

INTER-AMERICAN TROPICAL TUNA COMMISSION

94<sup>TH</sup> MEETING

Bilbao (Spain)  
22-26 July 2019

DOCUMENT IATTC-93 INF-A  
RESPONSES TO REQUESTS FOR DATA AND ANALYSES

This document contains the staff’s responses to requests for data and analyses made in preparation for the discussions at the at 94<sup>th</sup> meeting of the Commission, as well as to requests and recommendations for action made by the 10<sup>th</sup> meeting of the Scientific Advisory Committee in May 2019 (SAC-10). Other relevant information is included in Documents [IATTC-94-01](#), [IATTC-94-03](#), [FAD-04-01](#), [SAC-10-10](#), and other SAC-10 documents.

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A. REQUESTS BY CPCs

1. COLOMBIA

**COL-1.1:** Monitor compliance with the various provisions of Resolution [C-17-02](#), specifically those related to “measures for fishing on fish-aggregating devices (FADs)”.

Compliance with the provisions of Resolution [C-17-02](#) in 2018 is described in Document COR-10-02, except with regard to paragraphs 9 and 15, detailed below.

**Paragraph 9** states that “A FAD shall be activated exclusively onboard a purse-seine vessel”. Compliance with of this provision cannot be monitored by the IATTC staff due to lack of necessary data.

**Paragraph 15** states that: “To reduce the entanglement of sharks, sea turtles or any other species, as of 1 January 2019 CPCs shall ensure that the design and deployment of FADs shall be based on the principles set out in paragraphs 1 and 2 of Annex II of Resolution C-16-01.” This provision entered into force in 2019, and is therefore not addressed in COR-10-02.

[Annex II](#) of Resolution [C-18-05](#) (which replaced C-16-01) requires that netting used on a FAD must be of less than 7-cm stretched mesh size, in both the surface and submerged components of the FAD, although netting larger than 7 cm can be used in the submerged component (the ‘tail’), provided it is rolled up tightly.

Observers record FAD data on the *Registro de Objetos Flotantes* (ROF). On the form used prior to April 2019 (version 8-2005), only limited information on the mesh used in the tail of the FAD was recorded, so compliance cannot be verified, but a new version introduced in April 2019 (version 4-2019) allows all this information to be recorded. The data collected in 2019 to date on the two versions is as follows:

ROF version	FADs recorded	FADs with netting	
		Compliant	Non-compliant
8-2005	9,868	-	-
4-2019	2,337	900	1,216

**COL-1.2:** Establish whether remote deactivations of FADs have occurred, in accordance with the provisions of paragraph 10 of Resolution C-17-02

**Paragraph 10** of [C-17-02](#) states:

*“10. For the purposes of this resolution, a FAD is considered active when it:*

*a. is deployed at sea; and*

*b. starts transmitting its location and is being tracked by the vessel, its owner, or operator.”*

**Paragraph 9** states that *“A FAD shall be activated exclusively onboard a purse-seine vessel”*.

However, [C-17-02](#) does not consider deactivations, nor regulate how they must be carried out, physically or remotely. Likewise, deactivation data are not required to be reported to the staff, and guidelines for reporting such data have not been developed. Therefore, the staff is unable to respond to this request.

**COL-1.3:** Conduct proper monitoring of compliance with paragraph 11 of Resolution C-17-02, in accordance with the provisions of paragraph 12 of the resolution.

**Paragraph 12** of [C-17-02](#) charged the staff and the WG-FADs with establishing, by 30 November 2017, guidance on reporting FAD data. In compliance with this mandate, the staff and the WG-FADs developed a set of guidelines, available [here](#).

However, as noted above (see [COL 1.1](#)), the data that have been provided in compliance with specified in the resolution and consistent with these guidelines are insufficient

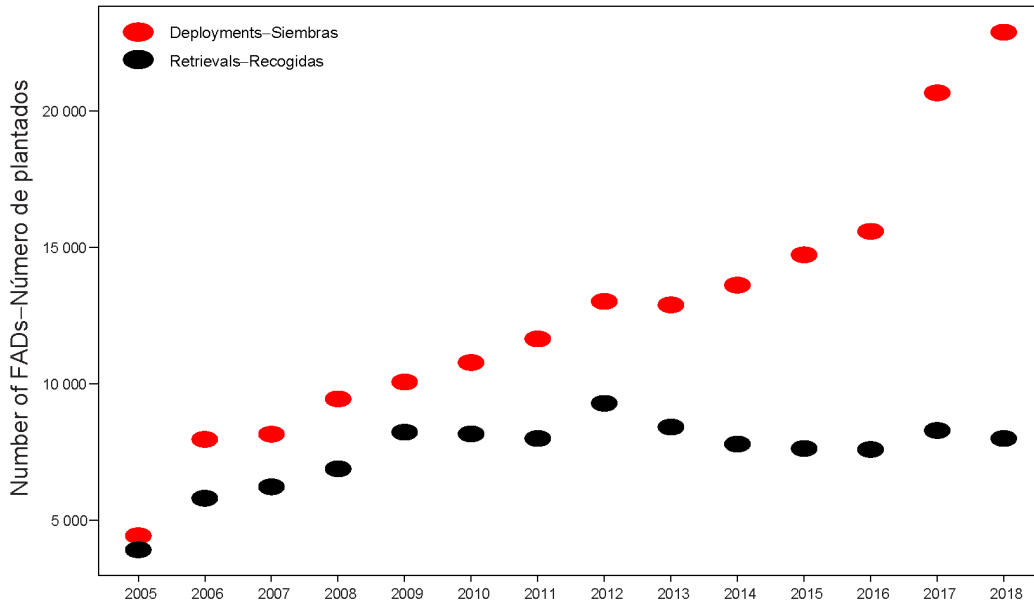
**COL-2.1:** Present the evolution of the total number of deployments and retrievals of FADs in the EPO.

Figure [COL-01](#) shows deployments and retrievals of FADs by Class-6<sup>1</sup> vessels in the EPO during 2005-2018, based on observer data. However, the difference between deployments and retrievals does not reflect the total number of FADs at sea for several reasons, mainly:

1. FADs cannot be tracked between trips, and thus every deployment is considered a new deployment;
2. Natural objects that are modified count as deployments; and
3. FADs can sink, be lost, or become stranded on shore.

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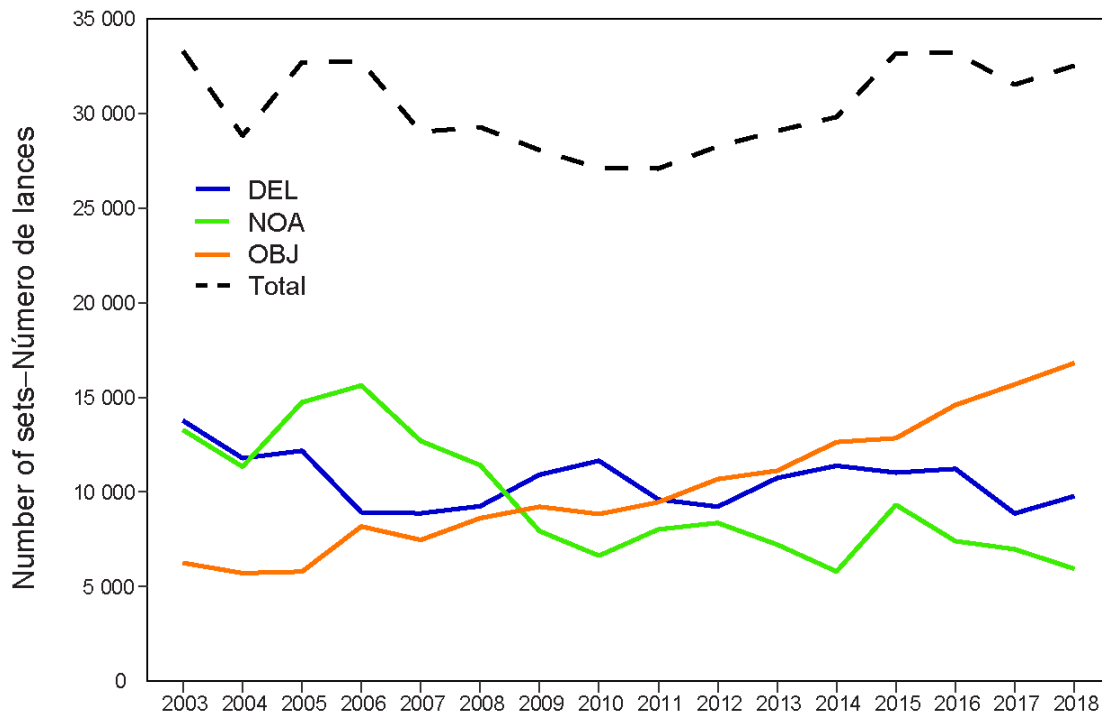
<sup>1</sup> Carrying capacity > 363 t



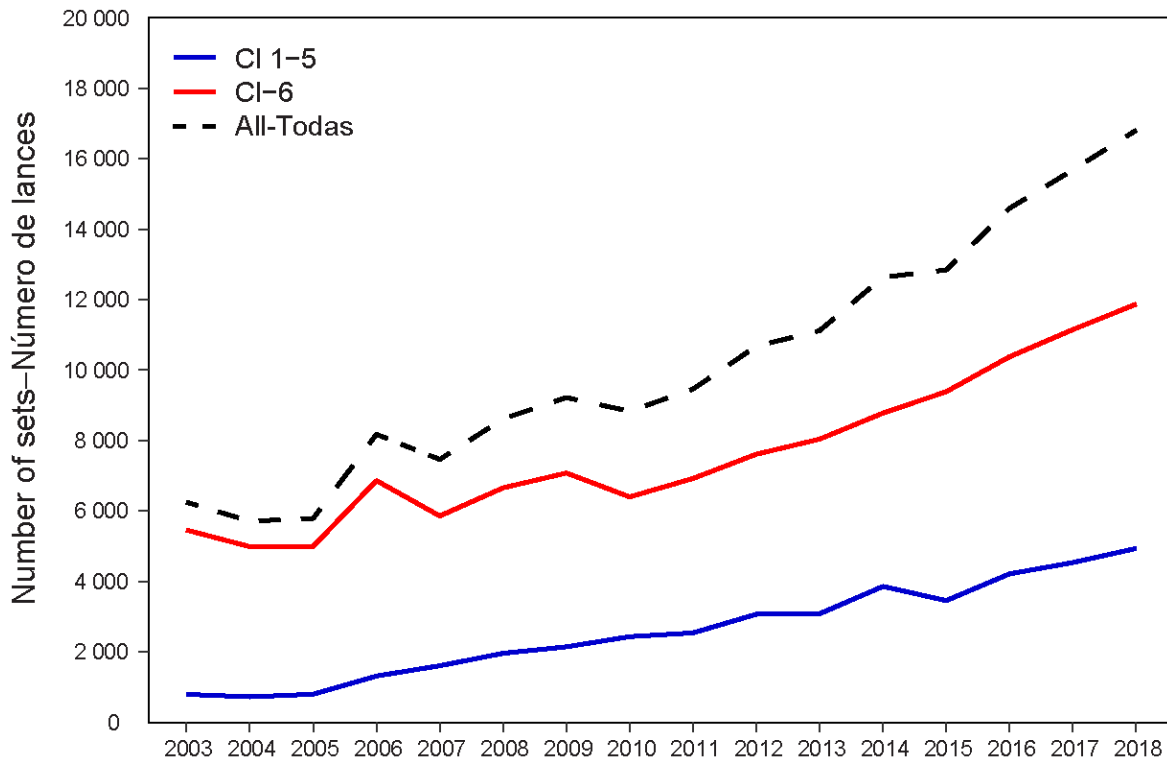
**FIGURE COL-01.** FAD deployments and retrievals by Class-6 vessels, 2005-2018.

**COL-2.2: Present the evolution of the total number of sets on FADs in the EPO**

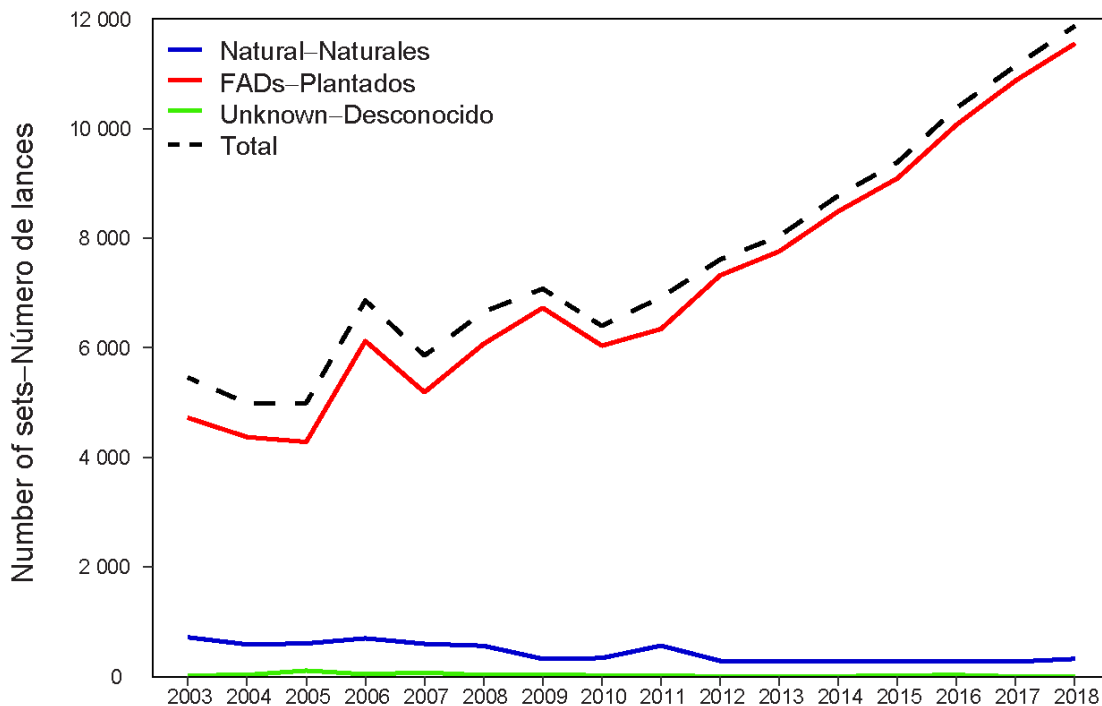
Figures COL-02 and COL-03 illustrate the evolution of the number of purse-seine sets during 2003-2018, by set type and vessel capacity class, respectively. Figure COL-04 show the evolution of floating-object sets, by type, during 2003-2018, by Class-6 vessels only; the logbook data used for Class 1-5 vessels are insufficiently detailed to permit differentiation of the different types of floating objects.



**FIGURE COL-02.** Evolution of purse-seine sets, by set type (OBJ: floating object; DEL: dolphin; NOA: unasociated), 2003-2018. Source: Document IATTC-94-01, Table A-7.



**FIGURE COL-03.** Evolution of floating-object sets by Class 1-5 and Class 6 vessels, 2003-2018. Source: Document [IATTC-94-01](#), Table [A-7](#).



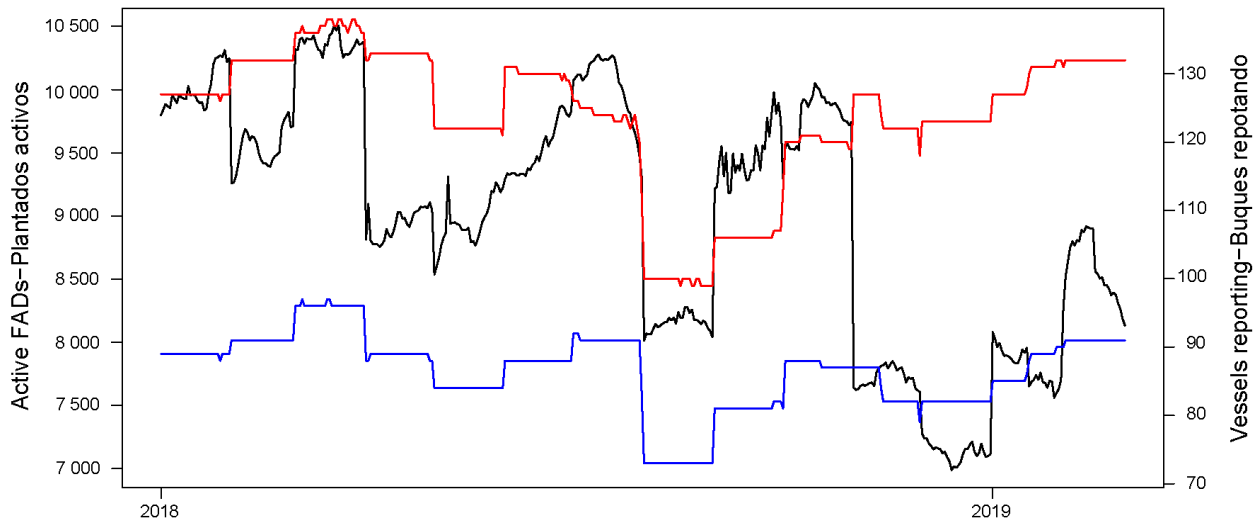
**FIGURE COL-04.** Evolution of floating-object sets by Class-6 vessels, by type of floating object, 2003-2018. Source: Document [IATTC-94-01](#), Table [A-8](#).

**COL-2.3:** Present monthly information on the total number of active FADs in the EPO, explaining the percentage of vessels that have submitted information and a possible extrapolation for estimating the total of active FADs in the EPO during 2018 and the first two months of 2019.

Figure COL-05 shows the number of active FADs reported by the purse-seine fleet in 2018 and the first two months of 2019 and the number of vessels reporting daily during the period.

Although not all vessels that deploy FADs comply with the requirement of Resolution C-17-02 to report daily FAD data, and some do so only intermittently, observer data indicate that reporting rates for vessels deploying and fishing on their own FADs are high (median 80%; average 95%). Reporting rates for Class 1-5 vessels cannot be estimated, as they do not carry observers.

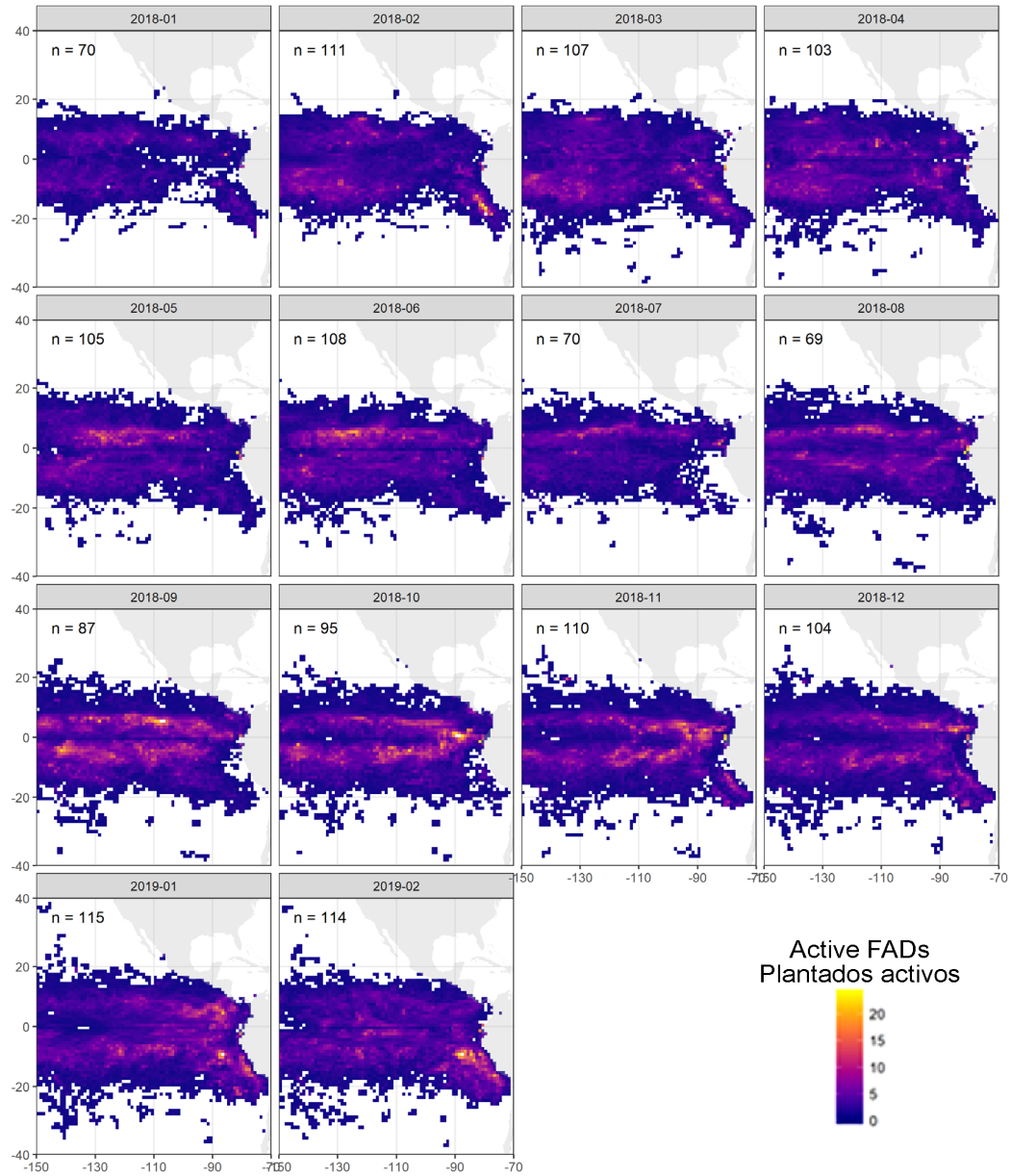
The staff considers that extrapolating from these data to estimate the total number of FADs is not advisable, since the fishing strategies used by vessels vary by capacity, company, flag, season, or a combination of these and other factors, and the assumptions that would have to be made may lead to misleading results and interpretation.



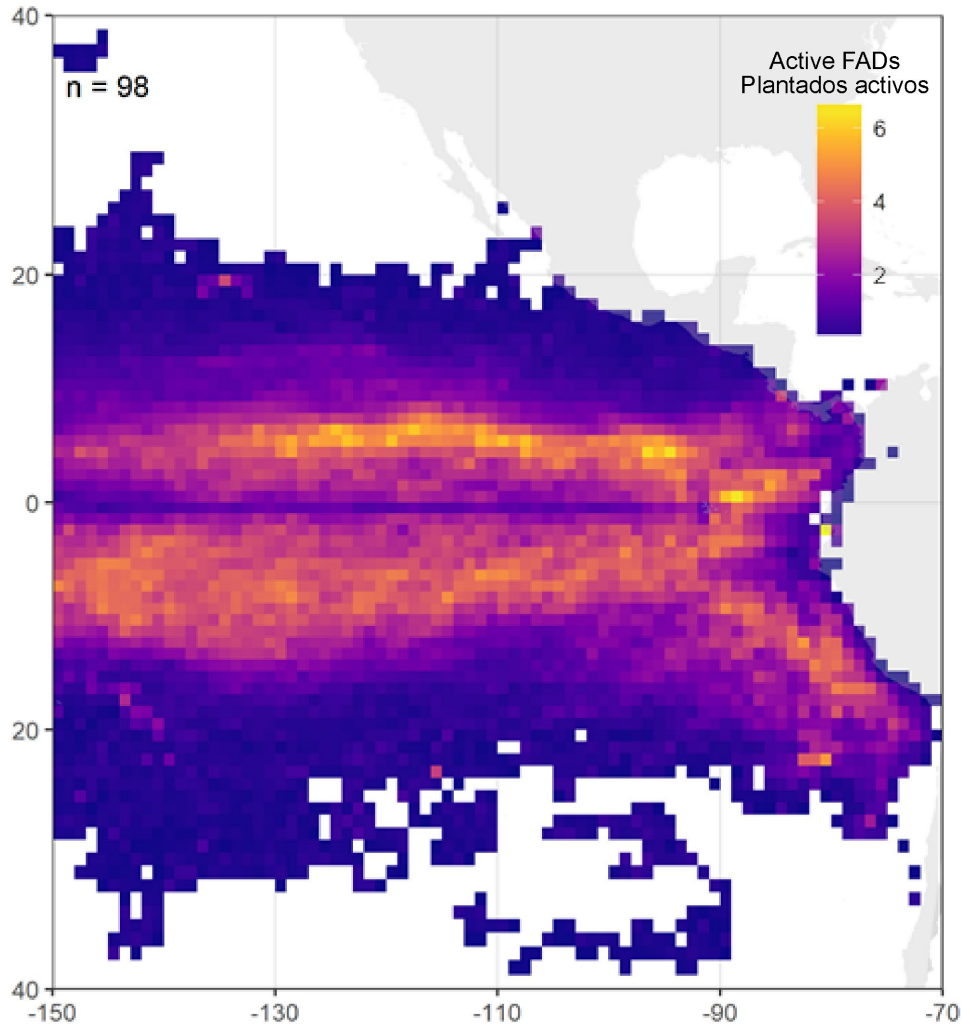
**FIGURE COL-05.** Number of active FADs reported by the purse-seine fleet in 2018 and the first two months of 2019 (black line) and number of vessels reporting daily (red: total; blue: Class-6 vessels). Includes 106 Class-6 vessels, 11 Class-5, 28 Class-4, and 7 Class-3.

**COL-2.4:** Presentation of FADs (active buoys) by quadrant, month-to-month, in the EPO.

Figures COL-06a and COL-06b show the average number of active FADs, by 1°-area, by month (06a) and the average for the 14 months (06b), reported by between 70 and 115 vessels (mean = 98). They do not represent total FADs at sea, because (a) buoys can be deactivated remotely but the FAD remains at sea, and (b) not all vessels report, so these are probably underestimates.



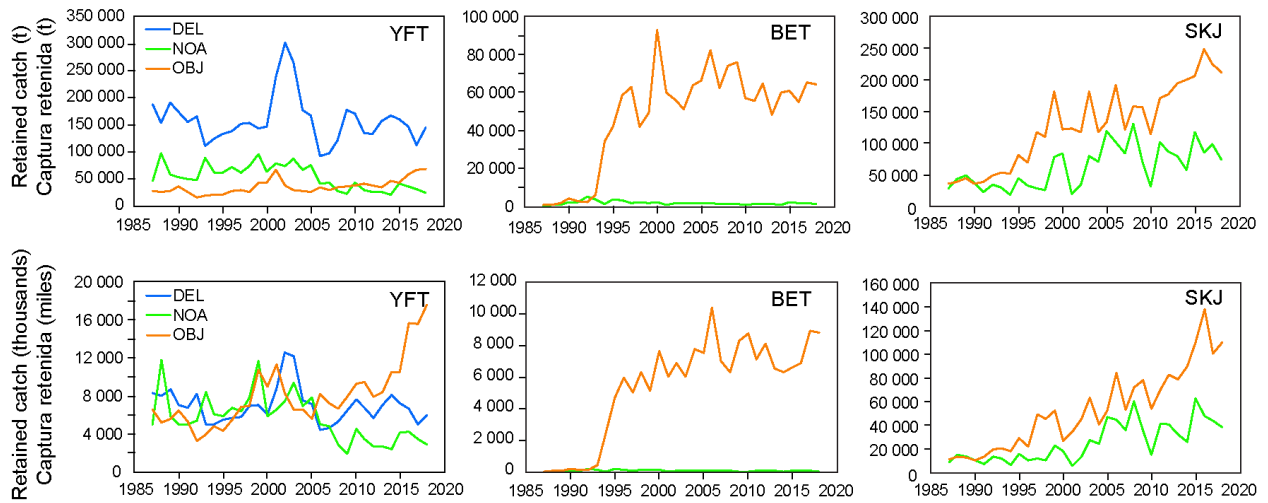
**FIGURE COL-06a.** Average number of active FADs, by 1°-area, reported by between 70 and 115 vessels (mean = 98), by month, during the January 2018-February 2019 period.



**FIGURE COL-06b.** Average number of active FADs, by 1°-area, reported by between 70 and 115 vessels (mean = 98) during the January 2018-February 2019 period.

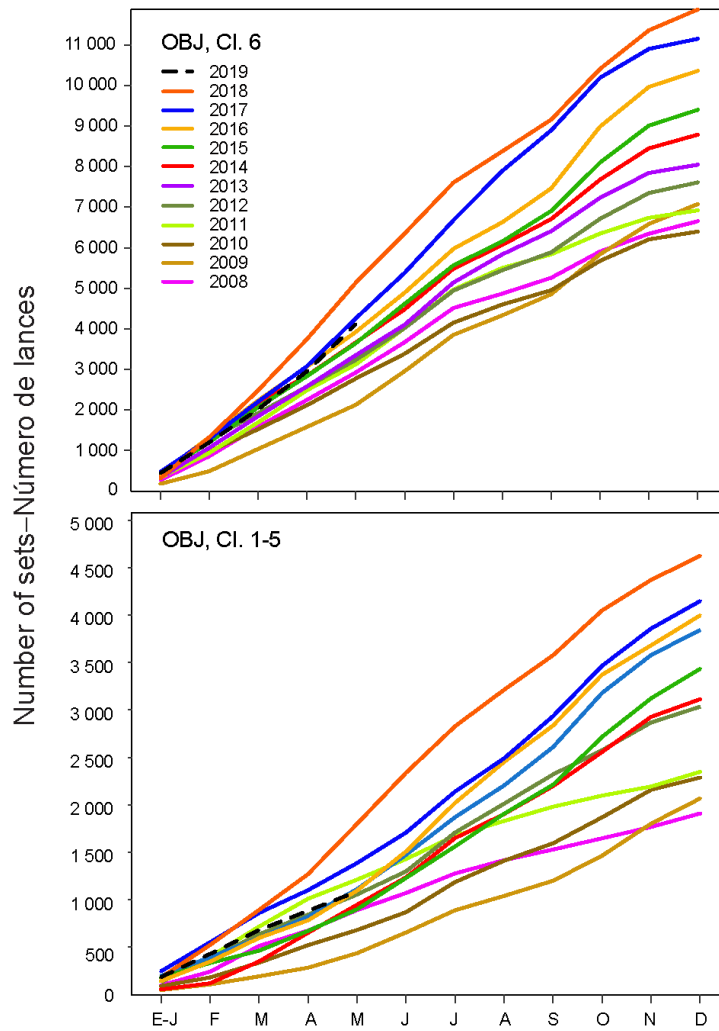
**COL-2.5:** Present the evolution of catches of tropical tunas by set type (quantities by species in tons and number of individuals).

Figure COL-07 shows catches of tropical tunas, in tons and numbers of fish, by set type and species, during 1987-2018. Figures COL-08a-b show the cumulative monthly number of sets, by species, set type, and vessel capacity class, during 2008-2019.

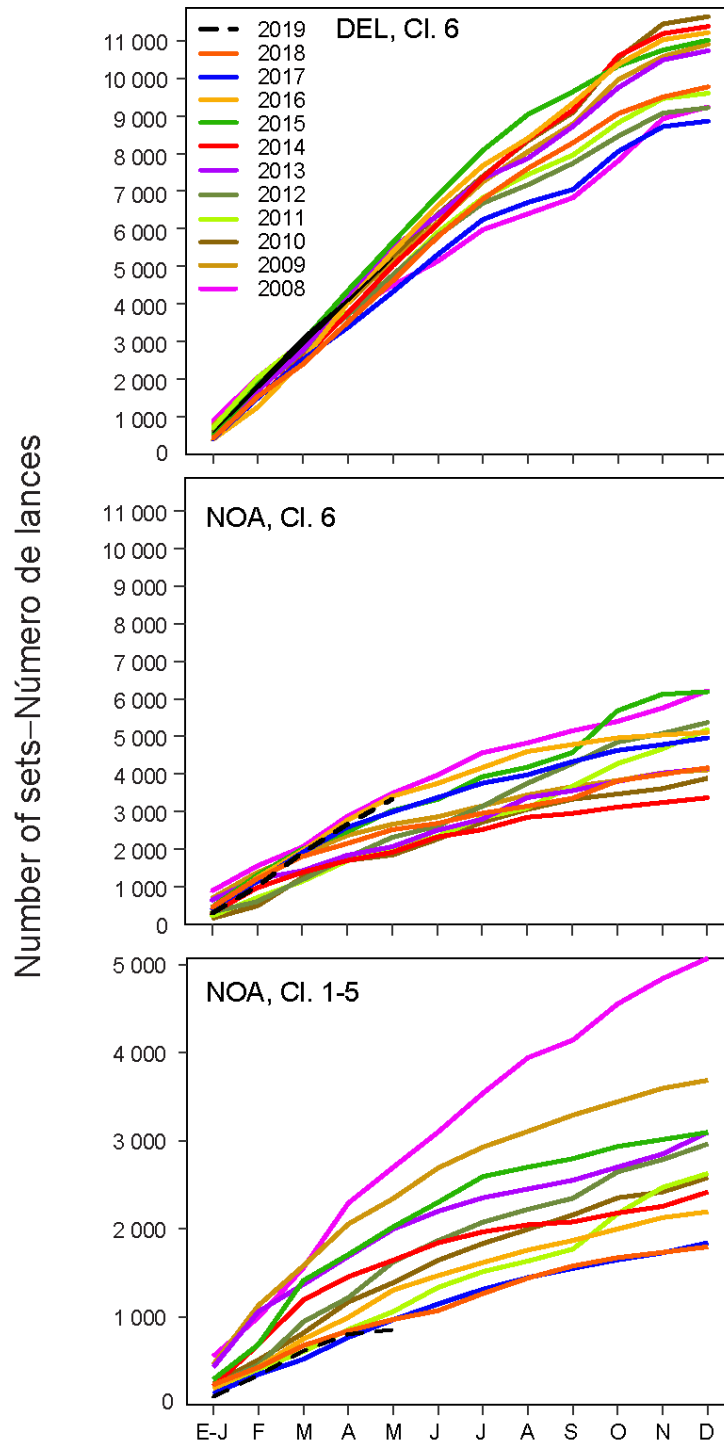


**FIGURE COL-07.** Purse-seine catches of yellowfin (left), bigeye (centre), and skipjack (right), in tons (upper panels) and thousands of fish (lower panels), by set type, 1987-2018. Sources: catch in weight: Document [IATTC-94-01](#), Table [A-7](#); catch in numbers: YFT and BET, calculated from the catch in weight, using the annual average weight by set type estimated in the respective stock assessments; SKJ: [IATTC-94-01](#), Table [A-7](#), all set types combined.





**FIGURE COL-08a.** Cumulative number of floating-object (OBJ) sets, by month, 2008-2019: Class-6 vessels (top); Class 1-5 vessels (bottom).

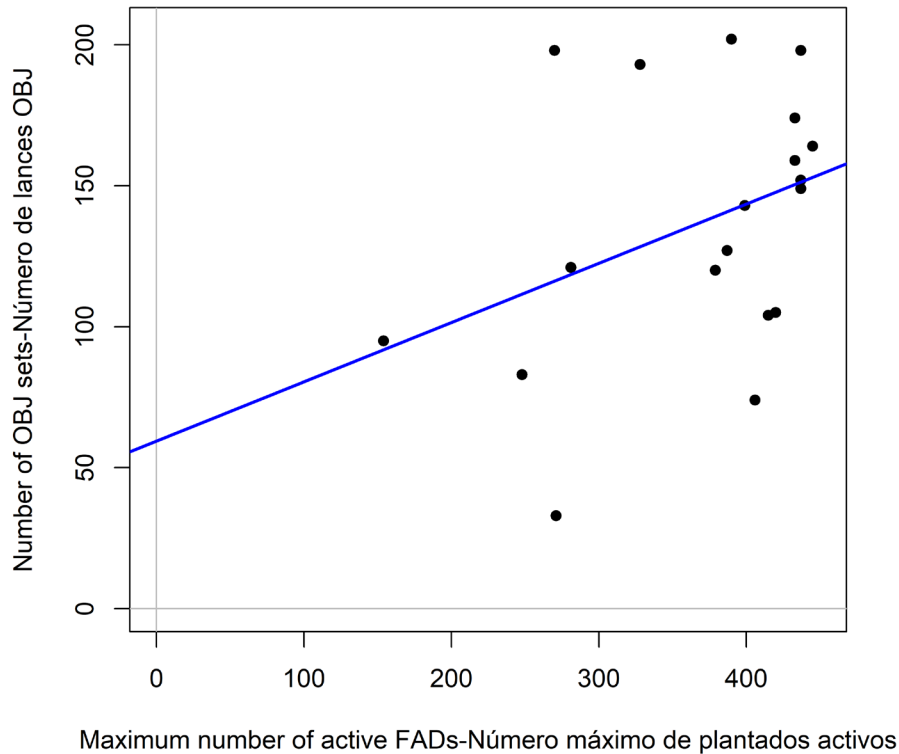


**FIGURE COL-08b.** Cumulative number of sets, by month, 2008-2019: dolphin (DEL) sets, Class-6 vessels (top); unassociated (NOA) sets, Class-6 vessels (center); unassociated (NOA) sets, Class-1-5 vessels (bottom).

**COL-2.6:** What is the correlation between the average number of active FADs per vessel and the number of sets on FADs per year?

The relationship between the number of active FADs and the number of floating-object sets per vessel is

illustrated in Figure COL-09, taken from Document FAD-04-01. The analyses conducted during the preparation of that document highlighted the need to investigate further those vessels that mostly fish on their own FADs, since a positive relationship was found between the number of FADs monitored and the number of floating-object sets made by such vessels.



**FIGURE COL-09.** Relationship between maximum number of active FADs and number of floating-object sets per vessel, for vessels that mostly fish on their own FADs, 2018.

**COL-2.7:** Present other information and data considered relevant to the discussions that will be held at the meeting.

Other relevant information is included in Documents [IATTC-94-01](#), [IATTC-94-03](#), [FAD-04-01](#), [SAC-10-10](#), and other documents for the 10<sup>th</sup> meeting of the Scientific Advisory Committee in May 2019.

**COL-2.8:** Table showing the monthly minimum, maximum, and average number of active FADs, by vessel categories in C-17-02, for 2018 and the first two months of 2019.

Number of active FADs per vessel																
Month	CI-6 ( $\geq 1200 \text{ m}^3$ )				CI-6 ( $< 1200 \text{ m}^3$ )				CI 4-5				CI 1-3			
	Min	Max	Avg	SD	Min	Max	Avg	SD	Min	Max	Avg	SD	Min	Max	Avg	SD
2018																
Jan	2	437	155	125	1	272	58	59	1	104	24	25	1	67	25	27
Feb	2	415	147	118	1	281	50	54	1	88	25	19	1	43	11	11
Mar	1	427	146	121	1	271	51	53	1	97	23	19	2	45	13	12
Apr	2	426	144	120	1	228	45	44	1	96	22	19	1	44	12	12
May	6	415	150	126	1	246	50	47	1	80	20	15	2	49	13	12
Jun	1	409	160	130	1	265	49	51	1	78	21	16	1	53	10	11
Jul	3	432	157	134	1	261	52	54	1	81	22	19	1	44	10	12
Aug	2	431	145	117	3	246	63	53	1	91	26	22	3	50	18	16

Sep	1	437	92	90	18	245	70	44	1	83	23	21	4	7	5	1
Oct	1	445	162	138	1	283	55	54	1	83	24	21	1	54	15	19
Nov	1	435	141	121	1	255	53	61	1	98	24	23	1	60	15	18
Dec	2	397	134	110	1	281	48	65	1	87	22	22	1	47	9	14
2019																
Jan	1	409	135	119	1	281	50	65	1	94	24	21	1	48	11	14
Feb	1	425	142	136	1	247	50	57	1	97	23	19	1	54	12	16

## 2. UNITED STATES

**USA-01:** Estimate the increased number of closure days corresponding to the increased number of FAD sets during the establishment of C-17-01.

For practical reasons, the calculation is based on all floating-object sets, not only FAD sets, which make up over 96% of floating-object sets (Figure [COL-04](#)). It is based on bigeye, since most of the bigeye catch is taken in FAD sets. Yellowfin and skipjack are caught in other set types, so the calculation would not only be more complicated, but would also have less effect on the duration of the closure.

Assuming that fishing mortality ( $F$ ) is proportional to the number of FAD sets, the duration of the closure (currently 72 days) should be increased in proportion to the increase in the number of FAD sets. The annual average number of floating-object sets during 2015-2017 (10,303) increased to 11,871 in 2018; assuming no further increases, the closure in 2020 would therefore need to be **111 days**, calculated as follows:

2018 closure 72 days; open season:  $365 - 72 = 293$  days

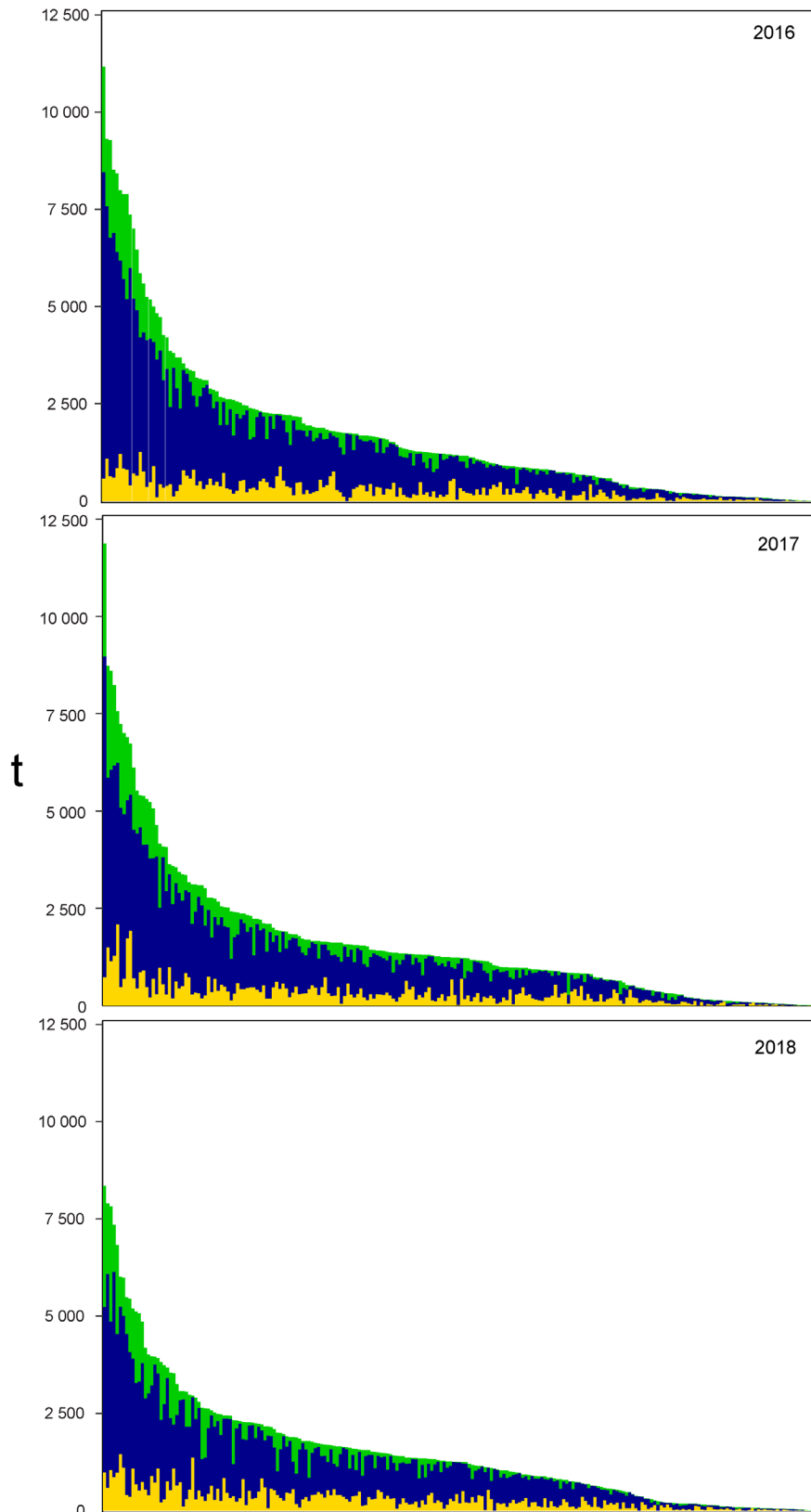
2020 open season:  $293 * (10,303 / 11,871) = 254$  days

2020 closure:  $365 - 254 = 111$  days

## 3. VENEZUELA

**VEN-01.** A list of all vessels that fished on FADs, the number of sets on FADs, and catches of yellowfin, bigeye and skipjack in sets on FADs during 2018, 2017, and 2016.

The list of vessels is available [here](#). Figure [VEN-01](#) shows the total annual retained catches of bigeye, yellowfin and skipjack by each vessel.



**FIGURE VEN-01.** Species composition of annual catches in floating-object sets by individual vessels, 2016 (top), 2017 (centre), and 2018 (bottom).

**VEN-02.** A table with the catches of yellowfin, bigeye and skipjack, by set type, for 2018, 2017, 2016, and if possible, previous years.

This information is published in Document IATTC-94-01, Table [A-7](#), for the 2003-2018 period.

**VEN-03.** A figure showing the variation by set type during 2000-2018.

See Figure [COL-02](#).

## **B. SAC-10 RECOMMENDATIONS**

### **Tropical tuna conservation:**

*That the IATTC staff present to the meeting of the SAC in 2020 a set of options for management measures for tropical tunas, consistent with the staff's work plan to improve the stock assessments of tropical tunas.*

See document [FAD-04-01](#) with proposed limits on active FADs. Additional options will be provided in 2020.