

9th MEETING OF THE SCIENTIFIC COMMITTEE

Held virtually, 27 September to 2 October 2021

SC9-JM01

Trachurus murphyi catch history

Secretariat

1. Summary Paragraph

The Secretariat has provided an updated historical catch data series to 2021 as **Annex 1**. There are no notable changes to the historical catch history. As final catch figures are not due until September 30th, in many cases the 2020 data remain catch estimates.

Initial 2021 catch estimates, by fleet, have been provided by applying the mean 2010-2020 observed ratio, of historical provisional catch figures¹ and the final catch figures, to the available 2021 monthly catches. Members are asked to either accept these initial estimates or provide adjustments based upon their knowledge of the current fishing season. Previous estimates for total current catches have always been within about 10% of the final figures. Last year's SC8 2020 estimate for total catch shows a relative underestimate of 7.6% overall with the previous 5 years having relative underestimates varying from – 10.0% to 10.1%.

Box-plots showing historical monthly catches for each of the major fleets are presented and compared with the current monthly catches from the first half of 2021.

This paper also provides a short explanation of the *Trachurus murphyi* (CJM) catch history as used in the SPRFMO CJM stock assessment.

This year a new section (6) has been included showing information provided by IATTC on catches of Epipelagic forage fishes (including *Trachurus* spp) for the entire IATTC area.

2. Annual Catch Totals

Historical catch data for the years prior to 2007 were originally provided to the (Interim) SPRFMO Secretariat under the 2007 interim data standards. Thus, the SPRFMO Secretariat holds catch data for all major fish species (including CJM) caught in the SPRFMO Area, in many cases back to the 1970s. The 2007 interim data standards were revised and the term “annual catch total” introduced in the 2012 interim data standards. This term persists in the current Conservation and Management Measure 02-2021 (Data standards). Members and CNCPs provide annual catch totals raised to ‘live’ weight for all species caught during the previous calendar year.

A summary of this information was first published in 2008 (SPRFMO-V-SWG-10) and it is updated annually. In this paper, where possible, these annual catch totals are used to create the historic catch data series for the CJM stock assessment up to and including 2019².

The 2020 annual catch totals are due on 30 September 2021 (after this paper was drafted); and so monthly catch reports are used to provide the 2020 estimates.

¹ Provisional catch figures = the part-year monthly catch figure that was available at the time of the meeting.

² Noting the fleet descriptions in Section 4



The 2021 (current year) estimates will be developed during the meeting, but initial estimates based upon current information are provided.

3. Monthly Catch Reports

CMM 01-2021 (*Trachurus murphyi*) requires Members and CNCs to report monthly catches to the Secretariat within 20 days of the end of the calendar month, except that when total catches have reached 70% of the amount indicated in paragraph 10, Members and CNCs agree to implement a 15-day reporting period, in which the calendar month is divided into two reporting periods, day 1 to 15 and day 16 to the end of the month.

In 2021 total catches reached 70% during the month of May, so the first 15-day reporting period was from the 1st until the 15th of June (Letter G82-2021). At the time of SC9 the Secretariat expects to have access to monthly/15-day catch reports through to the 15th of September (this current paper is based on catch information through to the end of July).

4. Fleets used in the assessment

The Joint Jack Mackerel model (JJM) used by the SC to assess Jack mackerel stocks, recognises four distinct fleets. Fleet 1 is a coastal purse seine fishery in northern Chile. Fleet 2 is a purse seine fishery in central-south Chile that extends into the high seas. Fleet 3 combines the far-north coastal purse seine fisheries occurring in the EEZs and Territorial waters of Ecuador and Peru. Finally, Fleet 4 corresponds to the offshore trawl fleet operating solely in the SPRFMO Area.

In most cases, data submitted to the Secretariat can be assigned to the correct Fleet. However, while the Secretariat has an estimate for the total Chilean catch it can only be split into the High seas and EEZ portions and not into northern and central-south portions, so the Secretariat is not able to split the Chile catch between Fleets 1 and 2 (northern and central-south Chile). In previous years, Chile has provided these estimates at the SC meeting.

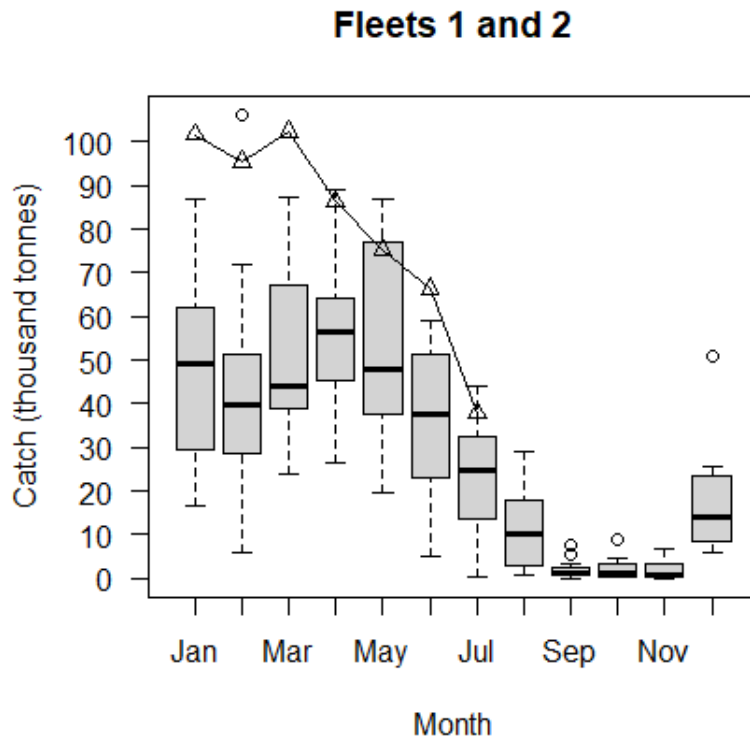


Figure 1: Box plots for 2010-2020 monthly catch reports of *Trachurus murphyi* from Fleets 1 & 2 combined (Northern and Central Chile). The line connecting squares shows the 2021 monthly catch reports.

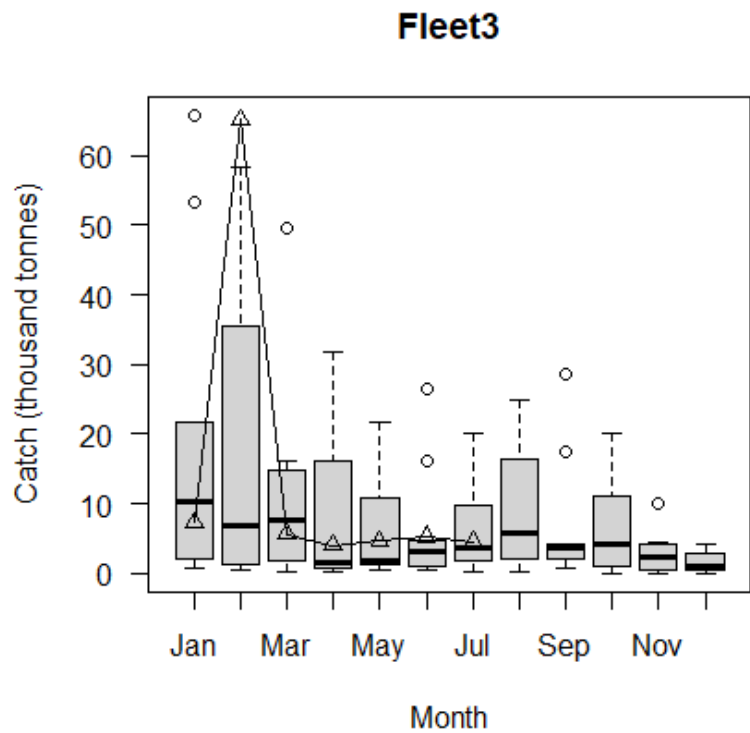


Figure 2: Box plots for 2011-2020³ monthly catch reports of *Trachurus murphyi* from Fleet 3 (Far-North). The line joining squares shows the current 2021 monthly catch reports.

³ Fleet 3 Monthly catches for 2010 are not available.

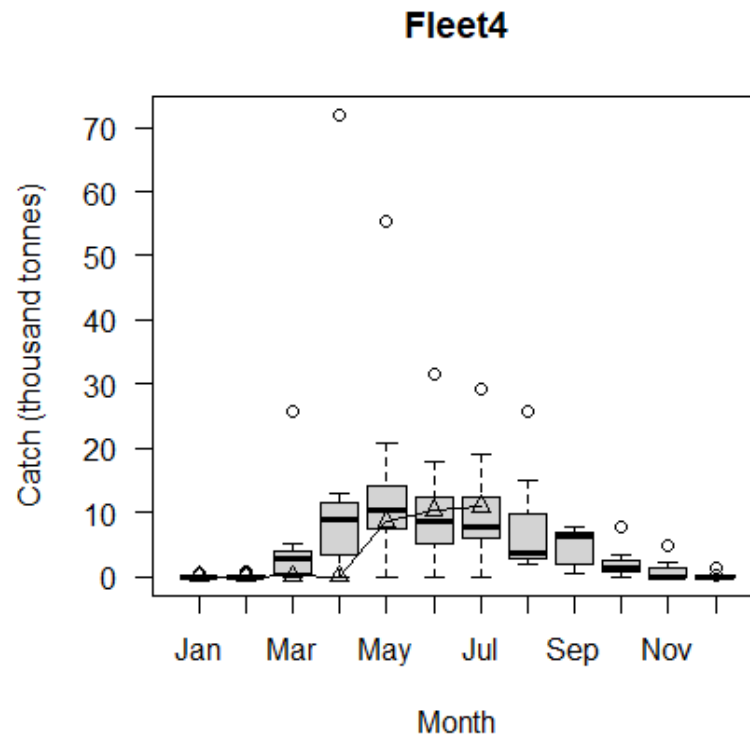


Figure 3: Box plots for 2010-2020 monthly catch reports of *Trachurus murphyi* from Fleet 4 (Offshore Trawl). The Black line shows the current 2021 monthly catch reports.

5. Excel attachment

An Excel workbook is annexed to this paper ([Annex 1](#)).

- Tab 1 (CJM Stock Assess input) contains the Jack mackerel annual catch totals by Member and CNCP and is structured by Fleet. There are various notes that reflect previous decisions taken by the SC about this data series. Underlined figures have been updated since last assessment (refer to table A8.1 of [SC8 Report Annex 8](#)).
- Tab 2 (2021 catch estimates) contains the initial catch estimates for 2021 and shows the underlying calculations.
- Tab 3 (Accuracy of previous estimates) shows the relative change associated with each of the current year catch estimates used in previous SC meetings.

6. IATTC provided information

At the third 2021 SPRFMO SC Web Meeting Ecuador raised a question about catch of Jack mackerel in the tuna fishery managed by IATTC but overlapping the SPRFMO Convention Area. The Secretariat has asked IATTC if they could provide estimates of the quantities involved.

In reply, IATTC referred to Table J-6 of [SAC-12-12](#) (Table 1) which includes *Trachurus* species in a group called “Epipelagic forage fishes” and covers the entire IATTC area (northern boundary 50 degrees North). In Table J-6 of the same paper



Table 1 shows estimated purse-seine catches by set type in metric tons (t) of small forage fishes by observers onboard size-class 6 vessels with a carrying capacity >363 t and minimum reported longline (LL) catches of small forage fishes (gross-annual removals in t) as previously detailed in Table J-6 of IATTC paper SAC-12-12.

“Epipelagic forage fishes” include various mackerels and scad (*Decapterus* spp., *Trachurus* spp., *Selar crumenophthalmus*), Pacific saury (*Cololabis saira*), and tropical two-wing flyingfish (*Exocoetus volitans*).

The same paper also notes a minimum nominal purse-seine catch for “Epipelagic forage fishes” of <1 tonne in floating object sets for 2020 for size class 1-5 vessels with a carrying capacity <363 t (from observer records with 24% coverage).

As shown in Table 1 and noted by IATTC, the catches, across all the species included in the group, are very small (averaging <5 t per year with a maximum of ~23 t). Small pelagics are not targeted by these fisheries and are generally not associated with target species. These small pelagics also are likely to have very low gear selectivity as they are probably small enough to fit through the meshes of a tuna seine net. There is 100% observer coverage of the purse-seine fleet, so any substantial catches of small pelagics would be recorded, or at least noted if the observer was unable to make a thorough catch estimate for a set.

It is the Secretariats view that these catches are unlikely to have been included in catch figures submitted to SPRFMO.

Because these figures include other species than *Trachurus murphyi* and cover area to the north not included in the SPRFMO area, these should be considered upper limits for the purpose of the Jack mackerel stock assessment.



Table 1: Extracted estimated catches of “Epipelagic forage fishes” from Table J-6 of IATTC paper SAC-12-12.

Method	Epipelagic forage fishes			
	Purse Seine			Longline
Set type	Floating object (OBJ)	Unassociated tuna schools (NOA)	Dolphins (DEL)	LL
1993	-	-	-	-
1994	-	-	-	-
1995	-	-	-	-
1996	-	-	-	-
1997	-	-	-	-
1998	<1	-	-	-
1999	<1	-	-	-
2000	-	-	-	-
2001	-	-	-	-
2002	-	-	-	-
2003	<1	-	-	-
2004	<1	<1	-	-
2005	6	<1	<1	-
2006	7	1	-	-
2007	2	5	-	-
2008	3	<1	-	-
2009	<1	<1	-	-
2010	4	<1	<1	-
2011	2	<1	<1	-
2012	13	12	-	-
2013	4	-	<1	-
2014	3	<1	<1	-
2015	6	-	-	-
2016	21	-	<1	<1
2017	3	-	-	-
2018	5	<1	-	-
2019	5	8	<1	-
2020	3	<1	-	-
Total	88	28	<1	<1