footage in 2023 and 2024 and submit the result of the estimation along with usual manual measurement to the SCRS. Farm CPCs are also encouraged to analyze stereo camera footages in the past years, to the extent possible, with the automatic length measurement technology and submit the result to the SCRS. The SCRS shall evaluate the accuracy and validity of the automatic estimation system, and update the growth table, as appropriate, in 2025 at the latest.

(3) From 2023, farm CPCs shall monitor the growth rates of their farms, and submit their reports, including the reason of higher growth rates, where appropriate, to the ICCAT Secretariat [by February 15] for review by Panel 2 during its intersessional meeting early next year.

(4) The eBCD TWG in 2023 shall consider developing a function to automatically calculate growth rates and compare them with the benchmark growth rates when all BFTs in a cage are harvested. When this function is developed, farm CPCs will not need to produce growth calculation sheet and submit it to a regional observer as described in 3.(1).

4. Proposed text for amending Recommendation 21-08

27. ~~The SCRS, on the basis of a standardized protocol to be established by the SCRS for the monitoring of recognizable individual fish, shall undertake trials to identify growth rates including in weight and size gains during the fattening period.~~ *Based on the result of the trials on Artificial Intelligence referred to in paragraph 166 and other scientific information available, the SCRS shall review and update the growth table published in 2022 and present those results to the 2025 annual meeting of the Commission.* ~~In updating the growth table, the SCRS should invite independent scientists who have appropriate expertise to review the analysis. The SCRS shall also consider the difference among geographic areas (including Atlantic and Mediterranean) in updating the table. Farm CPCs shall ensure that the scientists tasked by the SCRS for the trials can have access to and, as required by the protocol, assistance to carry out the trials.~~

27bis. Farm CPCs ~~shall endeavor~~ *shall ensure* that the growth rates derived from the eBCDs are coherent with the growth rates published by the SCRS. ~~If significant discrepancies are found between the SCRS tables and growth rates observed, that information should be sent to the SCRS for analysis.~~ *If the observed mean weight of harvested BFT in a cage is higher than the benchmark (i.e., 110% of the upper 95% confidence interval based on the SCRS table), the excessing weight from the benchmark level shall be compensated by releasing the excessing weight of BFTs on the presence of an ICCAT Regional observer or paying back the amount from its next year's quota. Such amount shall be back-calculated to the weight at caging by the growth table.*

27ter. *Farm CPCs shall monitor the growth rates for each of their farms using the information of eBCD, and submit the result of the monitoring, including the reason of higher weight than the benchmark, where appropriate, to the ICCAT Secretariat by 15 February each year for review by Panel 2 at its intersessional meeting. A functionality within the eBCD system to automatically calculate growth rates shall be considered by the eBCD TWG in [2023].*

Procedure to monitor the growth rate and repot to Panel 2

1. Extract raw data by Flag CPC from the eBCD system

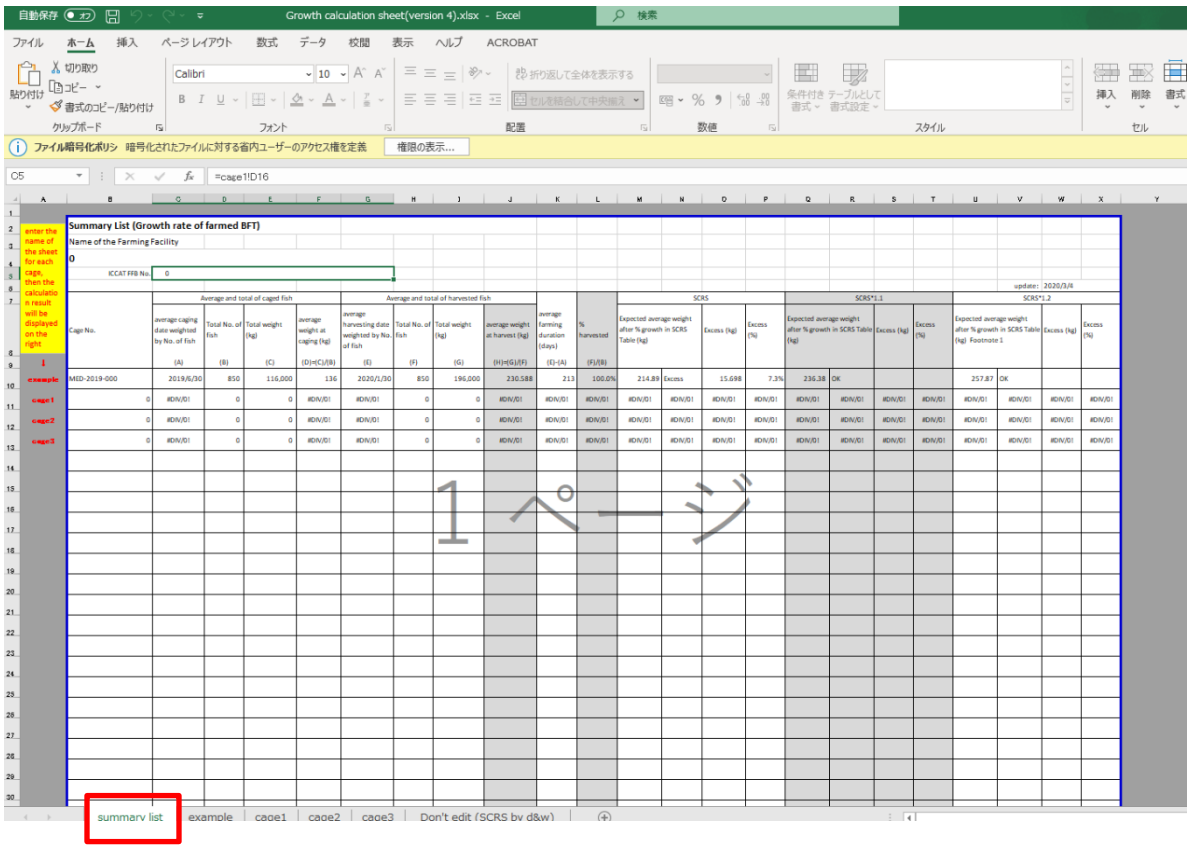
Download necessary caging and harvesting data from the eBCD system. This information is available from "Reports/Section's Raw Data/Flag's Raw Data".

2. Exporting the data to the Growth Calculation Sheet (GCS)

GCS files should be produced for each farm, in which one sheet is used for each cage. Please see **Appendix 1** for the detail on how GCS works (PA2-614-APP-1).

3. Report to a regional observer and Panel 2

When the necessary information for each cage is filled-in, the growth rates by cage are automatically calculated and summarized in a sheet named "Summary List", in which the calculated growth rates are compared to the benchmark growth rates based on the SCRS table. Farm CPCs should submit the Summary list to a regional observer, and the ICCAT Secretariat for review and discussion by Panel 2.



4. Monitoring the high growth rate

If growth rates higher than the upper 95%tile established by the SCRS is observed in a cage in which all caged fishes has been harvested, Farm CPC shall explain such abnormality when it reports GCS to Panel2.