

# INTER-AMERICAN TROPICAL TUNA COMMISSION

## 91<sup>ST</sup> MEETING

La Jolla, California (USA)

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### DOCUMENT IATTC-91-03a

## EVALUATION OF TUNA CONSERVATION PROPOSALS

The IATTC staff evaluated the three proposals for the conservation of tuna in the eastern Pacific Ocean (EPO) presented at the 90<sup>th</sup> meeting of the Commission in October 2016 as potential replacements for the current measure (Resolution [C-13-01](#)), which expires on 17 January 2017. The proposals are summarized below, together with the staff's comments, analyses, and conclusions.

The numbers presented are only approximate, because not all the aspects of the proposals could be evaluated and there is uncertainty about how they might be implemented.

### 1. PROPOSAL [IATTC-90 G-1B](#), SUBMITTED BY THE UNITED STATES<sup>1</sup>

This proposal, applicable during 2017-2019, includes an individual vessel catch limit, or quota (IVQ), of 1.0 t of bigeye and yellowfin combined per cubic meter (m<sup>3</sup>) of capacity, and an additional 8 days of closure for vessels with a Dolphin Mortality Limit (DML) issued under the Agreement on the International Dolphin Conservation Program (AIDCP).

#### EVALUATION

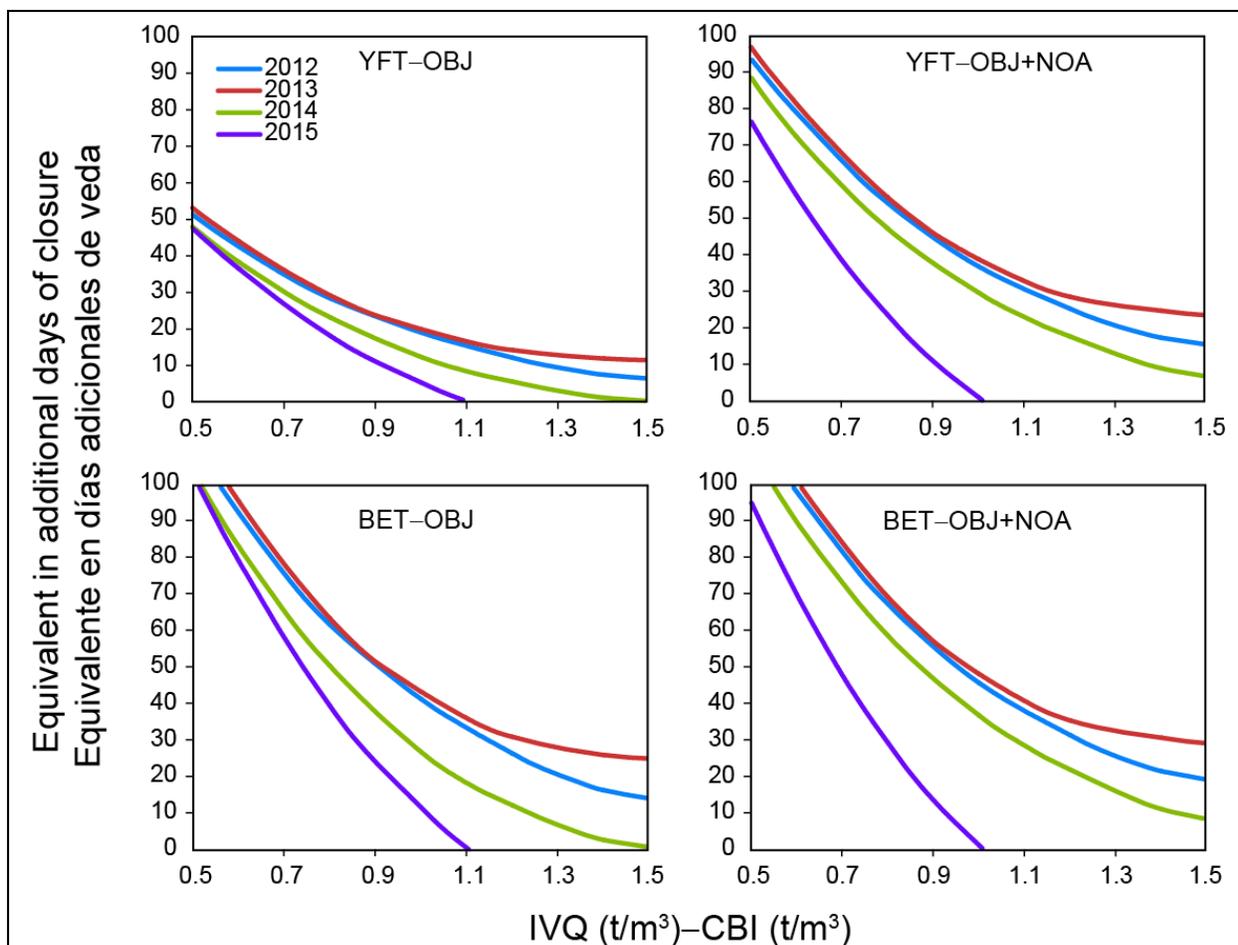
The evaluation suggests that such an IVQ system would be equivalent to 36 days of closure for the floating-object fishery, and would, on average, offset the overall increase in capacity and the additional capacity increases by Guatemala (3,762 m<sup>3</sup>) and Venezuela (1,668 m<sup>3</sup>), which are equivalent to approximately 4 and 2 days of total EPO closure, respectively. However, the reduction due to the IVQs is only for Class-6<sup>2</sup> vessels fishing on floating objects (OBJ), which account for about 14% and 91% of the total catch of yellowfin and bigeye, respectively; taking these proportions into account results in about 5 and 33 equivalent days of closure for the two species. If the IVQ is based on Class-6 vessels fishing on unassociated tunas (NOA) and/or floating objects, then the IVQ increases to 1.05 t/m<sup>3</sup> of capacity, and the proportions are about 25% and 93% of the total catch of yellowfin and bigeye, respectively, and are equivalent to about 9 and 33 additional days of closure for the two species. This differs from the required additional days of closure because it does not take into consideration the adjustments to the fishing effort required to maintain the fishing mortality at the level corresponding to the MSY estimated by the stock assessment, and includes the Guatemalan and Venezuelan capacity increases.

Since the IVQs apply only to yellowfin and bigeye caught by Class-6 vessels in sets on floating objects (or floating-object and unassociated sets combined (OBJ+NOA)), they cover only a small proportion of the yellowfin catch. However the reduction in yellowfin catch would consist of small tuna, and fishery impact studies suggest that the effect of this is 2-3 times greater than that of a reduction in catches of large tuna. Therefore, for yellowfin the reduction might be equivalent to about 10-15 days of closure of the whole EPO (18-27 for OBJ+NOA, although this does not take into consideration that the total closure also includes floating-object sets). Figure 1 shows equivalent days of additional total EPO closure for different levels of IVQs during 2012-2015. The effect of the IVQs differs among years, and 2015 stands out from the other years.

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<sup>1</sup> The United States have submitted later a new version of their proposal (IATTC-91 G-1C)

<sup>2</sup> Carrying capacity > 363 t



**FIGURE 1.** Equivalent days of additional total EPO closure, calculated for bigeye (BET) and yellowfin (YFT) separately (the IVQ is the same but the impact is different for the two species), for different IVQs applied either to floating-object sets (OBJ) only or to floating-object and unassociated sets combined (OBJ+NOA). The calculations are based on Class-6 vessels, and are adjusted for the proportion of catch of each species represented by that set type; the yellowfin closure is multiplied by 3 (the optimistic value) to reflect that small fish are caught (see text).

This proposal also includes alternative closures of 87, 70, and 62 days. These different closures were not evaluated since they are intended to be applied simultaneously with the IVQs and are already expressed in days of closure by definition.

The proposal also includes an additional 8 days of closure for vessels with a DML, which typically do not fish on floating objects or unassociated tunas. Sets on tunas associated with dolphins account for about 70% of the total purse-seine catch of yellowfin, so this is equivalent to about only 6 additional days of closure of the entire EPO.

## CONCLUSION

This proposal is equivalent to approximately 16-21 (including the additional closure for DML vessels) and 33 days of total EPO closure for yellowfin and bigeye, respectively.

## 2. PROPOSAL [IATTC-90 G-2B](#), SUBMITTED BY COLOMBIA AND ECUADOR

This proposal, applicable during 2017-2018, includes a global limit on catches of bigeye and yellowfin combined caught in sets on fish-aggregating devices (FADs) of 95% of the 2013-2015 average divided

among the countries. The remaining 5% is available for distribution to vessels without catch limits.

## EVALUATION

For the analysis, it was assumed that the restriction on fishing on FADs would apply to all floating objects. A 5% reduction in the catch in floating-object sets by Class-6 vessels is not equivalent to a 5% reduction in the total purse-seine effort (or capacity), since catches are also taken in other set types and by smaller vessels. Catches by Class-6 vessels on floating objects account for about 14% and 91% of the total catch of yellowfin and bigeye, respectively. This is equivalent to 2 and 14 days of closure of the entire EPO for all purse-seine vessels for yellowfin and bigeye, respectively.

As for Proposal G-1A, the reduction in yellowfin catch would consist of small tuna, and fishery impact studies suggest that the effect of this is 2-3 times greater than that of a reduction in catches of large tuna. Therefore, for yellowfin the reduction might be equivalent to about 4-6 days of closure of the whole EPO.

These calculations do not include the capacities added by Guatemala (3,762 m<sup>3</sup>) and Venezuela (1,668 m<sup>3</sup>), which are equivalent to approximately 4 and 2 days of total EPO closure, respectively. Note that the catches used for the national limits are made by vessels of all size classes, but applied only to Class-6 vessels.

The proposal does not include the “*corralito*”<sup>3</sup> closure, which is equivalent to 3 days of closure for bigeye. This closure probably has a minor impact on the yellowfin catch.

Vessels that do not catch their limit can reduce the number of days of closure in the next year. This has not been evaluated; the analysis assumes that all countries catch their allocated limits.

The proposal does not require the retention of all tuna caught. This is not considered in the evaluation.

The longline catch limits have been increased to 750 t for some countries. This is not considered in the evaluation.

## CONCLUSION

This proposal is equivalent to approximately 4-6 and 11 (the catch limit on floating objects less the *corralito*) additional days of total EPO closure for yellowfin and bigeye, respectively.

### 3. PROPOSAL [IATTC-90 G-5A](#), SUBMITTED BY MEXICO

This proposal, applicable during 2017, includes all purse-seine vessels in the 62-day temporal closure.

## EVALUATION

Class 1-3 purse-seine vessels account for only about 1.1% and 1.4%, and Class-4 vessels about 2.9% and 3.7%, of the total catch of yellowfin and bigeye, respectively, in the IATTC CAE (catch and effort) database. Class-4 vessels are currently allowed to make one trip of up to 30 days’ duration during the closure, so only about half of their potential catches during the closure would be affected by this proposal.

The 62-day closure covers approximately 17% of the year, and therefore the reduction in catch would only be about 0.4% [(1.1% + 2.9% x 0.5) x 17%] and 0.6% [(1.4% + 3.7% x 0.5) x 17%] for yellowfin and bigeye, respectively, equivalent to 1 and 2 days of total EPO closure. However, small vessels do catch small yellowfin, so the reduction in yellowfin catch would consist of small tuna, and fishery impact studies suggest that the effect of this is 2-3 times greater than that of a reduction in catches of large tuna. Therefore, for yellowfin the reduction might be equivalent to about 2-3 days of total EPO closure.

The proposal requires vessels to remove 50% of the FADs they deploy before the start of the temporal closure. We are unable to evaluate this aspect of the proposal.

The proposal includes limits on the number of FADs vessels may deploy, linked to the vessel’s well

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<sup>3</sup> Offshore area closed during September to all purse-seine fishing

volume. We are unable to evaluate this aspect of the proposal.

## CONCLUSION

The main components of this proposal could not be evaluated.

### 4. CONSIDERING DAYS FISHED AND MAIN SET TYPE WHEN EVALUATING CAPACITY CHANGES

The increase in the capacity of the purse-seine fleet is the main reason for requiring additional days of closure to manage the tropical tuna stocks in the EPO. However, the capacity increases have been evaluated on a coarse scale, and the only adjustment has been for vessels that make a single trip within a year, which are counted as one-quarter of their capacity.

For this analysis, data on Class-6 vessels in the IATTC catch-and-effort (CAE) database were used to calculate the capacity that fished each year during 2013-2015, by DML status, both nominal and weighted by the number of days fished (Table 1). Data from smaller vessels were not used because logbook data are not obtained for all such vessels, and 2016 is not included because the data are incomplete. The change in capacity differs by year, DML status, and method of calculation, but the increase from 2013 to 2015 was much larger for vessels without a DML (18 and 17) for both methods of calculation versus those with a DML (10 and 8). Note that including small vessels in the analysis will likely affect only the 'no DML' category, since generally only Class-6 vessels are allocated DMLs.

**TABLE 1.** Nominal and weighted capacity, in cubic meters of well volume, that fished in a year during 2013-2015, by DML status, for Class-6 purse-seine vessels. The increases are the proportional increases from one year to the next. Source: IATTC CAE data base.

	2013	2014	2015
<b>Capacity that fished (m<sup>3</sup>)</b>			
No DML	88,073	107,501	104,331
DML	108,038	111,975	118,785
Increase (no DML)		1.22	0.97
Increase (DML)		1.04	1.06
<b>Capacity (m<sup>3</sup>), weighted by days fished</b>			
No DML	43,349	47,195	50,513
DML	59,016	59,010	63,498
Increase (no DML)		1.09	1.07
Increase (DML)		1.00	1.08

### 5. OVERALL CONCLUSIONS

In terms of conservation, the United States proposal (G-1A) provides the most benefit, followed by the Colombia-Ecuador proposal (G-2B) and the Mexican proposal (G-5B), although the Mexican proposal could not be fully evaluated. The US proposal is more restrictive for bigeye than necessary because it is based on recent catch levels and does not take into consideration the adjustments to the fishing effort required to maintain the fishing mortality at the level corresponding to the MSY estimated by the stock assessment.

The Colombia-Ecuador and US proposals differ significantly in how the IVQs or country limits are calculated. The Colombia-Ecuador proposal is based on historic catch, and the analysis assumes that each country will catch its full limit. This implies that the method each country uses to allocate its catch limit among its vessels is such that each vessel can catch its limit or transfer it to a vessel that needs an additional quota. In contrast, the United States IVQs are based on capacity, and the calculation assumes that a vessel that did not catch its IVQ in the past will not catch it in the future.

When evaluating these proposals, additional information on IVQs contained in documents for previous

meetings should also be taken into consideration, including Document [IATTC-90 INF-B Addendum 1](#). Documents [SAC-04-11](#) and [IATTC-82 INF-A](#) discuss the numerous logistical issues that have to be addressed before implementing an IVQ system (*e.g.* transferability of quotas, switching set types, enforcement, monitoring, and species identification).

Care needs to be taken when choosing the vessels that will be allocated IVQs based on their combined yellowfin and bigeye catch, because some vessels with large yellowfin catches are allocated much larger IVQs, but could switch to catching more bigeye. Restricting the IVQs to floating-object sets may be difficult to enforce.

The options related to restrictions on FADs cannot be analyzed with the information available; more comprehensive data on FADs, including unique identification, are required. Therefore, the effectiveness of these measures in reducing fishing mortality cannot currently be evaluated.