OBJECTION OF THE RUSSIAN FEDERATION
TO CMM 1.01, CONSERVATION AND MANAGEMENT MEASURE
FOR *TRACHURUS MURPHYI*

REVIEW PANEL ESTABLISHED UNDER ARTICLE 17 AND ANNEX II OF THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF HIGH SEAS FISHERY RESOURCES IN THE SOUTH PACIFIC OCEAN

WRITTEN MEMORANDUM

OF THE STATE OF CHILE

21 JUNE 2013

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Written Memorandum

Supporting Material

Memorandum of the State of Chile regarding the Objection of the Russian Federation to the Conservation and Management Measure for *Trachurus murphyi* 2013

1. On April 25, 2013, the Russian Federation presented an objection to the Conservation and Management Measure for *Trachurus murphyi* 2013. This objection is based on the unjustified discrimination in form and in fact that would result from the participation of the total allowable catch between the Members of the Convention and Cooperating Non-Contracting Parties and on the inconsistency with provisions of the Convention. The Russian Federation indicates that it would have captured jack mackerel during 2010, which would serve as a basis for the participating total allowable catch that was not given by the measure.

2. On the other hand, the Government of the Republic of Chile, through this document, presents the arguments justifying the action of the Commission in conformity with the Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean (hereinafter the Convention) and the establishment of a conservation and management measure for the fishery of *Trachurus murphyi*.

I

OF THE OPPOSITION TO THE OBJECTION

Matters of form

3. First, and before going into matters of substance, the formal aspects of the presentation made by the Russian Federation shall be revised, which in the judgment of Chile presents contraventions to the Convention and contradictions on the formulated facts.

4. In conformity with Article 17 number 2 of the Convention, the Member that presents an objection shall specify in detail the grounds for the objection. According to Chile's point of view, the Russian Federation does not comply with such requirement in accordance with the following:

a. In the first document submitted on 25 April 2013, it expressed that the catches during 2010 were not considered, thus constituting the unjustified discrimination on which the objection is based on;

b. In its Memorandum dated 14 June 2013 which supports the objection, it expresses that the year 2010 shall not be considered in the participation of catches for 2013 since that year was not to be considered for future allocations

in the 2009 Interim Measures and that those Interim Measures were voluntary and not legally binding on the parties.

c. Both arguments are contradictory and of different nature, therefore, the formal requirement of the Convention on this subject is not met. The objected fact presented cannot be widened by its supporting Memorandum since it is only a document supporting the objection and, if accepted, it is contradictory to the aforementioned arguments presented by the Russian Federation and would be formulated out of date.

5. On the other hand, Article 17 number 2 letter b) ii) of the Convention also states that Members shall adopt alternative measures that are equivalent in effect to the decision to which it has objected and have the same date of application. This requirement is not met. In fact, the document submitted shows no clear alternative measures applicable rather than the established measure. The Memorandum calls for the year 2010 not to be considered for participation. However, and in a contradictory manner, it offers an alternative measure based on the consideration of that year in a table with a new participation taking into account its catches.

6. Additionally, according to the article mentioned above, advise to the Executive Secretary of the terms of such alternative measures is also required. This requirement is not met either.

7. Also, the formal aspects that the same Parties of a valid and in force Treaty have estimated as an indispensable requirement for presenting an objection shall not be ignored.

8. In such sense, and according to the Convention, the Chilean delegation alleges defects in the form of procedural requirements in the presentation of the objection of the case. Therefore, we expressly request this Review Panel to issue a declaration on this aspect.

Matters of substance

9. In this chapter, the Chilean delegation will express the grounds on which the objection submitted by the Russian Federation shall be considered inadmissible. It is unfounded for considering that there is an unjustified discrimination on the measure adopted for *Trachurus murphyi* at the First Meeting of the Commission in January of the present year.

Account of relevant facts for the Memorandum

10. First, the reasons in fact for the elimination of the catches reported by the Russian Federation in 2010 shall be expressed. Regarding this issue, the Chilean delegation endorses the report submitted by the Chairperson and Executive Secretary of the South Pacific Regional Fisheries Management Organization called "Information Paper", dated 13 June 2013, to the Permanent Court of Arbitration. Without prejudice

to the aforementioned, the following facts and background, as basis for the analysis of this Memorandum, are highlighted.

a. *Submission of catch data by the Russian Federation for 2010.* On 13 July, the Russian Federation reports the monthly catches from January to June, amounting to 17,493 tons of *Trachurus murphyi* to the Interim Secretariat[1]. On 23 December, it reports catches from July to December amounting to 23,822 tons of *Trachurus murphyi*[2]. The total of catches for 2010 of the Russian Federation is 41,315 tons of *Trachurus murphyi*[3].

b. *Submission of information of Russian vessels authorized to operate within the area of the Convention.* In conformity with the information sent in the Information Paper by the Chairperson and Executive Secretary, it is stated that the only Russian vessel operating in the area of the Convention in 2010 was the vessel *Lafayette*[4].

c. *Relevant information of catch transshipment occurred during 2010 submitted by Peru.* According to letter 51-2010 dated 22 December 2010[5], of the Interim Secretariat, Peru reported its monthly catches until October amounting to 40,516 tons of *Trachurus murphyi.* This total amount of catches presents no modifications in later documents of the Interim Secretariat. The Interim Secretariat in its letter 0024-2011 dated 2 May 2011[6] requires Peru about the transshipment information of its vessels to the vessel *Lafayette* during 2010. Peru submitted information on transshipment of four of its vessels, *Pacific Champion, Pacific Conqueror, Pacific Hunter, and Pacific Voyager*, amounting to 31,275 tons of *Trachurus murphyi* during 2010[7].

d. *Inspections to the Russian Federation vessel, Lafayette.*

i. Inspection in Papeete, French Polinesy. On 30 March 2011, the Interim Secretariat circulated the inspection report of the vessel

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[1] Supporting Material 24 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 92.

[2] Supporting Material 25 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 93.

[3] Report on Interim Management Measures (PrepCon-02-INF-02 Rev2), dated January 2011 table 9, page 13.

[4] Paragraph 31 Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 14.

[5] See Supporting Material 1

[6] Supporting Material 31 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 118.

[7] Supporting Material 32 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 120.

Lafayette conducted by the French authorities on 24 January 2010[8]. Such report indicates that the vessel is a former oil tanker equipped with intended to pump the fish into a refrigerated tank before its process on-board with possibilities offered to other vessels to dock on both sides and to transship the fish or to refuel the vessel. The *Lafayette*'s master had doubts about the capacity of the vessel to operate as a pair-trawler. The vessel had neither fishing gears such as trawls or warps.

ii. Inspection in Las Palmas, Spain. On 26 January 2012, the Interim Secretariat circulated a letter from the European Union that attaches an inspection and a technical report conducted to the vessel *Lafayette* on its capability to carry out pair-trawling. The inspection confirms the results of the previous inspection and concludes that the design, size and lay-out of the *Lafayette* do not allow it to carry out pair-trawling. This means it is highly unlikely the vessel has ever operated as a trawler and according to the unfinished test of the winch, neither did in 2010. In fact, its length overall (228mt) and gross tonnage (49,173 tons) compared to a typical mid-water pair-trawler (length overall 58mt and 1,720 GT) make its maneuverability at slow speeds extremely dangerous and much more difficult in which trawling activities. The Russian vessel does not comply with the requirements of vessels participating in pair-trawling to be equivalent in performance and size. In addition to this, the vessel does not have the capacity to haul a net aboard, a fishing sonar or fish finding devices, and control of warp tension or depth of trawl, which constitute clear evidence of lack of operation. Taking into account all of the above, it is concluded that this is not a trawler but a factory mothership[9].

e. The Russian Federation submitted two documents to the Science Working Group at its 10th Meeting held in Port Vila, Vanuatu on September 2011:

i. *"National report"* (SWG-10-12). This report contains annual comparative information of fishing activities, especially on the fishery of *Jack mackerel*, from 1977 to 2011. Table 1 shows that by 2010 they had only one vessel operating. Table 3 shows that in 2010 *jack mackerel* catches amounted to 41,315 tons. Table 6 does not show number of tows or number of fishing days for 2010. Figure 6 shows monthly catches of *jack mackerel between 2008 and 2011; 2010 shows no information*[10].

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[8] Supporting Material 26 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 94.

[9] Supporting Material 49 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, page 169.

[10] See Supporting Material 2.

ii. *"Report on the Russian Scientific Observation in the Cruise Onboard of the Russian BATM #K -2176 "Leader" in the South-East Pacific (SEPO), March-May 2011"* (SWG-10-12A). Table 1 shows the fishery performance of *jack mackerel* between 2008 and 2011; in 2010 there was no fishing activity[11].

11. Regarding the previous facts, it can be concluded that from the 41,315 tons reported by the Russian Federation for 2010, 31,275 tons correspond to catches transshipped by Peruvian vessels during that year. This fact has not been refuted by the Russian Federation. According to the inspections conducted and the lack of operational fishing data of such vessel (catch information on a two by tow basis), it therefore follows that the vessel *Lafayette* did not have the capability or basic elements to perform catches by itself.

12. In conformity with the information submitted by the Russian Federation to the Science Working Group at the meeting held in Lima, Peru, on September 2012, at the moment of undertaking the stock assessment of *jack mackerel* of that year, it was agreed to eliminate catches reported by the Russian Federation for 2010[12]. That elimination is based on the lack of catch information for 2010 as shown in its own reports.

II

CONSEQUENCES OF THE LACK OF CORRECT AND COMPLETE INFORMATION SUBMITTED BY THE RUSSIAN FEDERATION

Legal consequences.

13. Provisions of Article 3 of the Convention[13]. In this article, Parties are expressly required to submit correct, detailed and complete information. Based on cooperation and international commitments taken, Members are to comply with the objective of the Convention.

14. Non-compliance of diverse provisions of the Interim Measures to which the Federation adhered:

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[11] See Supporting Material 3.

[12] See Supporting Material 4.

[13] Provision states: *"In giving effect to the objective of this Convention and carrying out decision making under this Convention, the Contracting Parties, the Commission and subsidiary bodies established under Article 6 paragraph 2 and Article 9 paragraph 1 shall: (a) apply, in particular, the following principles; ...(iv) full and accurate data on fishing, including information relating to impacts on the marine ecosystems in which fishery resources occur, shall be collected, verified, reported and shared in a timely and appropriate manner;".*

a. Contravenes paragraph 15 of the 2009 Interim Measures by submitting information on monthly catches out of date. This information should be submitted within 30 days after the end of each month. This is clear in the letters sent to the Executive Secretary by the Russian Federation on 13 July 2010 reporting catches from January to June 2010 and on the letter of 23 December 2010 reporting catches from July to December 2010[14].

b. Paragraph 14 of the 2009 Interim Measures; non-compliance with provisions of Data Standard, submission of information on 2010 data on fishing activities on a tow by tow basis, by June 2011, is not met.

Factual consequences

15. If tons reported by the Russian Federation are considered, duplicity of catches arises. In fact, 31,275 tons of *Thachurus murphyi* out of the 41,315 tons reported by the Russian vessel were considered within the participation basis of Peru, which actually carried the catches with vessels flying its flag. If considered to establish the participation of both States, duplicity of catches would arise, resulting in a complete contravention to the objective of the Convention. Moreover, the Russian Federation did not object or discredit Peru's information on transshipment of catches to the vessel *Lafayette* by Peruvian vessels.

16. Acknowledgement of effective fishing operations by the vessel *Lafayette* would imply ignoring two concrete and conclusive evidence presented by France and the European Union regarding its lack of capability to carry catches by itself. The Russian Federation has presented no evidence to prove otherwise.

III

OF THE COMPETENCE OF THE COMMISSION

17. The Russian Federation states that the Commission has no competence to verify that their 2010 reported catches constitute incorrect information since the Commission was not established and it was an interim period at the moment of the submission of that information.

18. Chile states that the Commission has the competence and the duty to verify the information submitted by the Parties. In this regard, Article 3 number 1 letter a) iv) of the Convention shall be cited: "*full and accurate data on fishing, including information relating to impacts on the marine ecosystems in which fishery resources occur, shall be*

[14] Supporting Materials 24 y 25 of the Information Paper submitted by the Chairperson and Executive Secretary of the Organization, pages 92 y 93.

collected, verified, reported and shared in a timely and appropriate manner". The Commission, as the decision-making body of the Organization and one of the addressees of the regulation, has the express mandate to verify that the information submitted by the Parties is correct, especially if it constitutes the basis for applying a conservation and management measure, as the objected measure.

19. The Russian Federation, as a Member of the Convention and addressee of the regulation, has the obligation to report correct, accurate, and complete data on fishing activities on which a measure will be based in a timely manner. This information shall coincide with the data that the Commission shall verify.

20. Notwithstanding the Convention entered into force on August 2012, the adoption of measures shall be based on previously collected data during the first period of operation. In the case of this Organization, there was a formal interim period constituted by the participants, now Members States in which catch and relevant scientific information was collected, especially for the fishery of *Trachurus murphyi*. The use of such data does not imply a retroactive effect of the Convention, but a power to be used at the moment of adopting a decision, in this case, the adoption of the measure for *Trachurus murphyi* 2013.

21. Without prejudice of the foregoing, during the interim period and in conformity with the 2009 Interim Measures and the Data Standard, all data on fishing activities of the previous year was to be collected and provided to the Interim Secretariat every June. Accordingly, the Federation committed to report catches through the Data Standard, which required the submission of detailed catch information on a tow by tow basis. To date, the Russian Federation has not submitted the 2010 information on a tow by tow basis.

22. Paragraph 11[15] of the 2011 Interim Measures expressly provides the Interim Secretariat with a mandate to verify annual catch reports submitted by participants against submitted data (on a tow by tow basis for trawlers). This resulted from the lack of accuracy on data submitted during previous years and the relevance of it in the scientific and information scope. Regarding this paragraph, the Russian Federation expressed that it would not comply with the information of its 2010 catches, as stated in a footnote in the 2011 Interim Measures. Without prejudice to the foregoing, the Federation states that it will keep reporting its catches according to provisions of 2009[16] Interim Measures which already required submission of information on fishing activities detailed on a tow by tow basis as expressed in the previous paragraph.

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[15] Number 11 of 2011 Interim Measures: "11.The Interim Secretariat shall verify the annual catch reports submitted by the Participants against the submitted data (tow by tow in the case of trawlers, and set by set or trip by trip in the case of purse-seining fishing vessels). The Interim Secretariat shall inform the Participants of the outcome of the verification exercise and any possible discrepancies encountered."

[16] Note 2 of the 2011 Interim Measures: "The Russian Federation will not apply this paragraph for its 2010 catch data which will be provided in accordance with 2009 Interim Measures."

23. Finally, it shall be taken into account that the Russian Federation signed the Convention on January 2011, during the Second Preparatory Conference held in Cali, Colombia. According to the Russian Federation, the Commission can not refer to those measures since they are not legally binding or to the information on which those measures were adopted since that information was provided before the Convention entered into force. This implies the unilateral restriction of the powers of the Commission.

IV

USE OF THE YEAR 2010 AS A BASIS OF THE DETERMINATION OF THE PARTICIPATION IN THE FISHERY OF *Trachurus murphyi*

24. At the moment of adopting the conservation and management measure in January of this year at the First Meeting of the Commission, the Russian Federation did not question the year 2010 as a basis for the calculation of the participation. According to its declaration presented and included in the Report of the First Session of the Commission[17], the Secretariat did not recognize the catches reported by the Federation for that year.

25. Additionally, the Federation does not object the use of the year 2010 in its objection presented on 25 April 2013. This argument was just incorporated in the Memorandum that supports the objection dated 14 June 2013.

26. As expressed in paragraph 4 of this Memorandum and in respect of formal aspects, there is a contradiction in the arguments presented by the Russian Federation. On the one hand, it objects the lack of recognition of its 2010 catches in the document of the objection. On the other hand, the supporting Memorandum widens the objection, stating that the year 2010 shall not be considered since according to number 4 of the 2009 Interim Measures, that year was not to be used for future allocations. It is impossible to recognize both arguments due to the contradiction between them and also, just one of them was presented in a properly and timely manner.

27. In this regard, it shall be stated that there was an express declaration of the Commission in the 2013 Conservation and Management Measure[18], in respect of the consideration of the years included in the interim period of the Convention. In that sense, 2010 information was expressly excluded from the prohibition of the utilization of the years included in the interim period to determine the participation. Such decision on the conservation and management measure was not objected by the Russian

[17] See Supporting Material 5. Report of the First Meeting of the Commission, January 2013, Annex K.

[18] See Supporting Material 6.

Federation. Paragraph 3 states: *"The provisions of this CMM and those of the 2011 and 2012 Interim Measures for pelagic fisheries are not to be considered precedents for future allocation or other decisions taken in accordance with Article 21 of the Convention relating to participation in fisheries for Trachurus murphyi in the Convention Area and in adjacent areas of national jurisdiction in the circumstances provided for in Article 21(4)(ii) and (iii) with the consent of the relevant Coastal State Contracting Party or Parties, and are not to affect the full recognition of the special requirements, including the fisheries development aspirations and interests, of developing States, in particular small island developing States and territories and possessions in the region, in accordance with the Convention. In particular, catches from 2011 to until at least this CMM is reviewed in accordance with paragraph 26 will not be considered in future allocation decisions."* In this subject, this conservation and management measure replaces the related Interim Measures.

28. Additionally, paragraph 4 of the mentioned Conservation and Management Measure also states that for future allocations, compliance with 2007 Interim Measures, revised in 2009, 2011 and 2012 is to be considered when adopting allocations in conformity with Article 21 of the Convention.

29. In summary, the Commission adopted the application of 2010 for the determination of the 2013 Conservation and Management Measure as a decision with full powers according to the Convention and International Law. This decision is fully in force and was not objected by the Russian Federation.

V

CONCLUSIONS

30. In the light of the foregoing, it is concluded that:

a. The Conservation and Management Measure objected does not discriminate in form or in fact against the Russian Federation. On the contrary, the measure is opposite to the Russian statement: it is consistent both with the object and purpose of the Convention and with the management rules and principles of the Regional Fisheries Management Organization.

b. In conformity with the background presented by the Chairperson and Executive Secretary, it is evident that the Russian Federation did not comply with the duty of reporting.

c. The Commission has fully and strong powers to apply Article 3 number 1. a) (iv) in the presence of incorrect and incomplete information: *"full and accurate data on fishing, including information relating to impacts on the marine ecosystems in which fishery resources occur, shall be collected, verified, reported and shared in a timely and appropriate manner"*. In this sense, there is

detailed and irrefutable information on the absence of effective catches carried by the Russian vessel *Lafayette*. This justifies the decision of the Scientific Group, Interim Secretariat and subsequently the decision of the Commission to not consider those catches on the principles of justice and respect to the objective of the Convention.

d. The decision to apply the year 2010 as a basis for the participation of the Members and Cooperating Non-Contracting Parties in the total allowable catch for 2013 is justified and under the law. As a consequence, this results in the lack of consideration of the Russian Federation.

e. The Commission has full powers to use information collected during the interim period as a basis of the conservation and management measures. It is understood that these new measures were to be developed on the basis of the information submitted by the Parties even though that information was submitted before the Convention entered into force. This does not mean the Convention has a retroactive effect as implicitly stated by the Russian Federation in its objection and Memorandum. In addition, it must be taken into account that such period was regulated by rules proposed and agreed by the participants according to international law. In the case of the Convention of the South Pacific Regional Fisheries Management Organization, the Commission has full powers to adopt conservation measures in accordance with measures adopted in interim periods, measures into force, or adopting new decisions based on the information submitted to that effect.

f. The total allowable catch, adopted in paragraph 6 of the Conservation and Management Measure 1.01, was not objected by the Russian Federation. Additionally, as expressed in paragraph 4 of this presentation, the fact that the year 2010 was considered as a basis for the 2013 participation was not objected. Therefore, both the decision corresponding to the total allowable catch and the year as a basis for the participation become binding for all the Members of the Commission and for all Cooperating Non-Contracting Parties.

g. In addition, according to paragraph 4 of the Conservation and Management Measure for 2013, 1.01, adopted by the Commission, the consideration of the year 2010 as a basis for the participation included in the Conservation Measure was expressly authorized.

31. Taking into account the arguments presented in this Memorandum and in accordance with the Convention in Articles 3, 8, 16, 17 and its Annex II and with the Conservation and Management Measure 1.01, the Government of the Republic of Chile requests this Panel to recommend that the decision to adopt the objected conservation and management measure for *Trachurus murphyi* does not discriminate in form or in fact against the Russian Federation and that it is not inconsistent with the Convention or the relevant international law according to the 1982 Convention or the 1995 Agreement.

VI

REQUEST

32. In view of the provisions of paragraph 6 of Annex II of the Convention, the Government of the Republic of Chile requests this Panel the opportunity to be heard at the Hearing in order to present the arguments regarding the Objection of the Russian Federation on the aforementioned Measure and to make a Power Point presentation during such Hearing.

Supporting Material 1

Title:	***Monthly catch reports for Trachurus species.***
Code:	Letter 2010-051.
Author:	Executive Secretary.
Recipient:	Heads of Delegations.
Type of document:	Letter.
Relevant passages:	Table that shows monthly catches of *Trachurus murphyi* reported during 2010.

Supporting Material 1

International Consultations on the Establishment of the
South Pacific Regional Fisheries Management Organisation

22 December 2010
Ref: 2010-051

To: Heads of Delegations

From: Robin Allen, Executive Secretary

Re: Monthly catch reports for *Trachurus* species

According to the voluntary "Revised Interim measures for Pelagic Fisheries" adopted on 14 November 2009, the Interim Secretariat is to circulate monthly reports of ***Trachurus*** catches to all participants on a quarterly basis.

The table shows monthly catches (t) of ***Trachurus murphyi*** reported during 2010.

Month	Belize	Chile (High Seas and EEZ combined)	China	European Union	Faroe Islands	Korea	Peru	Russian Federation	Vanuatu	Grand Total 2010 to Date
Jan	0	49,781	0	0	0	0	0	0	0	49,781
Feb	0	18,084	0	0	25	0	0	0	0	18,109
Mar	371	79,615	10,466	3,678	1,556	1,223	212	0	8,170	105,291
Apr	946	73,247	16,481	23,421	2,725	2,579	9,086	3,723	16,634	148,842
May	242	83,058	14,866	15,739	3,662	2,221	9,560	2,846	9,092	141,286
Jun	503	34,676	8,589	4,016	2,635	871	8,449	10,924	6,557	77,220
Jul	180	25,617	5,065	6,512	1,040	1,217	10,105		5,213	54,949
Aug		20,978	3,504	18,404	0	38	3,104		821*	46,848
Sep		890	3,189	3,977*	0	34	0			8,090
Oct		1,185	1,447		0		0			2,632
Nov					0					0
Dec										
Total (t)	2,240	387,131	63,606	75,747	11,643	8,183	40,516	17,493	46,487	653,047

* Participants advised this was the last month their vessels would fish in the *Trachurus* fishery in 2010

There have been no reported catches of any other ***Trachurus*** species.

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Supporting Material 2

Title:	***National report of the Russian Federation to the SPRFMO Science Working Group on the fisheries in the pacific in 2008-2011.***
Code:	SWG-10-12.
Author:	Russian Federation.
Recipient:	All the participants of the SPRFMO Science Working Group.
Type of document:	Document for the 10° Scientific Working Group, available in the SPRFMO website.
Relevant passages:	Tables 1, 3 and 6; Figure 6.

Supporting Material 2

SWG-10-12

National report of the Russian Federation to the SPRFMO Science Working Group on the fisheries in the Pacific in 2008-2011

1. Description of the fishery

1.1. Fishery in 1972-2011

Practically right after opening by the Russian researchers in second half 1970 – first half 1980th the huge aggregations of a jack mackerel in South Pacific this species became the basic object for fishery in region. Chub mackerel also was one of the main important species for fishery.

The development of fishery stimulated studying of biology and stock conditions of jack mackerel. Till the beginning of 1990th the main researches of the oceanic jack mackerel were made by Russian scientists. From 1955 till 1992 Russia executed 562 expeditions in the South Pacific.

The combined value of the fishery biomass of a jack mackerel in the region, was estimated in 25-40 mln t (in 1980th), including 16-25 mln t in the Southeast Pacific and 9-15 million t in Southwest Pacific. Considering catch as a whole it is possible to ascertain that the fishery of jack mackerel in the South Pacific in that period did not reach the level exceeding productional possibilities of that species to support its abundance at stably high level. The maximum total share of withdrawal by fishery from size of all biomass of the species during 1978-2006 made approximately 6.5-10.5 %.

The information about the number vesseles, which fished in the region is shown in Tables 1-2.

Table 1. Number of the fishing vessels during the fishery in the Southeast Pacific from 1972 till 2011

Year	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Number of vessels	?	?	0	0	0	0	?	81	75	92
Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Number of vessels	90	92	104	113	91	93	84	113	120	110
Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of vessels	43	3	4	3	?	0	0	0	0	0
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of vessels	0	3	3	3	0	0	1	6	1	2

Note: "?" means that the information is absent

Supporting Material 2

Table 2. Number of the fishing vessels during the fishery in the Southwest Pacific from 1977 till 2011

Year	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Number of vessels	?	?	?	?	4	13	13	6	4	55
Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Number of vessels	?	1	12	20	42	?	?	?	?	?
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of vessels	?	?	?	0	0	0	0	0	0	0
Year	2007	2008	2009	2010	2011					
Number of vessels	0	0	0	0	0					

Note: "?" means that the information is absent.

Russian catches of jack mackerel and chub mackerel from 1972 to 2011 in the Southeast Pacific and from 1977 to 1999 in the Southwest Pacific are presented in Tables 3-4 and Figures 1-4.

Table 3. Russian catch of jack mackerel and chub mackerel in the Southeast Pacific in tons

	Year									
Catch, t	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Jack mackerel	5500	0	0	0	0	0	49220	532209	544970	771630
Chub mackerel	0	0	0	0	0	0	1773	5800	48300	41500
	Year									
Catch, t	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Jack mackerel	735898	866500	1056600	837700	785000	818628	938288	1096292	1122297	591800
Chub mackerel	41878	4416	71952	38275	1920	3835	34805	28160	74168	18257
	Year									
Catch, t	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Jack mackerel	32000	0	0	0	0	0	0	0	0	0
Chub mackerel	970	0	0	0	0	0	0	0	0	0
	Year									
Catch, t	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Jack mackerel	0	7540	62300	7040	0	0	4800	9113.2	41315	8228.83*
Chub mackerel	0	0	0	0	0	0	386.74	534.9		12.41*

Note: * data till September 10 2011

Supporting Material 2

The largest catch of jack mackerel (1122297 t) was taken in the Southeast Pacific in 1990, and in 1986 (146200 t of jack mackerel) in the southwest Pacific (Fig. 1, 3). As concerns chub mackerel, the largest catches of this species were taken in 1990 (74168 t) and in 1991 (828 t) in the Southeast and in the Southwest Pacific accordingly (Fig. 2, 4).

Table 4. Russian catch of jack mackerel and chub mackerel in the Southwest Pacific in tons

	Year									
Catch, t	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**
Jack mackerel	710	254	0	13	0	4953	10651	22300	133350	146200
Chub mackerel	0	0	0	0	0	0	0	0	50	0
	Year									
Catch, t	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Jack mackerel	107379	58997	57243	67618	127828	2892	4586	2008	1677	2280
Chub mackerel	50	200	700	100	828	?	326	204	75	0
	Year									
Catch, t	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Jack mackerel	886	52	223	0	0	0	0	0	0	0
Chub mackerel	0	0	0	0	0	0	0	0	0	0

Note: "?" means that the information is abcent.

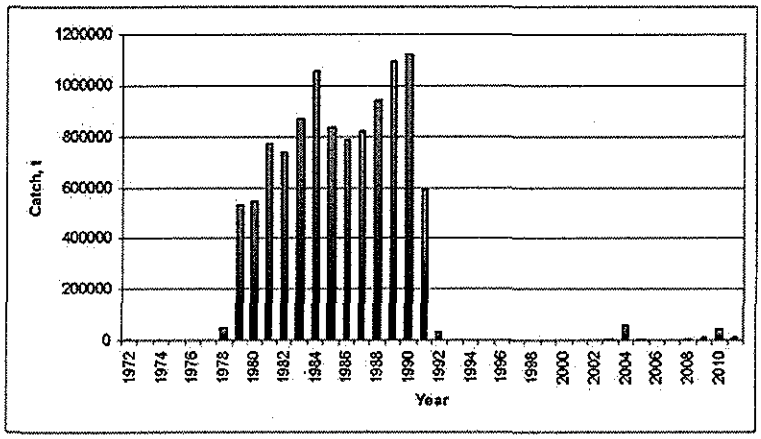

Figure 1. The Russian catch of jack mackerel in the Southeast Pacific

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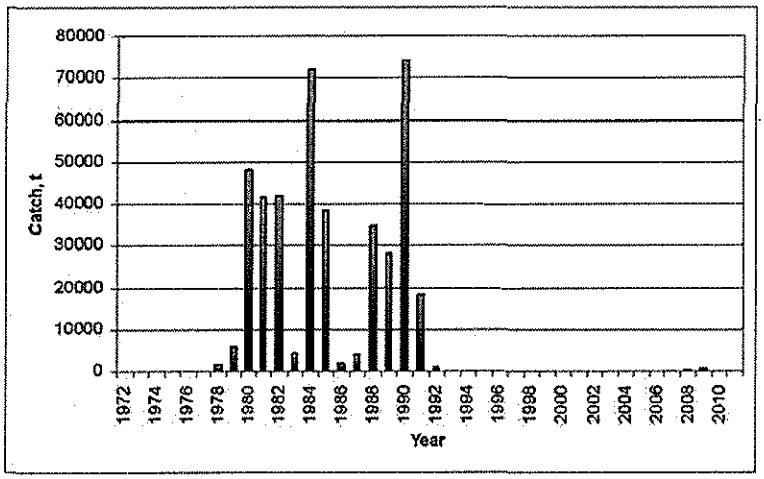

Figure 2. The Russian catch of chub mackerel in the Southeast Pacific

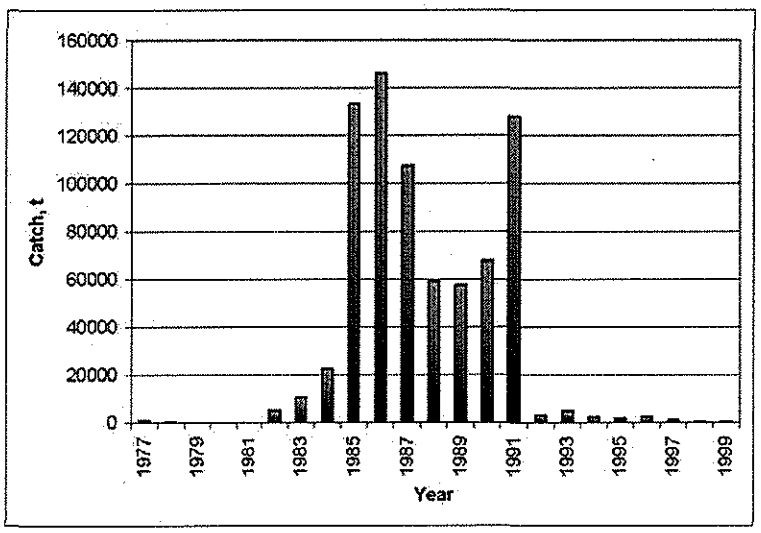

Figure 3. The Russian catch of jack mackerel in the Southwest Pacific

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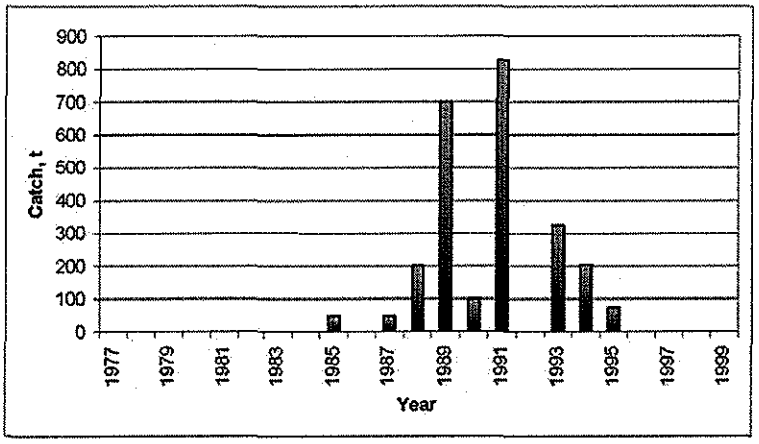

Figure 4. The Russian catch of chub mackerel in the Southwest Pacific

1.2. Fishery in 2008-2011

In the year 2008, Russian trawler "Persey" caught jack mackerel and chub mackerel in the high seas of Southeast Pacific. The total catch was 4800 t for jack mackerel and 386.74 t for chub mackerel in 62 fishing days (Tab. 5, 6, 7).

In 2009 the number of the Russian fishing fleet has increased to 6 vessels. "Germes", "Ivan Lyudnikov", "Semiozernoe", "Kapitan Kuznetsov", "Atlantida" and "Lafayett" (their GT are shown in Table 7) caught jack mackerel and chub mackerel in the high seas of Southeast Pacific.

In 2011 two Russian vessels ("Leader" and "Sheriff") worked in the high seas of Southeast Pacific (Tab. 5, 6, 7, Fig. 5).

Table 5. Russian actively fishing vessels for 2008-2011

year	name	GT
2008	**Persei**	**4638**
2009	Germes	4629
2009	Ivan Lyudnikov	6144
2009	Semiozernoe	6231
2009	Kapitan Kuznetsov	6231
2009	Atlantida	2062
2009	Lafayett	49173
total for 2009		**74470**
2010	**Lafayett**	**49173**
2011	Leader	6144
2011	Sheriff	6232
total for 2011		**12376**

Supporting Material 2

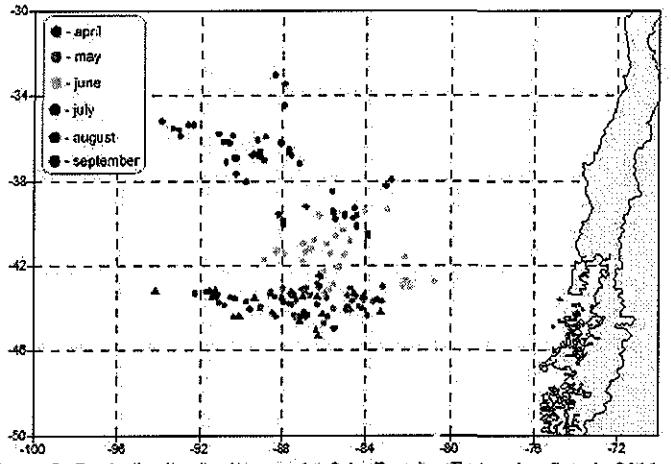

Figure 5. Catch distribution by month of the Russian Federation fleet in 2011

The vessels which were involved in this fishery use single midwater trawls. They operated in the area from 31.33 S to 38.87 S and from 85.33 W to 100.63 W in 2008, from 34.65 S to 43.98 S and from 79.05 W to 126.07 W in 2009 and from 32.85 S to 45.53 S and from 80.5 W to 94.63 W in 2011.

Table 6. The information about fishery in the high seas of the South Pacific in 2008-2011

year	number of vessels	number of tows	number of fishing days
2008	1	96	62
2009	6	235	153
2010	1		
2011	2	208	182

The Russian vessels operated in the area from July till October in 2008, from May to September in 2009 and from March in 2011. The main catch of jack mackerel and chub mackerel in 2008 was taken in September, the main catch of both species was taken in 2009 in July and in 2011 the main catch of jack mackerel and chub mackerel were taken in April (Fig. 6, 7).

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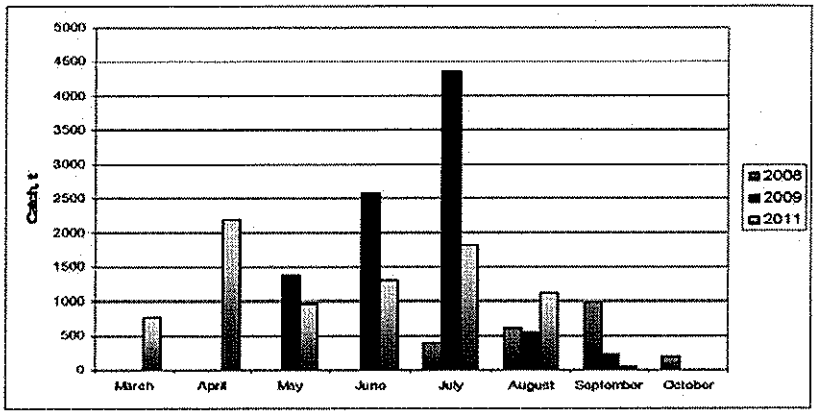

Figure 6. Monthly catches of jack mackerel by Russian vessels in 2008, 2009 and 2011

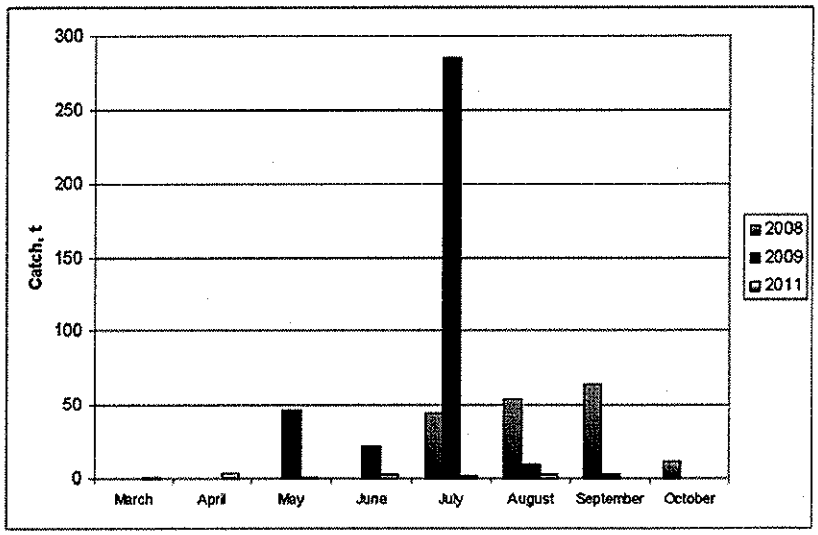

Figure 7. Monthly catch of chub mackerel by Russian vessels in 2008, 2009 and 2011

2. Catch, effort and CPUE summaries

Development of catches and efforts in fishing of the jack mackerel and chub mackerel by Russian vessels is presented in the Table 7, 8.

Supporting Material 2

Table 7. Catches and efforts for jack mackerel and chub mackerel fishery in the SPRFMO area

year	catch, t		catch per hour, t	
	jack mackerel	chub mackerel	jack mackerel	chub mackerel
2008	4800	386.74	10.06	0.84
2009	9113.20	534.93	7.94	0.57
2010	41315			
2011	8228.83	12.41	5.45	0.05

Table 8. The average monthly catch and CPUE of jack mackerel and chub mackerel by Russian vessels in Southeast Pacific Ocean in 2008-2011

month	catch, t		catch per hour, t	
	jack mackerel	chub mackerel	jack mackerel	chub mackerel
2008				
July	866.12	99.66	19.13	2.22
August	1344.21	118.65	9.81	0.86
September	2173.45	142.09	10.66	0.75
October	416.21	26.34	2.87	0.18
2009				
May	1377.11	46.86	8.18	0.28
June	2575.17	22.33	7.82	0.64
July	4347.26	285.39	8.52	0.84
August	543.44	9.84	5.21	0.11
September	220.90	3.08	6.33	0.07
2011				
March	772.12	1.20	5.43	0.04
April	2197.31	3.41	5.15	0.20
May	964.66	0.52	2.91	0.01
June	1302.56	3.00	3.60	0.03
July	1822.08	1.80	10.63	0.03
August	1122.68	2.30	7.51	0.03
September	47.42	2.89	0.18	0.03

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The CPUE of jack mackerel and chub mackerel in July-October (2008), May-September (2009) and March-August (2011) are shown in Figures 8 and 9.

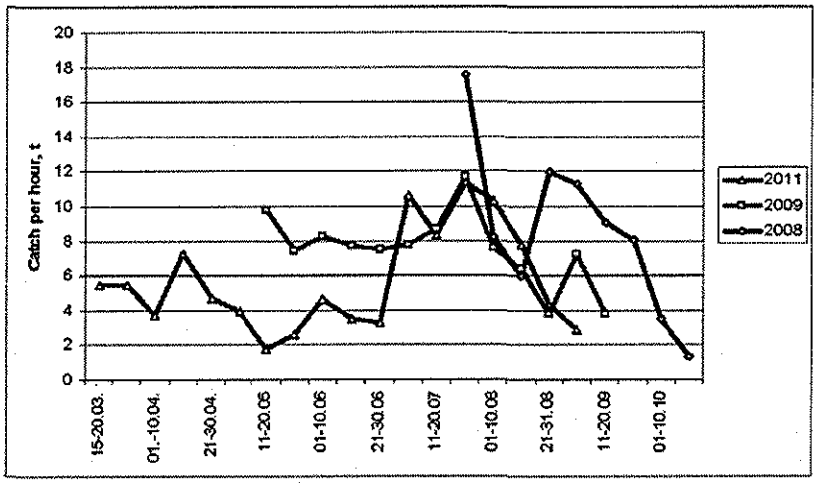

Figure 8. The CPUE of jack mackerel in 2008, 2009 and 2011

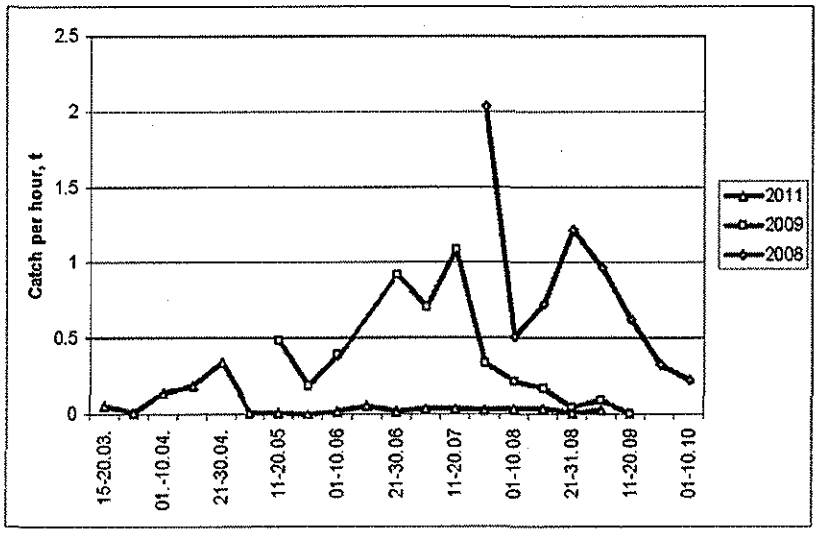

Figure 9. The CPUE of chub mackerel in 2008, 2009 and 2011

Supporting Material 2

3. Fisheries data collection and research activities

3.1. Collection of haul-by-haul information from the captains

Each trawler provided detailed information for each individual haul. That information contained data about the vessel and the trawl; tow start and end date and time; tow start and end position; height and width net opening; gear and bottom depth; intendent target species and about the catch.

The size of the individual catches was estimated.

3.2. Data collection by observers at sea

In accordance with the recommendation of the SPRFMO Data and Information Working Group, this programme attempted to obtain at least 10% coverage of all hauls made by the fleet. For this purpose, observers were onboard of the Russian vessel during fishing in 2008.

In 2009 the observers were onboard of fishing vessel "Germes" and onboard of R/V "Atlantida". 30.64% of hauls were observed.

In 2011 the observer worked onboard of the vessel "Leader". 33.17% of hauls were observed.

Onboard of commercial vessel of distant-water fisheries they recorded data on vessel, fisheries and biological information.

4. Biological sampling and length/age composition of catches

Biological sampling for mid-water trawl catch has been carried out to obtain size data and information on reproductive biology of jack mackerel and chub mackerel. Figure 10-11 present the length composition for 2008, 2009 and 2011.

A total of 2400 of jack mackerel and 2400 of chub mackerel were measured in 2008, compared to 5766 and 576 in 2009 and 11131 and 266 in 2011, in accordance.

Jack mackerel of 34-37 cm, 34-36 and 18-20 cm, 32-35 and 40-43 cm dominated in catches in 2008, 2009 and 2011 in accordance (Fig. 10).

Chub mackerel of 35-38 cm dominated in catches in 2008, specimens of 27, 30 and 34-35 cm dominated in 2009 and fish of 32-37 cm dominated in 2011 (Fig. 11).

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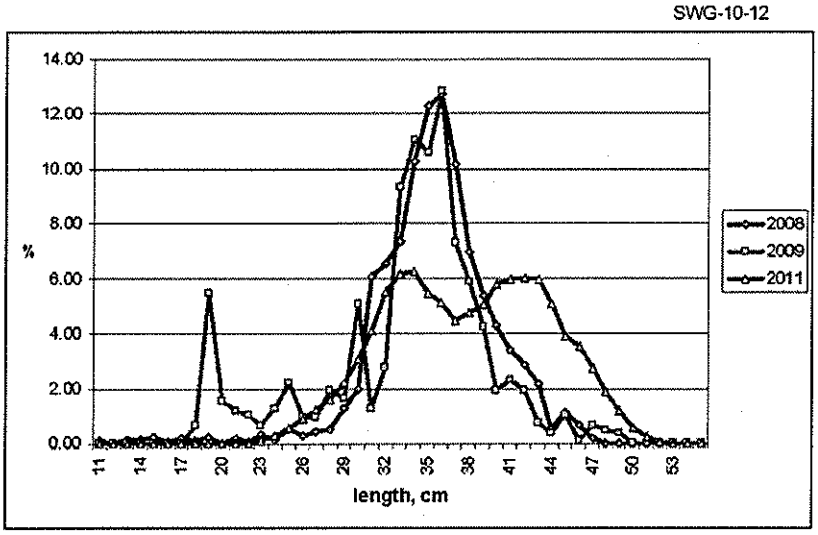

Figure 10. Length composition of jack mackerel in spring-autumn 2008, 2009 and 2011

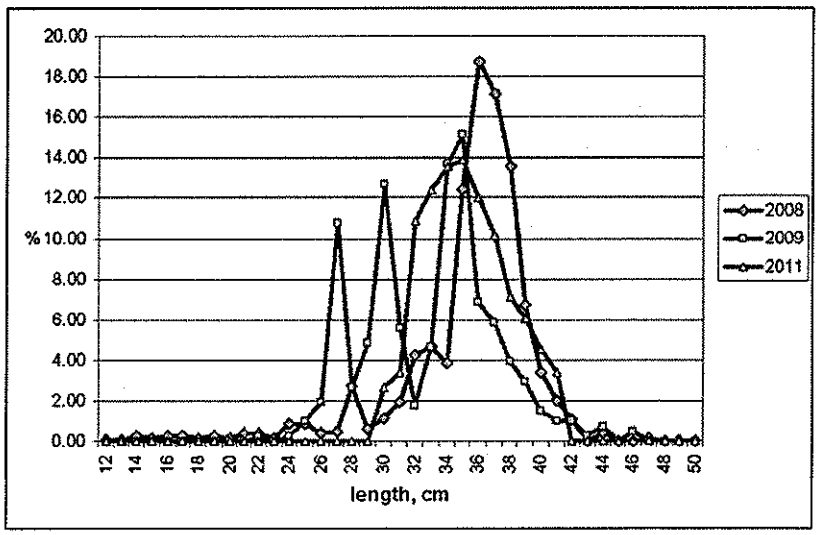

Figure 11. Length composition of chub mackerel in summer-autumn 2008, 2009 and 2011

The average length of jack mackerel and chub mackerel by ten day period in 2008, 2009 and 2011 are shown in Figures 12-13.

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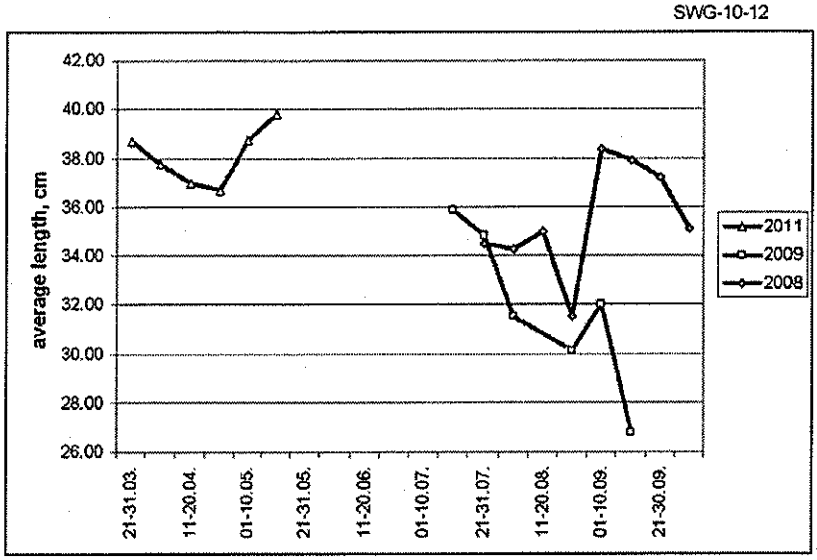

Figure 12. Average length of jack mackerel by ten day period in 2008, 2009 and 2011

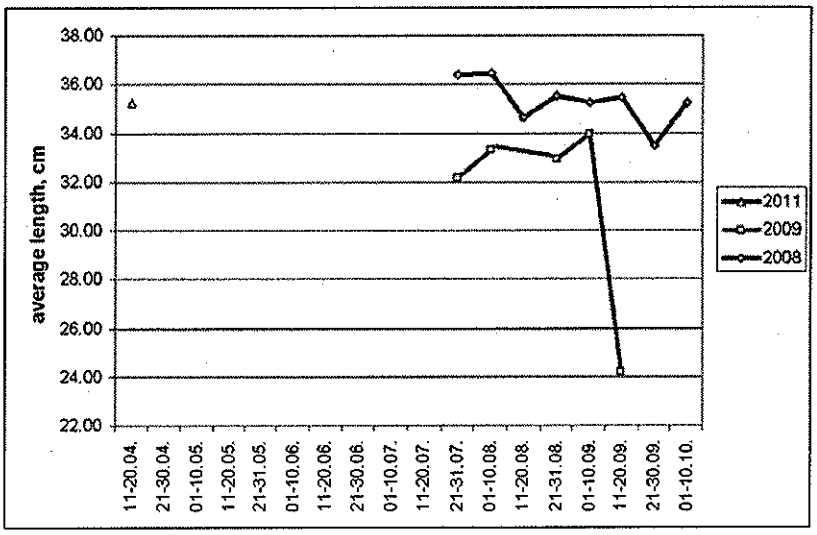

Figure 13. Average length of chub mackerel by ten day period in 2008, 2009 and 2011

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According to our data in 2008-2011 the occurrence of juveniles jack mackerel in the catches increased in advancing from the east to the west, causing a decrease in the average sizes of fish in the catches (Fig. 14).

According to the Russian data in 1979-2002 the average length of the jack mackerel, on the contrary, decreased in a direction from the west to the east, that is, off the coast of the South America the smallest jack mackerel was caught. According to the data, collected in the cruise of R/V "Atlantida" in 2009 the average length of a jack mackerel in catches increased at advancement in east direction on water area from 126° W to 74° W.

Thus, since 2008 the number of the juvenile jack mackerel, which was found in the coastal waters, was essentially reduced in comparison with the period from 1979 to 2002.

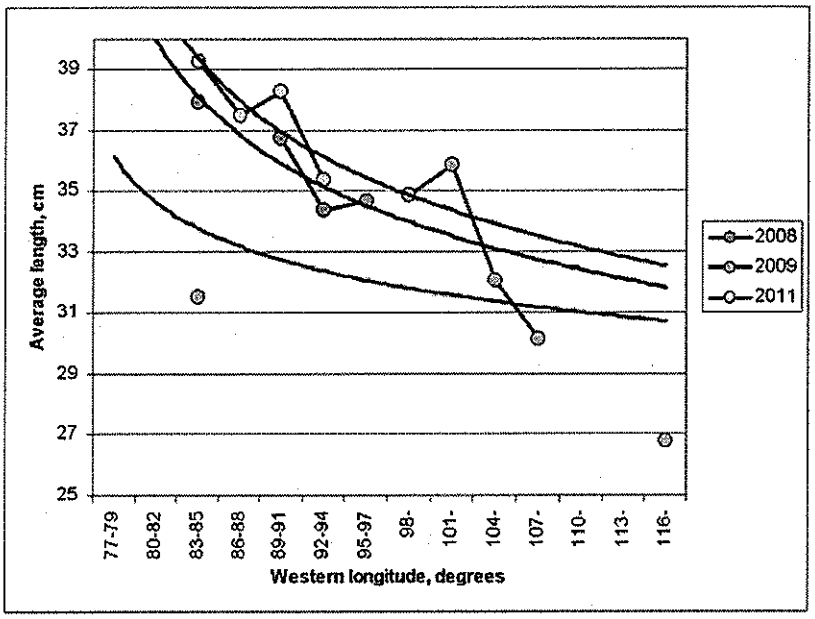

Figure 14. The average length of the jack mackerel in the catches on different meridians in 2008-2011

Supporting Material 3

Title:	***Report on the Russian Scientific Observation in the Cruise Onboard of the Russian BATM #K-2176 "Leader" in the South-east Pacific (SEPO), March-May 2011.***
Code:	SWG-10-12a.
Author:	Russian Federation.
Recipient:	All the participants of the SPRFMO Science Working Group.
Type of document:	Document for the 10° Scientific Working Group, available in the SPRFMO website.
Relevant passages:	Second paragraph in page 7 of original version; Table 1.

Supporting Material 3

SWG-10-12a

REPORT

On the Russian Scientific Observation in the Cruise Onboard of the Russian BATM #K - 2176 "Leader" in the South-East Pacific (SEPO), March-May 2011

Supporting Material 3

CONTENTS

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1. Introduction

The following tasks must be carried out onboard of the fishing vessels during the Russian studies for long-term sustainable use of stocks of jack mackerel fishing in the SPRFMO Convention Area:

- to ensure the observance by Russia the Interim control measures, apply to fisheries for *Trachurus* species in respect of the direction of scientific observers on 10% of Russian vessels engaged in fishing in SP;
- to continue the gathering of samples for genotypic analysis of population structure of Pacific jack mackerel;
- to spend a relative estimation of the stock's condition of jack mackerel using the catches by the standard effort;
- to investigate the spatial distribution of jack mackerel in the fishing season;
- to investigate the size-age composition of jack mackerel's catches in order to identify the structure of clusters and abundant generations;
- to carry out the morphophysiological studies of jack mackerel;
- to collect fishery and biostatistical data.

The works in 2011 were carried out onboard the Russian BATM "Leader" in the area between parallels 42°00′ and 45°58′ of the southern hemisphere and between meridians 83°00′ and 94°59′ of the western hemisphere.

One Russian scientific observer D.V.Pelenev worked onboard of the BATM "Leader". His duties included the performance of works according to the trip task.

2. Characteristics of the vessel, technical equipment and instruments

The general length of the vessel is 125.22 m; the general width is – 16.02 m; depth – 10.2 m; maximum speed – 16.1 knots. Engine power – 5146 kW; emergency power diesel generators – 1750 kW.

The fishing of hydbionts were made with mid-water trawl with the horizontal opening of 120 m and vertical – 80-100 m, general length of trawl – 690 m, mesh size in codend – 110 mm.

The ichthyologic researches were carried out by measuring board (division value of 1 mm), electronic scales of firm «Ishida» with compensated pump (maximum weight 20 kg, accurancy – 1 g), mechanical scales (maximum weight – 6 kg) and the cup weights (accurancy 10 mg).

3. Research technique, the volume of collected material

At each trawling the trawling card including the characterization of trawling and the species composition of target species was filled. The following trawling parameters were registered: the coordinates were the dragrope was taking to the stopper, the depth of the trawling and the catch's volume (t). The fishing-statistical parameters, such as catch per hour of trawling, 24 hours' catch, average daily catch for the ten days, general catch for 10 days were calculated during the fishing.

Samples for mass measurements of length, individual weight and biological analysis of the most abundant species of fish (jack mackerel and chub mackerel) were selected from each catch.

The biological analysis of fish included:

- measurement of the Smith's length (from the end of mug to the end of medium rays of caudal fin), up to 1 mm;
- determination of total body weight, up to 1 g;
- determination of body weight without viscera, up to 1 g;
- definition of sex and maturity stage of gonads;
- definition of filling the stomach to 5-point scale (0-4);
- determination of food composition in the stomach content.

The main bodies of hydrobionts – gonads and liver were weighted for the morphophysiological study. Then the indexes of each of the organs (the ratio of organ mass to body weight without viscera, expressed as a percentage) and the condition factor by Clark were calculated.

Data of trawling cards, biological analyses and data of morphophysiological studies, were brought in program Microsoft Excel. The maps of hydrobionts'

distribution were built with use of software Chartmaster, on a method a 2D-spline, which was developed in VNIRO (Russia). The following characteristics and factors were accepted for calculations:

horizontal opening of a trawl is 120 m;

trawling speed is 5 knots;

catchability coefficient is 1.0;

spline smoothing parameters is 0;

coefficient of influence of the depth is 0.

During the work 68 trawlings were carried out; 11131 mass measurements of jack mackerel and 266 of chub mackerel were made; 1850 and 50 byological analyses of jack mackerel and chub mackerel were done respectively; for age determination 327 jack mackerel's otoliths were taken; 200 jack mackerel's genetic samples (the fragment of right pectoral fin) were collected.

4. Chronology of scientific observation

The beginning of fisheries	March 21, 2011
The end of the scientific observation	May 21, 2011

5. Common characteristics of the catch, catch statistics

In 2011 from March to May the total catch of the main fishing objects (jack mackerel, chub mackerel) was 1913.78 tons, of them jack mackerel – 1912.47 t, chub mackerel – 1.31 t. The catches per one trawling ranged from 0.318 to 78.413 t, per hour of trawling – from 0.212 to 8,023 t. The largest catch was recorded in April – 1306 t (Fig. 1). Trawlings were carried out at depth layers of 20-46 t. In 2008, 2009 and 2011 the largest catches of pacific jack mackerel occurred in 2009, from May to July, while the lowest were in October 2008. It should be borne in mind that the diagram for 2011 presents data, based on the work of a single ship; while at the same time another Russian vessel worked in the SEPO.

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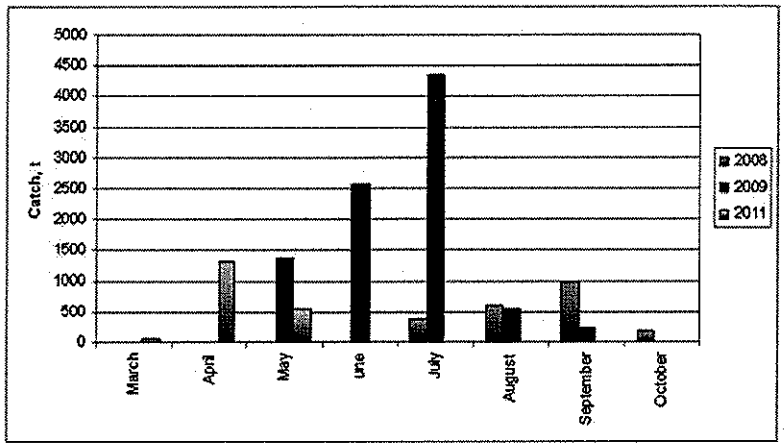

Figure 1. Monthly catches of the pacific jack mackerel by Russian fleet for 2008, 2009 and 2011.

The catches of the chub mackerel also were highest in July 2009 – more than 280 t. Nearly uniform monthly catch was recorded in 2008 from July to September and was about 50 tons, the minimum catches were observed in September 2009 and April 2011 (Fig. 2.)

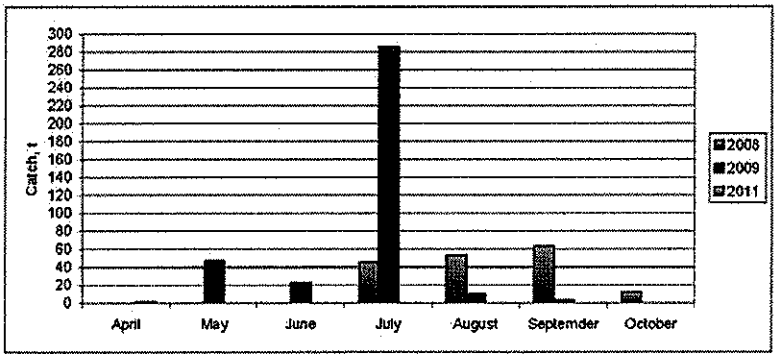

Figure 2. Monthly catches of the chub mackerel for 2008, 2009 and 2011.

The largest catches of the pacific jack mackerel per hour trawling were made in the third decade of July either in 2008 or in 2009 (Fig.3). During research in 2011 from March to May decadal catches ranged from 1.75 to 6.23 t per hour of trawling (there was the maximum catch in the second half of April).

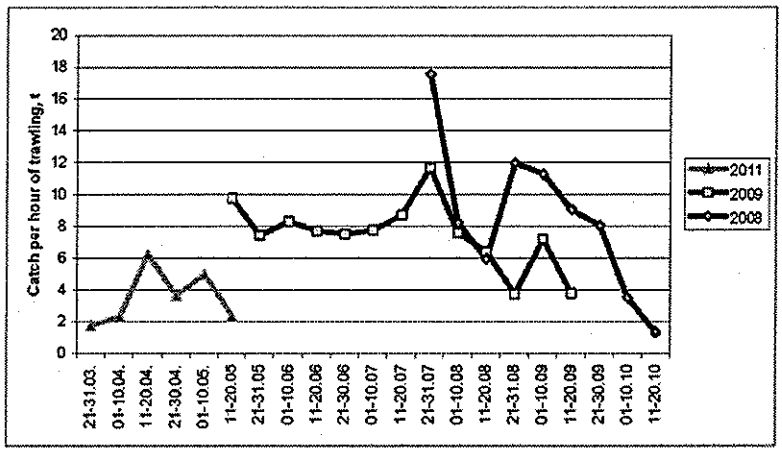

Figure 3. Decadal catches per effort of the pacific jack mackerel in 2008, 2009 and 2011 (Russian fleet).

In general, catches by the standard effort in 2011 was minimal for all the compared period. At the same time the annual decline in catch per unit effort in a number of years 2008-2009-2011 was pointed out (Table 1). This is an indirect indication of the deterioration of the pacific jack mackerel's stocks in the high seas of SEPO.

Table 1. Russian catches per hour of trawling of the pacific jack mackerel and chub mackerel by years.

year	jack mackerel	chub mackerel
2008	10.06	0.84
2009	7.94	0.57
2011	3.75	0.19

In general, fishing situation during the period of research can be described as unsatisfactory.

Also the frequent adverse weather conditions complicated the fishing, because of which the vessels lost from one to three days of work.

6. The characteristic of the pacific jack mackerel – *Trachurus murphyi*

Catches of the pacific jack mackerel per trawling ranged from 0.318 to 78.413 t, averaging 28.125 t. Maximum catch was recorded at coordinates 43°18' S 87°35' W. Catch per hour of trawling ranged from 0.212 to 8.023 t, averaging 3.750 t.

The main core of the pacific jack mackerel's aggregations was observed in the north of fishing area of BATM "Leader" at the end of March - May 2011

The fishery aggregations of the pacific jack mackerel shifted to the north (Fig. 4), following the cooling of water from March to May (Fig. 5). The jack mackerel's most preferred temperature was 11-12° C in March-May.

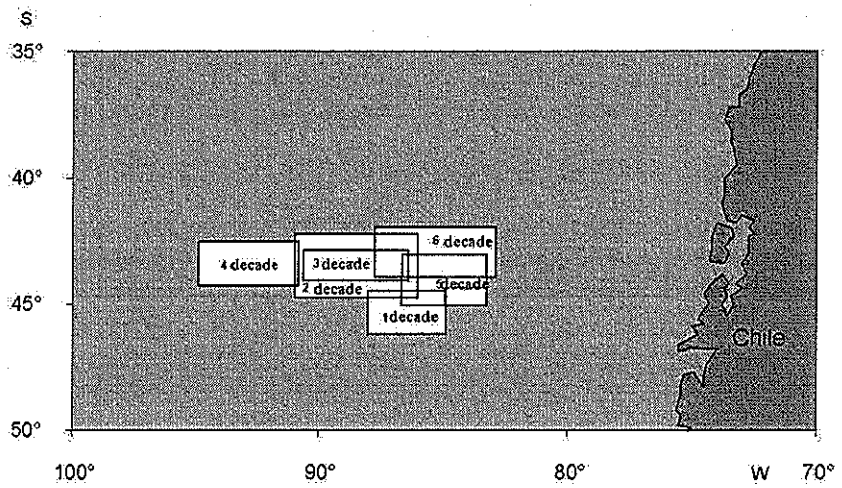

Figure 4. Map of movements of the vessel "Leader" in 2011 during the fishery in the SEPO by ten days (1 decade – 21.03.-31.03., 2 decade – 01.04.-

10.04., 3 decade – 11.04.-20.04., 4 decade – 21.04.-30.04., 5 decade – 01.05.-10.05., 6 decade – 11.05.-20.05.).

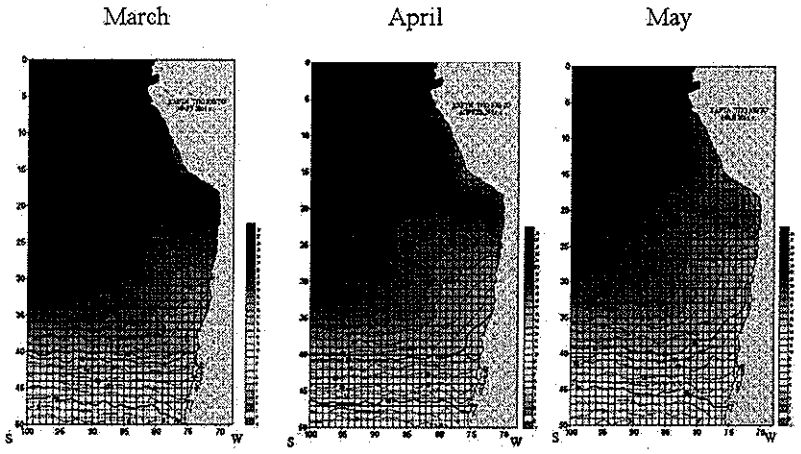

Figure 5. Maps of SST in the SEPO in the period from March to May 2011.

The jack mackerel with length from 22 to 55 cm (mean length 37.97 cm) were met in catches. Two modal groups dominated in the size range: of 32 - 35 cm, which accounted for 23.46% of the catch, and of 40-43 cm – 23.83% (Fig. 6).

The jack mackerel's length composition, similar to the 2011, was noted in 2007: the first dominated group had a modal length from 33 to 38 cm, the second – from 41 to 45 cm (Fig. 7). In 2008 and 2009 the length composition of the jack mackerel was unimodal with a mode of 34 to 39 cm. In addition, the catch in 2009 was attended by a large number of young generations, 2007-2008.

According to our data in 2008-2011 the occurrence of juveniles in the catches increased in advancing from the east to the west, causing a decrease in the average sizes of fish in the catches (Fig. 8).

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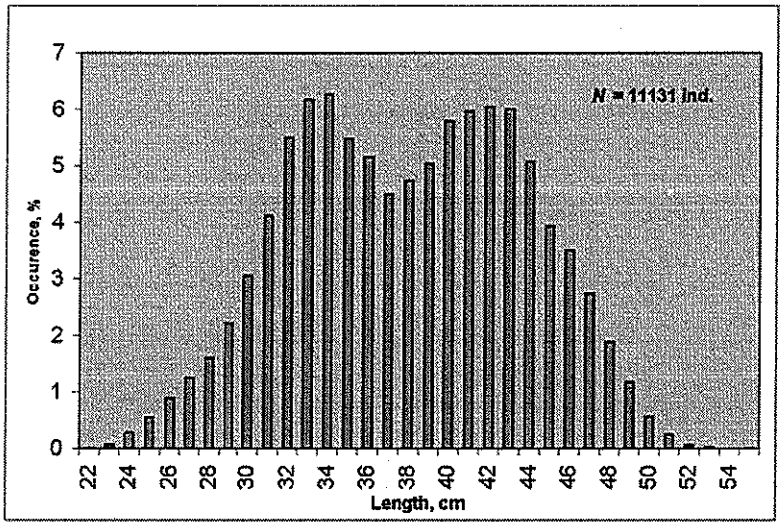

Figure 6. Length composition of the pacific jack mackerel in the SEPO in March-May 2011, according to trawlings of BATM "Leader".

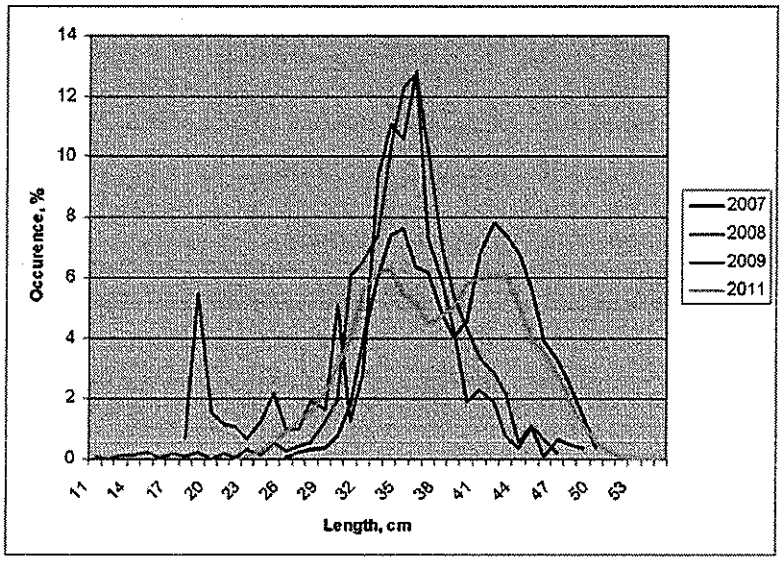

Figure 7. Length composition of the pacific jack mackerel from commercial catches in the SEPO 2007-2011.

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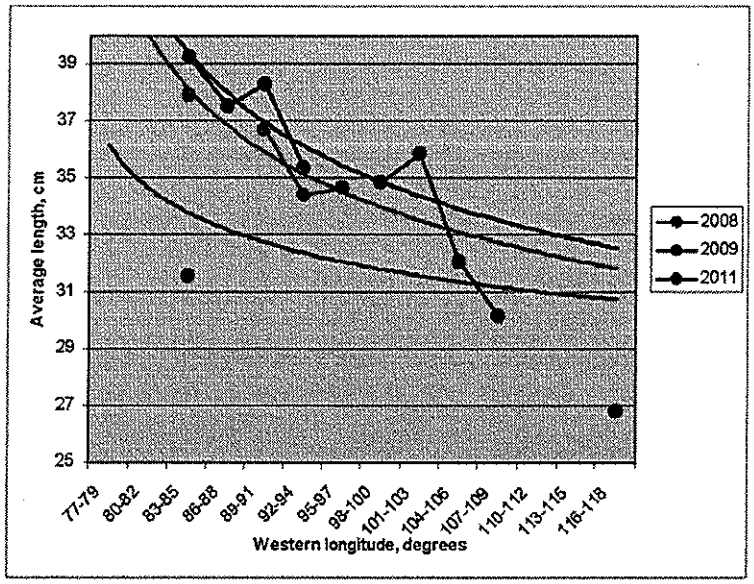

Figure 8. The average length of the pacific jack mackerel in the Russian catches on different meridians in 2008-2011.

According to the Russian data in 1979-2002 the average length of the pacific jack mackerel, on the contrary, decreased in a direction from the west to the east, that is, off the coast of the South America the smallest jack mackerel was caught. According to the data, collected in the cruise of R/V "Atlantida" in 2009 the average length of a jack mackerel in catches increased at advancement in east direction on area from 126° W to 74° W (Sushin, 2009).

Thus, since 2008 the number of the juvenile jack mackerel, which was found in the coastal waters, was essentially reduced in comparison with the period from 1979 to 2002.

In 2011, the jack mackerel in age from 3 to 5 years (generations of 2008-2006) dominated in the catches. Individuals of the same age classes dominated in the catches in 2007 (Fig. 9). There were practically no individuals older than 4 years in catches in 2008 and 2009. Attention is drawn to the appearance of the

immature fish with age 2 + in the catches of 2009 and 2011. Despite the emergence in the last 3 years of the young fish, the proportion of fish in the next age class (3 +) reduced during 2008-2011. In the same period the increased the share of old fish (6 +), which may develop high speed and for whom it is easy to avoid the gear. This may be indirect evidence of excessive catches of juveniles in recent years.

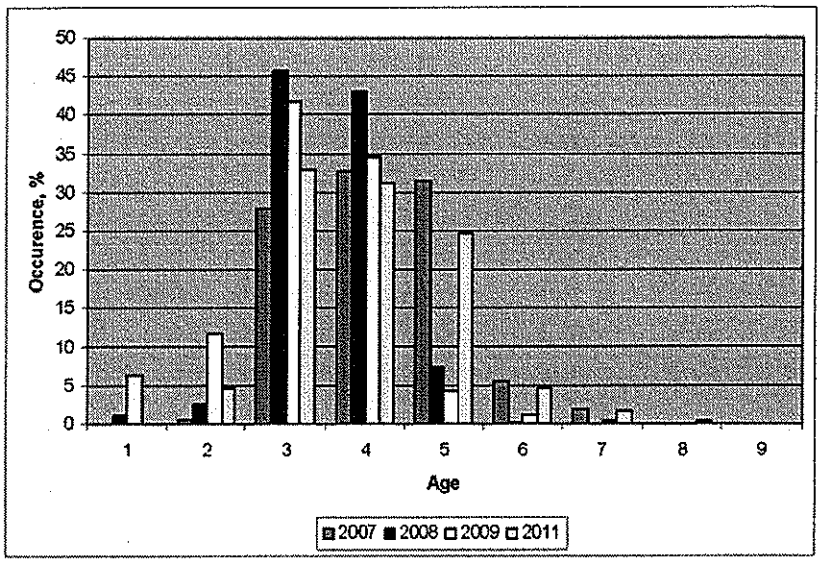

Figure 9. Age composition of jack mackerel's catches in the open sea of SEP according to fishing trawls 2007-2011.

Female jack mackerel dominated in the South-East Pacific in March-May 2011. They accounted for 70.78% and males – 22.15%, 7.07% – the juvenile. The stage of maturity of gonads of male and female jack mackerel were a similar during the study. The females with gonads at II - 17.14%, III - 58.49% and VI-II - 24.37% stages of maturity dominated in March-May 2011 (Table 2, Figure 10).

Supporting Material 3

Table 2. The biological characteristic of the pacific jack mackerel according to trawlings of BATM "Leader".

average length, cm/number of measurements		37.97/11131
minimum – maximum length, cm		20.7-62.5
average weight, g	females	685
	males	717
minimum - maximum weight, g	females	170-2014
	males	193-2382
share of males, %		22.15
dominated stages of maturity, %	females	II – 17.14%; III – 58.49%; VI-II – 24.37%
	males	II – 16.08%; III – 58.29%; VI-II – 25.63%
stomach fullness, point		2.46
share of empty stomach, %		88.16
cubic condition factor		0.89
gonadosomatic index, %	females	0.879
	males	0.886
hepatosomatic index, %	females	0.905
	males	0.965
number of individuals: bioanalysis/morphophysiology		1850/1850

Note: the average length is given by results of mass measurements, the rest is based on the results of the full biological analysis.

Among males dominated fish with gonads at II – 16.08%, III – 58.29% и VI-II – 25.63% stages of maturity.

A significant change in the ratio of individuals with different stages of maturity of the gonads were not observed during 60 days of research from March 21 till May 21 (Fig. 11, 12). During the period of scientific observation onboard of the BATM "Leader", the jack mackerel was in the middle of its feeding period of the annual cycle, which suggests the prevalence of individuals with III stage of the gonads' maturity.

Females were slightly smaller than males. Length of the first ranged from 23.0 to 58.8 cm, averaging 40.9 cm. Males' length range was from 26.0 to 62.5 cm, mean length – 41.4 cm. Difference in body weight among the females also was a

bit smaller: 170 - 2014 (average 685 g) and 193 - 2382 g (mean 717 g), males and females in accordance. The relationship between length and body mass had a well-pronounced exponential character (Fig. 13, 14) that were highly accurate approximation for both sexes (R^2 = 0.94 and 0.96 for females and males in accordance). The values of linear and power coefficients depending on the males and females were similar.

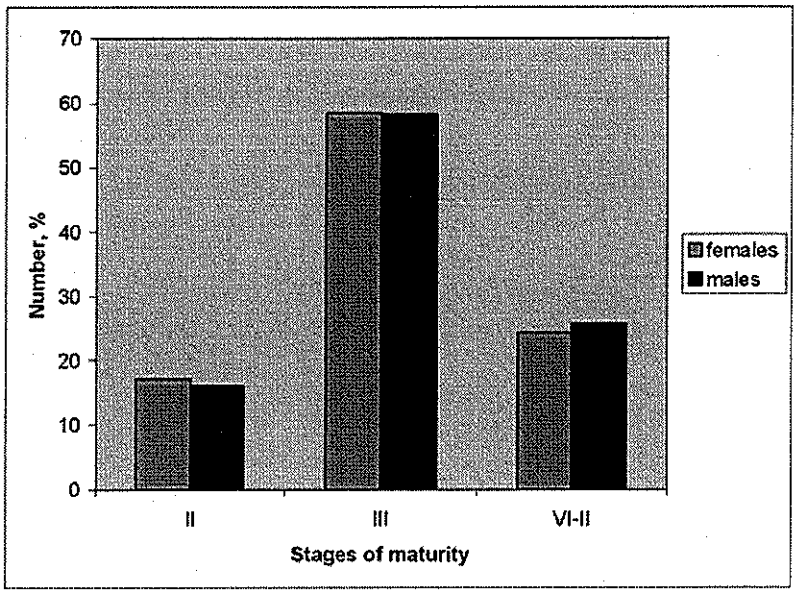

Figure 10. Ratio (%) of females (N = 1272) and males (N = 398) of jack mackerel with the gonads at different maturity stages in SEPO in March-May 2011.

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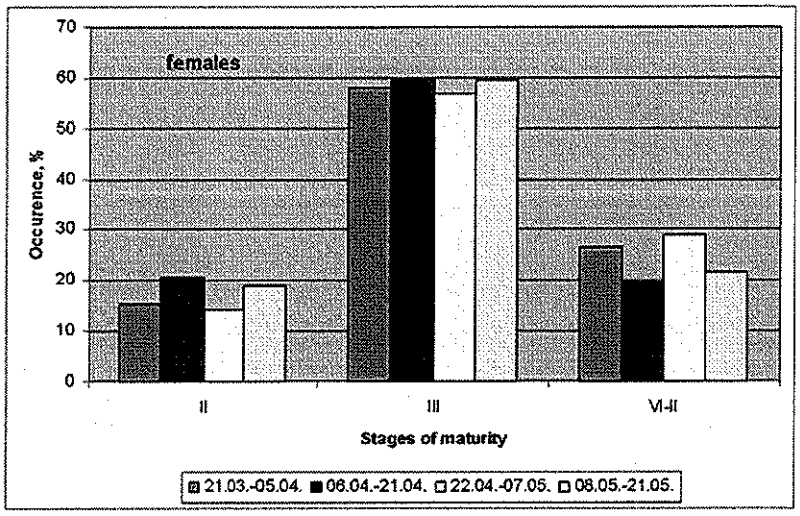

Figure 11. The ratio of females by stages of the gonads' maturity by 15 days in March-May 2011 in the SEPO.

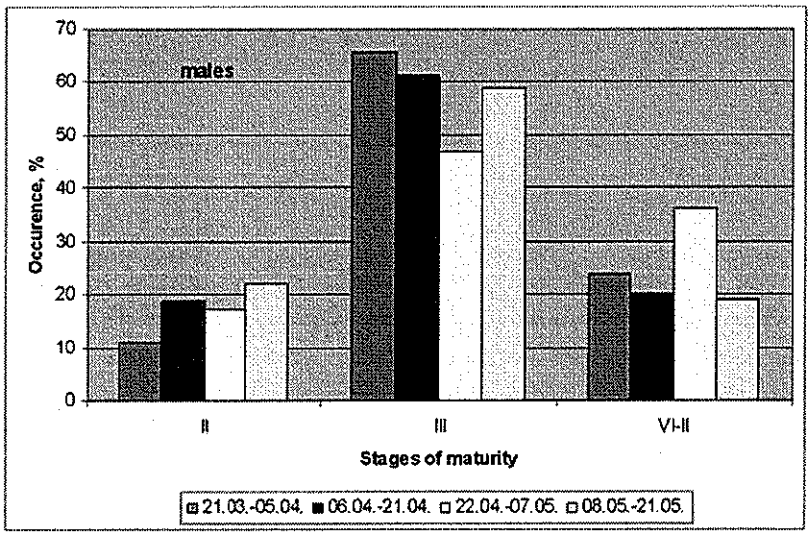

Figure 12. The ratio of males by stages of the gonads' maturity by 15 days in March-May 2011 in the SEPO.

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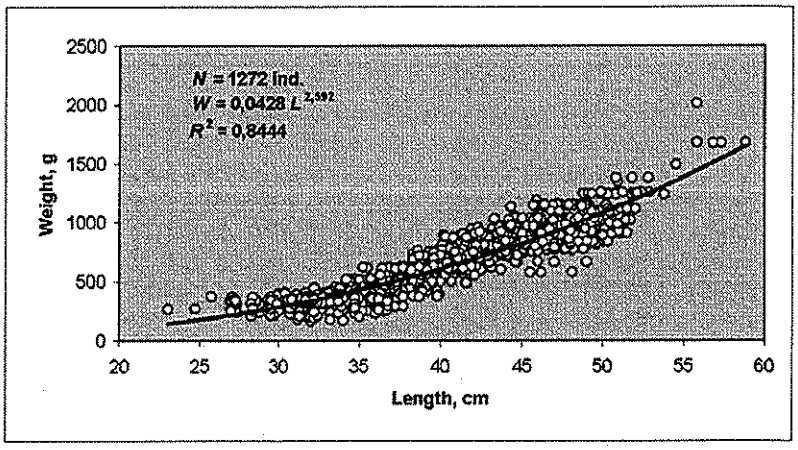

Figure 13. The relationship between length and weight of females of the pacific jack mackerel in the SEPO in March-May 2011.

The gonadosomatic index (GSI) of jack mackerel's females was lower than males' and was equal (an average) to 0.879 (Table 2). The males' gonadosomatic index was equal (an average) to 0.879 (Table 2).

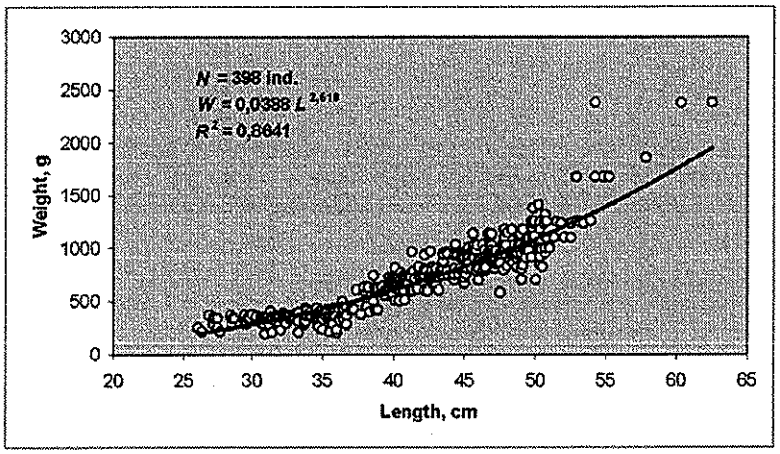

Figure 14. The relationship between length and weight of males of the pacific jack mackerel in the SEPO in March-May 2011.

A significant correlation between the GSI and length of specimens were not found (Fig. 15, 16).

In the period of study the highest rates of GSI were in the third decade of March (Fig. 17) both in males and females, probably due to the recent completion of spawning. Subsequently, the GSI was approximately at the same level.

Compared with 2007 (Fig. 18), GSI of females and males was higher in 2011; this fact probably indicates a low number of pacific jack mackerel in 2011 in comparison with 2007.

The females' hepatosomatic index (HSI) was also slightly lower than in males during the period of study, and was equal to (an average) 0.905 (Table 2). Males' HSI was equal to (an average) 0.965 (Table 2). The relative weight of the jack mackerel's somewhat decreased with increasing length of the specimens. This trend is more pronounced in males (Fig. 19, 20).

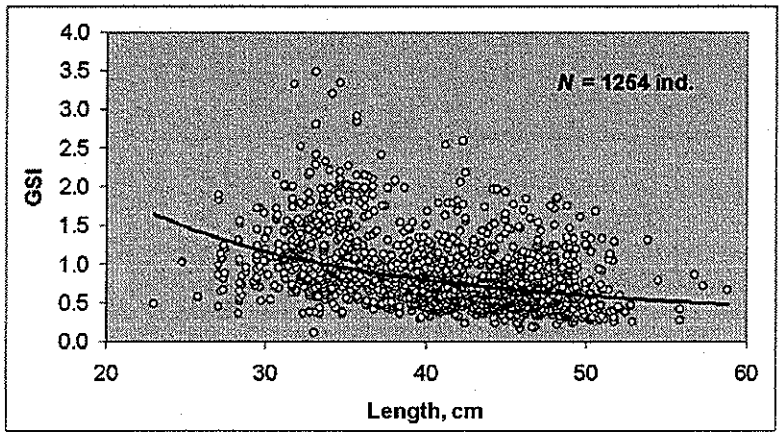

Figure 15. Gonadosomatic index (GSI) of jack mackerel's females, depending on the length in the SEPO in March-May 2011.

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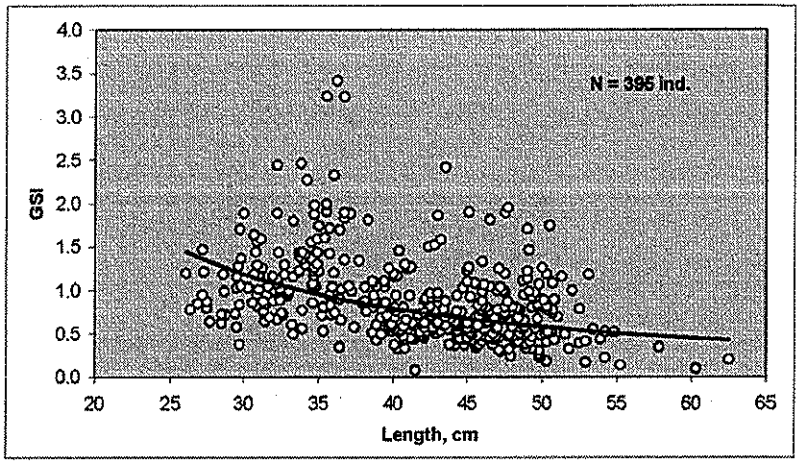

Figure 16. Gonadosomatic index (GSI) of jack mackerel's males, depending on the length in the SEPO in March-May 2011.

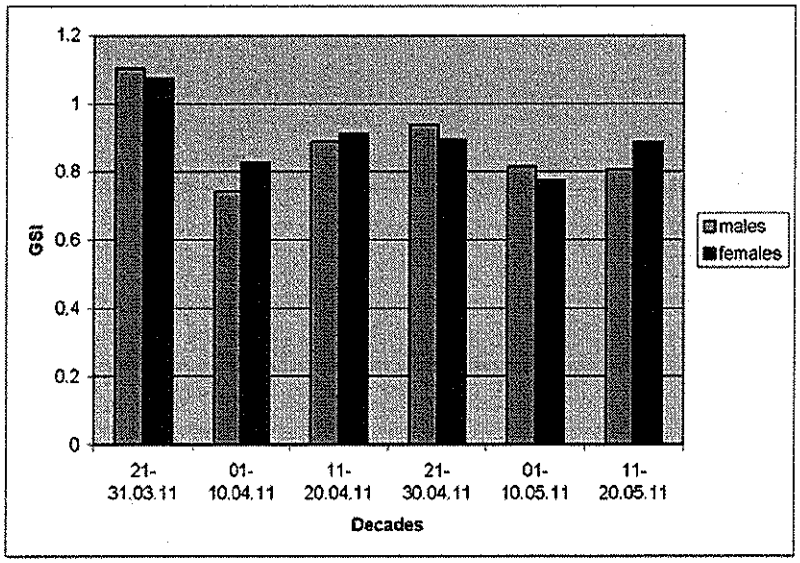

Figure 17. Gonadosomatic index of the pacific jack mackerel by ten days in March-May 2011.

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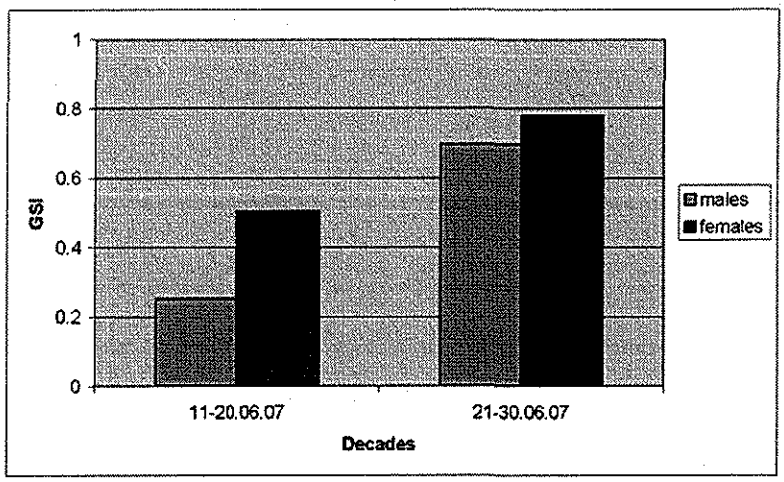

Figure 18. Gonadosomatic index of the pacific jack mackerel by ten days in June 2007.

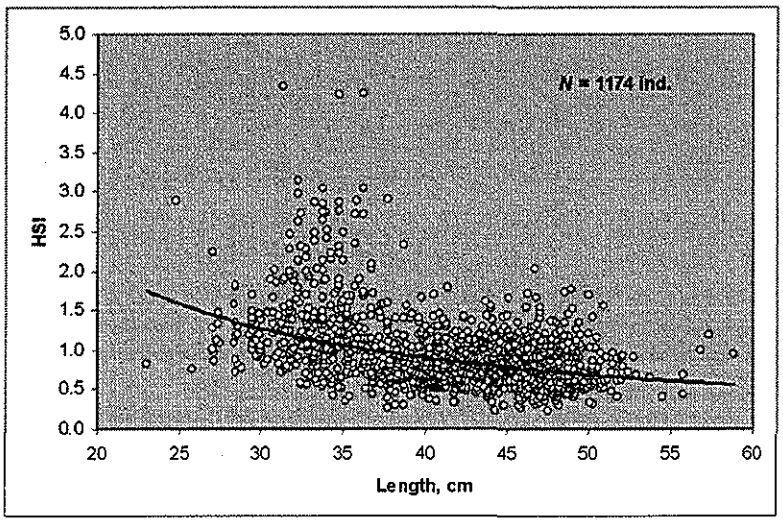

Figure 19. Hepatosomatic index of jack mackerel's females, depending on the length in the SEPO in March-May 2011.

The highest rate of HSI was recorded in females in the first decade of observation (Fig.21). Later it was about the same level. In males, the entire period of observation HSI was on one level. Either HSI or GSI was higher in 2011 than in 2007 (Fig.22), which indirectly reflects the low number of jack mackerel in 2011.

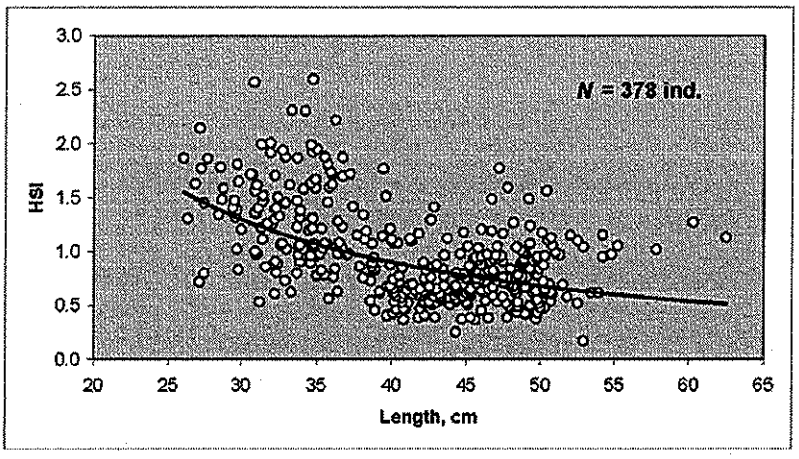

Figure 20. Hepatosomatic index of jack mackerel's males, depending on the length in the SEPO in March-May 2011.

The cubic condition factor as in females and males of the jack mackerel was similar and amounted to an average of 0,868 relative units for females and 0.865 for males (Table 2).

Value of the cubic condition factor does not depend on the length (Fig.23, 24).

The average stomach fullness (without scales) of the jack mackerel was 2.46, the percentage of empty stomachs reached 88.16%. As in most stomachs we found scales, it was not include in food items and excluded from the analysis (presumably fish swallowing it directly into the trawl). The main food objects of jack mackerel were euphausiids (54.33%) (mainly in fish length from 20 to 30 cm), hyperiids (25.80%) and shrimp (17.32%), in the rest the stomachs were digested food (12.70%) (Fig. 25).

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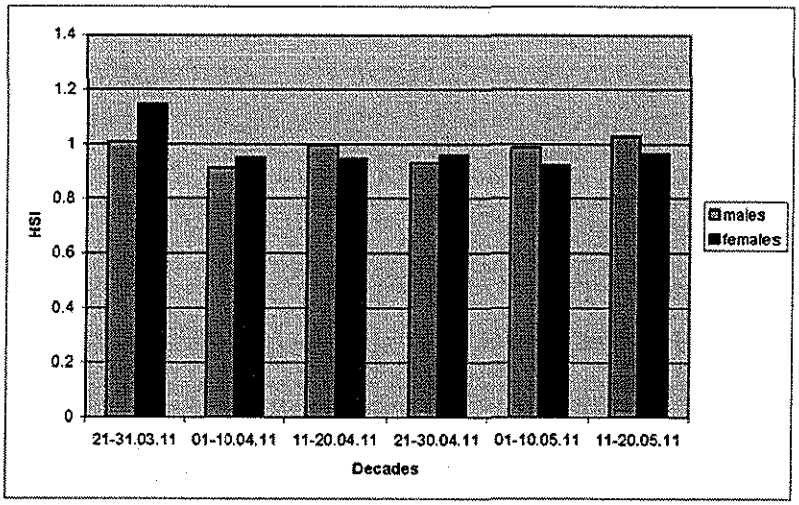

Figure 21. Hepatosomatic index of the pacific jack mackerel by ten days in March-May 2011.

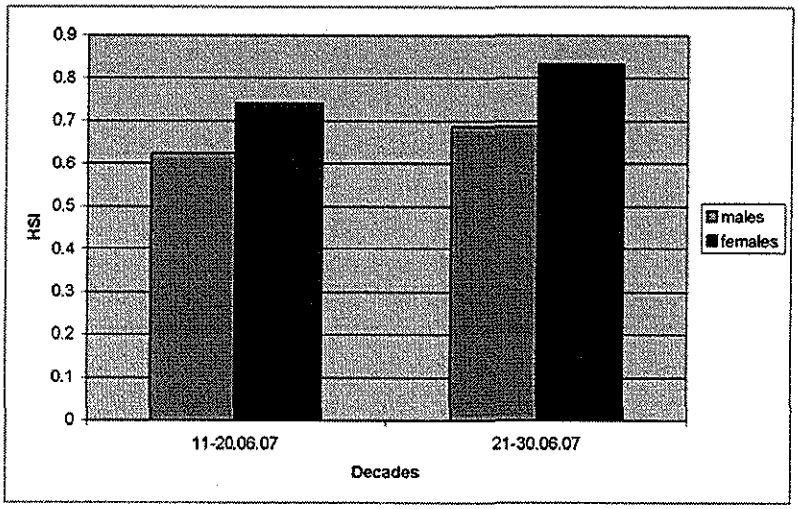

Figure 22. Hepatosomatic index of the pacific jack mackerel by ten days in June 2007.

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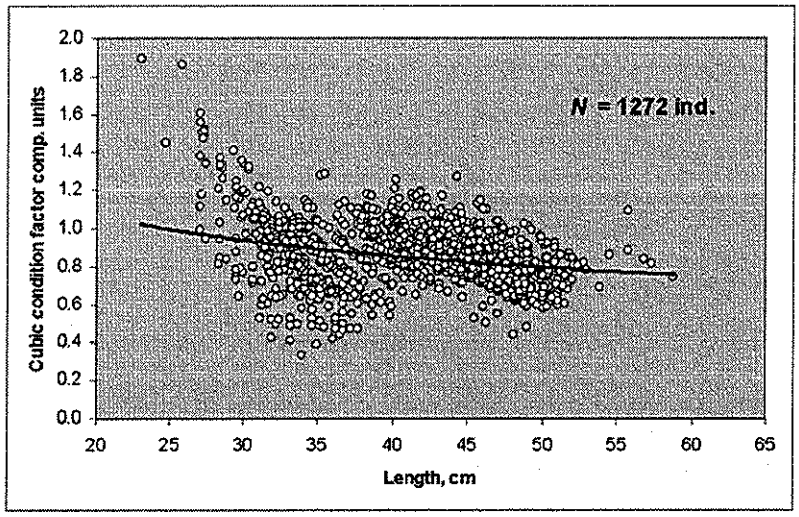

Figure 23. The cubic condition factor by Clark of jack mackerel's females, depending on the length in the SEPO in March-May 2011.

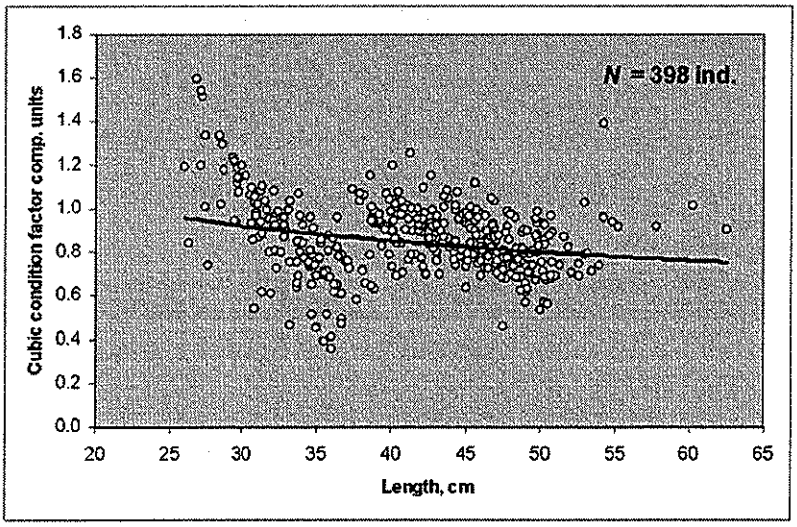

Figure 24. The cubic condition factor by Clark of jack mackerel's males, depending on the length in the SEPO in March-May 2011.

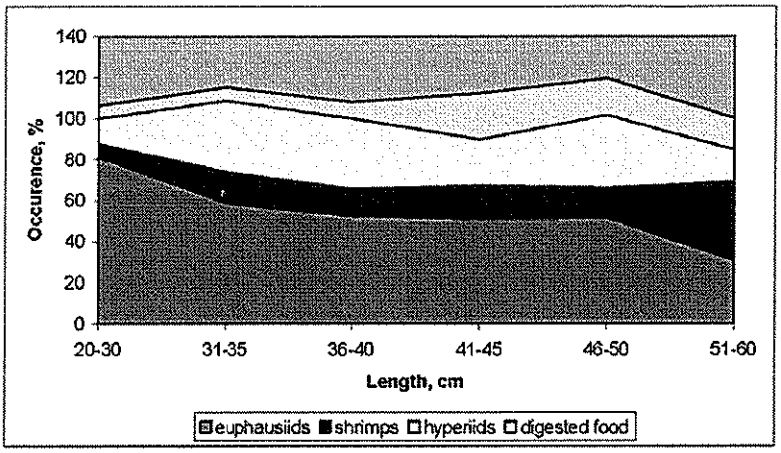

Figure 25. Pacific jack mackerel's food composition depending on the length in the SEPO in March-May 2011.

7. Characteristic of the chub mackerel – *Scomber japonicus*

In catches in the South-East Pacific during March-May 2011, chub mackerel was noted only once – on April 14 in the coordinates 44°34′ S 86°47′ W. The value of the catch amounted to 1.311 t per trawl, 0.187 t per hour of trawling.

The length of chub mackerel ranged from 30 to 42 cm, mode was 33-37 cm. 51.88% of catch consisted of the fish with such length (Fig.26).

Females dominated in the catch (62.0%). Males accounted for 38.0%. The weight of females varied in the range from 232 to 772 g, males – 272-820 g, averaging 561.84 g and 623.89 g in accordance (Table 3).

Average stomach fullness of chub mackerel was 0.8, the proportion of empty stomachs reached 76.0% (without scales). The cubic condition factor by Clark was equal to 1.124.

The females' GSI was significantly higher than males'. The average value of females' GSI in the catches was equal to 1.0; the GSI of males was equal to an average of 0,713.

Supporting Material 3

The females' HSI increased with the increasing of their length. The females' index of the liver was on average slightly smaller than males': 1.147 and 1.206 in accordance.

Table 3. The biological characteristic of the chub mackerel.

average length, cm/number of measurements		35.23/266
minimum – maximum length, cm		32.2-39.0
average weight, g	females	561.84
	males	623.89
minimum - maximum weight, g	females	232-772
	самцы	272-820
share of males, %		38.0
dominated stages of gonads maturity, %	females	II – 12.90%; III – 80.65%; VI-II – 6.50%
	males	II – 21.05%; III – 78.95%
stomach fullness, point		3.2
share of empty stomach, %		76.0
cubic condition factor		1.124
gonadosomatic index, %	females	1.000
	males	0.713
hepatosomatic index, %	females	1.147
	males	1.206
number of individuals: bioanalysis/morphophysiology		50/50

Note: the average length is given by results of mass measurements, the rest is based on the results of the full biological analysis.

The females with gonads at II – 12.90%, III – 80.65%, VI-II – 6.5% stages of maturity dominated in catches at the middle of April. The males' gonads were at II – 21.05% and III – 78.95% stages of maturity (Fig. 27).

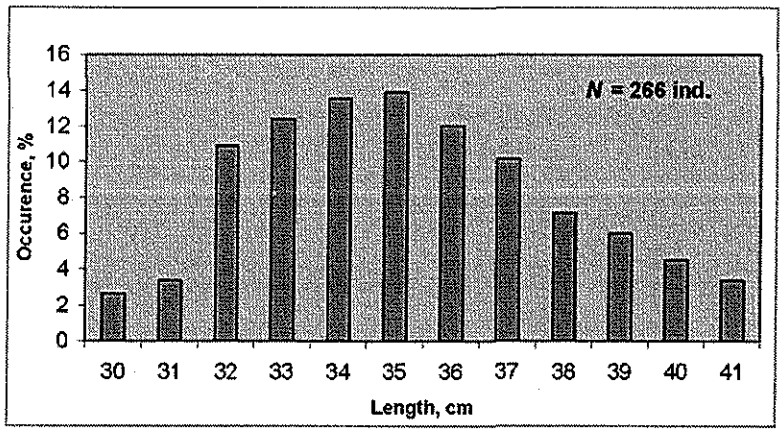

Figure 26. Length composition of the chub mackerel in the SEPO in March-May 2011.

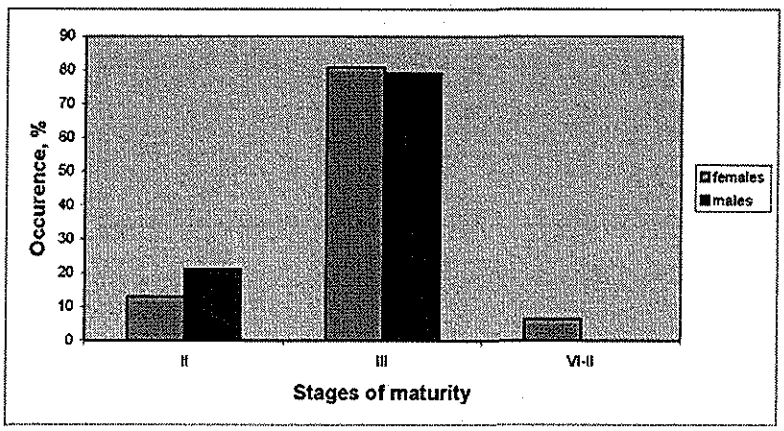

Figure 27. Ratio (%) of females (N = 31) and males (N = 19) of chub mackerel with gonads at different stages of maturity in SEPO in April 2011.

8. Conclusion and recommendations

The results of analysis of scientific data collected aboard the Russian fishing vessel the "Leader" in the March-May 2011, allows us to do the following conclusion.

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The stocks conditions of pacific jack mackerel and chub mackerel in the high seas of SEPO to deteriorate in a number of years 2008-2009-2011. This is evidenced by reduced catches on the standard effort: in 2.7 times of the first species, in 4.4 times in the second species. Indirect evidence of a decrease in the number of jack mackerel is the increasing of liver and gonad indices in 2011, despite the long-term average climate conditions (lack of temperature anomalies) (Fig. 28) (with a smaller number of jack mackerel in 2011 compared with 2007 and equal to the feed base food supply is obtained above a year low abundance, which leads to better conditions of feeding and increase the relative size of the depot spare nutrients - the liver).

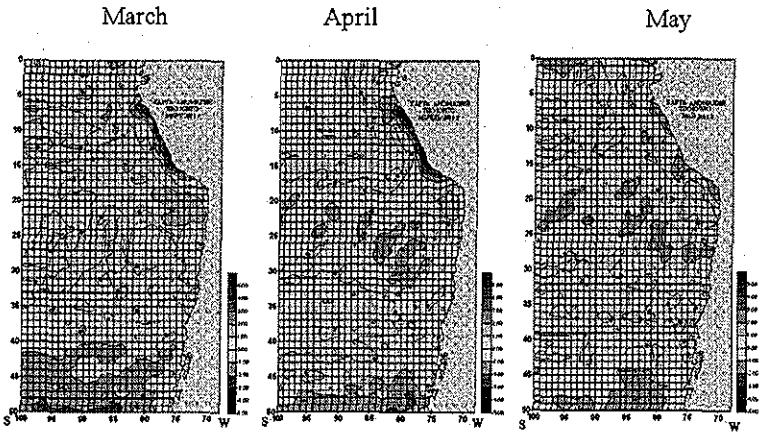

Figure 28. Maps of SST anomalies in the SEPO in the period from March to May 2011.

The main commercial concentrations of the jack mackerel were confined to the SST isotherms of 11-12° C in March-May 2011. The seasonal cooling of water marked shift of jack mackerel to the north following the displacement of the best temperature conditions for it.

In the last 4 years the smallest jack mackerel was met in the catches from the western part of SEPO. In eastern areas the average length of the jack mackerel in

the catch is much bigger than in the western fishery areas. This is due to the fact that there are no immature fish in the catches approximately to 90° W. Apparently, juveniles are absent near the Chilean EEZ due to its catches.

In 2009 abundance of jack mackerel at the age of 2+ was highest during last couple years. Nevertheless, in 2011 catches the abundance of this generation in age 4+ was lower than the same age generations in previous years. Such a picture is the indirect evidence that as early as age 2+ jack mackerel is under the greatest fishing press, which resulted in that there is average abundant generation in age 2+ had no average numbers after two years.

During the preparation of the annual stock assessment in September 2011 by the Science Working Group of the Convention on the Conservation and Management of the High Seas Fishery Resources in the South Pacific Ocean, it should take into account the deterioration of the pelagic fish stocks status in the high seas of the South Pacific.

Significant fishing pressure on the younger age classes of jack mackerel requires to establish the minimum fishery length of the jack mackerel and the minimum allowed mesh size of fishing gear by the regional fisheries management organization in the South Pacific and to monitor the compliance with these control measures of fishing.

Acknowledgments

The author expresses his sincere gratitude to Vanyushin G.P., the Head of the Laboratory of development of remote monitoring of fishing areas of VNIRO for the preparing and providing maps of SST of the South-East Pacific.

Supporting Material 4

Title:	**Report of the Jack Mackerel subgroup, Attachment A1.**
Code:	Annex SWG-10-03.
Author:	Chair of Jack Mackerel subgroup of the SPRFMO Science Working Group
Recipient:	All the participants of the SPRFMO Science Working Group.
Type of document:	Annex of the 10th Science Working Group Report, available in the SPRFMO website.
Relevant passages:	Table A1.3, in Attachment A1: Assessment models developed and evaluated during the Jack Mackerel Subgroup Meeting.

Supporting Material 4

A1. Attachment to SWG-03: Assessment models developed and evaluated during the Jack Mackerel Subgroup Meeting

A1.Data

During the meeting, several new pieces of information were presented. The meeting agreed on data sets going forward for catch (Table A1.3). The detailed catch-at-age and index data are provided in Attachment A2. The mean weights-at-age over time used for all gear types and indices of central-south and offshore fleets were the same as used in the 2011 assessment except for the Far North fleet (see Attachment A2). The maturity-at-age was updated based on new studies and the growth parameters are given in Table A1.4 and Table A1.5). The final datasets evaluated by the subgroup are available to members upon request.

Data revisions

During the beginning of the SWG meeting, the following data were compiled for the assessment report:

- Chile
  - Catches by region
  - Catch age
  - Standardized CPUE
- Peru
  - Length composition
  - Standardized CPUE
  - Acoustic index
- EU
  - Length frequency
  - Nominal CPUE (with Vanuatu) Added on year to end of time series
- China
  - CPUE (year effect coefficients)
  - Catch at length (in cm)
- Russian
  - Nominal CPUE data 2008-2011
  - 2008, 2009, and 2011 length frequency data

CPUE series

The Chinese CPUE was presented at the document SWG-11-JM-08, where the series standardized considered a GAM approach. In this work the year effects suppose represents the changes on exploitable biomass for offshore fleet. A similar approach analysis (GLM) was conducted in order to standardize the Chilean CPUE for the central-south area, whose details were informed in document SWG-11-JM-06. For the Peruvian CPUE, the abundance index was based on a GLM approach for two periods, since 1970 - 2001, and 2002-2012 (not documented). However and considering the fishery orientation, the first part was excluded from the analysis for assessment purposes.

As was recommended at SWG10, the Russian time series of CPUE was included but with low weight since it remains unstandardized.

Age and length compositions

There was a compilation of length compositions (partial results 2012) for countries that don't have age compositions (China, Vanuatu and Korea). A weighted frequency was done as a representative of

Supporting Material 4

offshore fleet. The age conversion for these fleets was done considering age-length keys of central-south area of Chile. A similar procedure was applied considering the information since 2000 for all offshore fleets that have operated off Chile.

The conversion of length composition (to age) from Peru and Ecuador was done within the model considering an approach length-based which was implemented for these purposes. In this context, a new series of length comps (total length since 1980) was provided by Ecuador, which was added to Peruvian comps based on its landings and an isometric weight-length relationship.

Acoustic biomass

A new series of acoustic biomass was provided by Peru for years 1985-2011. This series represents estimations based on the assumption of shifts in habitat area and its impact over traditional estimations. There were some discussion related to the criterion employed in this correction and if its value can be used as abundance index. Both series were used in stock assessment work. The long of this series is shorter than other series that were provided before (three years less), because for some of these years were not available environmental data to do the corrections before mentioned

Biological parameters

A new biological parameters set were updated, such as sexual maturity, growth and natural mortality. This update is based on differences of growth function between Peru and Chile. An average of natural mortality was used for combined model scenario (M=0.28). A weight-at-age matrix was included as well to describe the weight variation (by age and year) in the Peruvian fishery, which values were included in some model scenarios.

A1. The assessment model

A statistical catch-at-age model was used to evaluate the jack mackerel stocks. The JJM ("Joint Jack Mackerel Model") is implemented on ADMB and considered different types of information, which corresponds to the available data of the jack mackerel fishery in the South Pacific area since 1970 to 2012. The extent and type of information is listed in Table A1.6.

JJM developments

As requested at the Third Session of Preparatory Conference (Santiago, January 2012), some model improvements were included, as the explicit modeling of length comps for Far north fishery, and the incorporation of some routines related to stock projections, retrospective analysis and variations on stock- recruitment relationship over time. The model is now more flexible and permits to use catch information either at age or size for any fleet, and incorporate explicitly regime shifts in population productivity.

Models for stock structure hypothesis

The Third Session of Preparatory Conference also requested alternative stock structure hypotheses. During the meeting, three variants related to population structure were developed:

	Stock/Hypothesis	Fleets	Considerations
N0-N3	Northern Stock (Hypothesis #1, FAO 2008)	Far north	This considers the hypothesis that the Peruvian and Ecuadorian fishery information come from the same population and it's independent of the southern stock, principally fished by the Chilean fleet.
S1-S2	Southern Stock (Hypothesis #1 and #3, FAO 2008)	Northern Central-South Offshore fleet	This considers the hypothesis that the fishery information from Chile and those international fleets that operate offshore off EEZ Chile come from the same population, whose it's independent of the northern stock, principally fished by the Peruvian fleet.
1-7	A single stock (Hypothesis #2, FAO 2008)	All fleets	This considers the hypothesis that the northern and southern stock correspond to a single population unit.
8	Northern + Southern Stocks (Hypothesis #1 and #3, FAO 2008)	All fleets	This hypothesis considers the northern and southern stocks as separate population units, which are added together to provide estimates for the whole area that are comparable with those of the single stock hypothesis.

Model details

Parameters estimated conditionally are listed in Table A1.7. The most numerous of these involve estimates of annual and age-specific components of fishing mortality for each year from 1970-2012 and each of the four fisheries identified in the model. Parameters describing population numbers at age 1 in each year (and years prior to 1970 to estimate the initial population numbers at ages 1-12+) were the second most numerous type of parameter.

The table of equations for the assessment model is given in Tables A1.8, A1.9 and A1.10.

The treatment of selectivities and how they are shared among fisheries and indices are given in Table A1.11, A1.12 and A1.13. The numbers of parameters for different model configurations were around 350. Also depending on the model configuration, some growth functions were employed inside the model to convert length compositions to age compositions.

Model evaluation

A number of 14 exploratory models were proposed and run for evaluation purposes. After preliminary evaluations, a subset of 3 models (models 6, 7 and 8) was carried forward for presentation. Details of all these models are given in Table A1.14. The coefficient of variation for abundance indices are shown in Table A1.15.

Models 6 and 7 consider the single stock hypothesis and were based on model 1 (new sexual maturity and Peruvian information) and correspond to sensitivity analysis, which focused on evaluating the model response when the stock-recruitment relationship considers the period 2000-2012 (model 6) and when more variability in selectivity is considered (model 7). Model 8 considers the far north and the southern stocks as separate units (the two separate stocks hypothesis) added together. This provides estimates for the whole area under the two stocks hypothesis which are comparable with those of the single stock hypothesis.

A1. References

Gavaris, S., Ianelli, J. N., 2001. Statistical issues in fisheries stock assessment. Scand. J. Statistics: Theory and Appl., 29, 245-272.

Supporting Material 4

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A1. Tables

Table A1.3. Sources and values of catch (t) compiled for the four fleets used for the assessment.

	Fleet 1	Fleet 2	Fleet 3 (Far north)					Fleet 4 Trawler fleet off Chile (outside EEZ)										
Year	N Chile (1)	Chile CS (1)	Peru(1)	Ecuador (2)	USSR	Cuba (2)	Subtotal	Belize	Peru	Japan	China	EU	Faroe I.	Korea	Russia /USSR 1)	Cuba	Vanuatu	Subtotal	Total
1970	175208	7938	4711				4711											0	187857
1971	164838	21934	9189				9189											0	195961
1972	62634	7100	18782				18782								5500			5500	94016
1973	71762	8904	42781				42781											0	123447
1974	163396	12678	129211				129211											0	305285
1975	186890	34951	37899				37899											0	259740
1976	237876	65570	54154				54154			35								35	357635
1977	225907	75585	504992				504992			2273								2273	808757
1978	367762	150319	386793				386793			1667				403	49220			51290	956164
1979	311682	203269	151591		175938	6281	333810			120					356271	12719		369110	1217871
1980	266697	215528	123380		252078	38841	414299								292892	45130		338022	1234546
1981	435061	440935	37875		371981	35783	445639			29					399649	38444		438122	1759757
1982	756484	643821	50013		84122	9589	143724								651776	74292		726068	2270097
1983	259128	541696	76825		31769	2096	110690			1694					799884	52779		854357	1765871
1984	663695	677910	184333		15781	560	200674			3871					942479	33448		979798	2522077
1985	471599	923042	87466		26089	1067	114622			5229					762903	31191		799323	2308586
1986	42536	1103200	49863		1100	66	51029			6835					783900	46767		837502	2034267
1987	280594	1416781	46304			0	46304			8815					818628	35980		863423	2607102
1988	278701	1703037	118076		120476	5676	244228			6871					817812	38533		863216	3089182
1989	265861	2031058	140720	35108	137033	3386	316247			701					854020	21100		875821	3486987
1990	258233	2150956	191139	4144	168636	6904	370823			157					837609	34293		872059	3652071
1991	282817	2649828	136337	45313	30094	1703	213447								514534	29125		543659	3689751
1992	285387	2796812	96660	15022		0	111682								32000	3196		35196	3229077
1993	359947	2745099	130681	2673			133354											0	3238400
1994	197414	3596904	196771	36575			233346											0	4027664
1995	211594	3984244	376600	174393			550993											0	4746831
1996	264631	3017165	438736	56782			495518											0	3777314
1997	88276	2541981	649751	30302			680053											0	3310310
1998	19278	1546704	386946	25900			412846											0	1978828
1999	44582	1130488	184679	19072			203751			7								7	1378828
2000	107769	1135082	296579	7122			303701				2318							2318	1548870

	Fleet 1	Fleet 2	Fleet 3 (Far north)					Fleet 4 Trawler fleet off Chile (outside EEZ)										
Year	N Chile (1)	Chile CS (1)	Peru(1)	Ecuador (2)	USSR	Cuba (2)	Subtotal	Belize	Peru	Japan	China	EU	Faroe I.	Korea	Russia /USSR 1)	Cuba	Vanuatu	Subtotal	Total
2001	244019	1216754	723733	134011			857744				20090							20090	2338607
2002	108727	1357185	154219	604			154823				76261							76261	1696996
2003	142016	1272302	217734				217734				94690			2010	7540		53959	158199	1790251
2004	158656	1292943	187369				187369				131020			7438	62300		94685	295443	1934411
2005	168383	1262051	80663				80663	867			143000	6179		9126	7040		77356	243568	1754665
2006	155256	1224685	277568				277568	481			160000	62137		10474			129535	362627	2020136
2007	172701	1130083	254426	927			255353	12585			140582	123511	38700	10940			112501	438819	1996956
2008	167258	728850	169537				169537	15245			143182	106665	22919	12600	4800		100066	405477	1471122
2009	134022	700905	74694	19834			94528	5681	13326	0	117963	111921	20213	13759	9113		79942	371918	1301373
2010	169010	295681	17559	4613			22172	2240	40516	0	63606	67749	11643	8183	0		45908	239845	726708
2011	23945	194532	257241	69153			326394	0	674	0	32862	2248	0	9253	8229	8	7672	60946	605817
2012	12000	208403	168779	104			168883	0	2996	0	10797	0	0	5492	0	0	8746	28031	417317

Underlined figures have been updated.

2012 data are preliminary and reflect the best estimates for the year.

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Table A1.4. Jack mackerel sexual maturity by age used in the JMM models.

Age (yr)	1	2	3	4	5	6	7	8	9	10	11	12
Southern Stock	0.07	0.31	0.72	0.93	0.98	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Far North Stock	0.00	0.37	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table A1.5. Growth parameters and natural mortality.

Parameter	Far North stock	South Stock
L_∞ (cm) (Total length)	80.77	n/e
k	0.16	n/e
to (year)	-0.356	n/e
M (year-1)	0.33	0.23

n/e: not employed

Table A1.6. Years and types of information used in the JJM assessment models.

Fleet	Catch at age	Catch at length	Landings	CPUE	Acoustic	DEPM
North Chile purse seine	1975-2012	-	1970-2012	-	1984-1988; 1991; 2006-2009	1999-2008
South-central Chile purse seine	1975-2012	-	1970-2012	1982-2011	1997-2009	-
FarNorth	-	1980-2011	1970-2012	1996-2009, 2011	1983-2011	-
International trawl off Chile	1979-1991	2007-2011	1978-2012	China (2001-2012); EU & Vanuatu (2003-2011); Russian (1987-1991, 2008-09, 2011)	-	-

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Table A1.7. Symbols and definitions used for model equations.

General Definitions	Symbol/Value	Use in Catch at Age Model
Year index: i = {1970, ..., 2012}	I	
Age index: j = { 1,2,...., 12*}	j	
length index: l = { 10,11,..., 50}	l	
Mean length at age	L_j	
Variation coefficient the length at age	cv	
Mean weight in year t by age j	$W_{t,j}$	
Maximum age beyond which selectivity is constant	$Maxage$	Selectivity parameterization
Instantaneous Natural Mortality	M	Fixed M=0.23, constant over all ages
Proportion females mature at age j	p_j	Definition of spawning biomass
Proportion of length at some age	Γ	Transform from age to length
Sample size for proportion in year i	T_i	Scales multinomial assumption about estimates of proportion at age
Survey catchability coefficient	q^s	Prior distribution = lognormal(μ_q^s , σ_q^2)
Stock-recruitment parameters	R_0	Unfished equilibrium recruitment
	h	Stock-recruitment steepness
	σ_R^2	Recruitment variance
Unfished biomass	φ	Spawning biomass per recruit when there is not fishing
Estimated parameters		
$\phi_i(\#), R_0, h, \varepsilon_i(\#), \mu^f, \mu^s, M, \eta_j^s(\#), \eta_j^f(\#), q^s(\#)$		

Note that the number of selectivity parameters estimated depends on the model configuration.

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Table A1.8. Variables and equations describing implementation of the joint jack mackerel assessment model (JJM).

Eq	Description	Symbol/Constraints	Key Equation(s)
1)	Survey abundance index (s) by year (Δ^s represents the fraction of the year when the survey occurs)	I_i^s	$I_i^s = q^s \sum_{j=1}^{12} N_{ij} W_{ij} S_j^s e^{-\Delta^s Z_{ij}}$
2)	Catch biomass by year and age/length	$\hat{C}_{il}, \hat{C}_{ij}$	$\hat{C}_{ij}^f = \sum_{j=1}^{12} N_{ij} W_{ij} \frac{F_{ij}^f}{Z_{ij}} (1 - e^{-Z_{ij}})$ $\hat{C}_{il} = \Gamma_{l,j} \hat{C}_{ij}$ $\Gamma_{l,j} = \int_j^{j+1} e^{-\frac{1}{2\sigma_j^2}(l-L_j)^2} dl$ $L_j = L_{00}(1-e^{-k}) + e^{-k} L_{j-1}$ $\sigma_j = cv\, L_j$
3)	Proportion at age j, in year i	$P_{ij}, \sum_{j=1}^{12} P_{ij} = 1.0$	$p_{ij}^f = \frac{\hat{C}_{ij}^f}{\sum_j \hat{C}_{ij}^f}$ $p_{ij}^s = \frac{N_{ij} S_j^s e^{-\Delta^s Z_{ij}}}{\sum_j N_{ij} S_j^s e^{-\Delta^s Z_{ij}}}$
	Proportion at length l, in year i	$P_{il}, \sum_{l=10}^{50} P_{il} = 1.0$	$P_{il} = \frac{C_{il}}{\sum_{l=10}^{50} C_{il}}$
4)	Initial numbers at age	j = 1	$N_{1970,j} = e^{\mu_R + \varepsilon_{1970}}$
5)		1 < j < 11	$N_{1970,j} = e^{\mu_R + \phi_{1970-j}} \prod_{j=1}^{j} e^{-M}$
6)		j = 12+	$N_{1970,12} = N_{1970,11} \left(1 - e^{-M}\right)^{-1}$
7)	Subsequent years (i >1970)	j = 1	$N_{i,1} = e^{\mu_R + \varepsilon_i}$
8)		1 < j < 11	$N_{i,j} = N_{i-1,j-1} e^{-Z_{i-1,j-1}}$
9)		j = 12+	$N_{i,12^+} = N_{i-1,11} e^{-Z_{i-1,11}} + N_{i-1,12} e^{-Z_{i-1,12}}$
10)	Year effect and individuals at age 1 and i = 1958, ..., 2012	$\varepsilon_i, \sum_{i=1958}^{2012} \varepsilon_i = 0$	$N_{i,1} = e^{\mu_R + \varepsilon_i}$
11)	Index catchability		$q_s^s = e^{\mu^s}$
	Mean effect	μ^s, μ^f	$s_j^s = e^{\eta_j^s}$ $j \le$ maxage
	Age effect	$\eta_j^s, \sum_{i=1958}^{2012} \eta_j^s = 0$	$s_j^s = e^{\eta_{maxage}^s}$ $j >$ maxage
12)	Instantaneous fishing mortality		$F_{ij}^f = e^{\mu^f + \eta_j^f + \varphi_i}$
13)	Mean fishing effect	μ^f	
14)	Annual effect of fishing mortality in year i	$\varphi_i, \sum_{i=1970}^{2012} \varphi_i = 0$	
15)	age effect of fishing (regularized) In year time variation allowed	$\eta_j^f, \sum_{i=1958}^{2012} \eta_j^f = 0$	$s_{ij}^f = e^{\eta_j^f}$, $j \le$ maxage $s_{ij}^f = e^{\eta_{maxage}^f}$ $j >$ maxage
	In years where selectivity is constant over time	$\eta_{i,j}^f = \eta_{i-1,j}^f$	$i \ne$ change year
16)	Natural Mortality	M	fixed

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Eq	Description	Symbol/Constraints	Key Equation(s)
17)	Total mortality		$Z_{ij} = \sum_f F_{ij}^f + M$
17)	Spawning biomass (note spawning taken to occur at mid of November)	B_i	$B_i = \sum_{j=2}^{12} N_{ij} e^{-\frac{10.5}{12} Z_{ij}} W_{ij} p_j$
18)	Recruitments (Beverton-Holt form) at age 2.	$\tilde{R}_i$	$\tilde{R}_i = \frac{\alpha B_i}{\beta + B_i}$, $\alpha = \frac{4hR_0}{5h-1}$ and $\beta = \frac{B_0(1-h)}{5h-1}$ where h=0.8 $B_0 = R_0 \varphi$ $\varphi = \sum_{j=1}^{12} e^{-M(j-1)} W_j p_j + \frac{e^{-12M} W_{12} p_{12}}{1-e^{-M}}$

Table A1.9. Specification of objective function that is minimized (i.e., the penalized negative of the log-likelihood).

	Likelihood /penalty component		Description / notes
19)	Abundance indices	$L_1 = \sum_z \lambda_1^z \sum_i \log\left(\frac{I_i^z}{\hat{I}_i^z}\right)^2$	Survey abundances
20)	Prior on smoothness for selectivities	$L_2 = \sum_l \lambda_2^l \sum_{j=1}^{12} \left(\eta_{j+2}^l + \eta_j^l - 2\eta_{j+1}^l\right)^2$	Smoothness (second differencing), Note: *l={s, or f}* for survey and fishery selectivity
21)	Prior on recruitment regularity	$L_3 = \lambda_3 \sum_{i=1958}^{2012} \varepsilon_i^2$	Influences estimates where data are lacking (e.g., if no signal of recruitment strength is available, then the recruitment estimate will converge to median value).
22)	Catch biomass likelihood	$L_4 = \sum_f \lambda_4^f \sum_{i=1970}^{2012} \log\left(\frac{C_i^f}{\hat{C}_i^f}\right)^2$	Fit to catch biomass in each year
23)	Proportion at age/length likelihood	$L_5 = -\sum_{v,i,j} T^v P_{i,jfl}^v \log(\hat{P}_{i,jfl}^v)$	*v={s, f}* for survey and fishery age composition observations $P_{i,jfl}$ are the catch-at-age/length proportions
24)	Fishing mortality regularity	F values constrained between 0 and 5	(relaxed in final phases of estimation)
25)	Recruitment curve fit	$L_6 = \lambda_6 \sum_{i=1977}^{2012} \log\left(\frac{N_{i3}}{\tilde{R}_i}\right)^2$	Conditioning on stock-recruitment curve over period 1977-2011.
26)	Priors or assumptions	R_0 non-informative σ_R^2 fixed at 0.6	(Explored alternative values of σ_R^2
27)	Overall objective function to be minimized	$L = \sum_k L_k$	

Table A1.10. Lambda values used on log-likelihood functions in the base model.

s	Abundance index	$\lambda^{s\,(1)}$	f	Catch biomass likelihood	$\lambda^{f\,(1)}$
1	Acoustic CS- Chile	12.5	1	N-Chile	200
2	Acoustic N-Chile	2	2	CS- Chile	200
3	CPUE – Chile	21.9	3	Peru	200
4	DEPM – Chile	2.0	4	International	200
5	Acoustic-Peru	12.5	5	ex USSR	200
6	CPUE – Peru	12.5			
7	CPUE- China	12.5			
8	CPUE-EU	12.5			
9	CPUE- ex USSR	3.1			

s	Smoothness for selectivities	$\lambda^{s\,(1)}$	s	Proportion at age likelihood	T^s
1	Acoustic CS- Chile	100	1	Acoustic CS- Chile	30
2	Acoustic N-Chile	100	2	DEPM – Chile	20
3	CPUE – Chile	100			
7	CPUE- China	100			
8	CPUE-EU	100			
9	CPUE ex-USSR	100			

f	Smoothness for selectivities	$\lambda^{f\,(1)}$	f	Proportion at age likelihood	T^f
1	N-Chile	1	1	N-Chile	20
2	CS- Chile	25	2	CS- Chile	50
3	Peru	12.5	3	Peru	30
4	Internacional	12.5	4	Internacional	30
5	ex – USSR	12.5	5	ex - USSR	30

	Recruitment regularity	$\lambda^{(1)}$		S-Recruitment curve fit	$\lambda^{(1)}$
		1.4			1.4

(1) λ corresponds to $0.5/\sigma^2$:

σ	λ
0.05	200
0.10	50
0.20	12.5
0.30	5.6
0.40	3.1
0.50	2.0
0.60	1.4

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Table A1.11. Description of JJM model components and how selectivity was treated (Far North Stock).

Item	Description	Selectivity assumption
Fisheries		
1)	Peruvian and Ecuadorian area fishery	Estimated from length composition data (converted to age inside the model). Two time-blocks were considered, before and after 2002.
Index series		
2)	Acoustic survey in Peru	All age groups are available (without selectivity)
3)	Peruvian fishery CPUE	Assumed to be the same as 1)

Table A1.12. Description of JJM model components and how selectivity was treated (South stock).

Item	Description	Selectivity assumption
Fisheries		
1)	Chilean northern area fishery	Estimated from age composition data. Two time-blocks were considered 1970-1986; 1987-2012.
2)	Chilean central and southern area fishery	Estimated from age composition data. Four time-blocks were considered 1970-1987; 1988-1992; 1993-2003; 2004-2012.
3)	Recent offshore trawl fishery and	Estimated from age composition data. Two time-blocks were considered 1970-1995; 1996-2012.
4)	Ex-USSR trawl fishery	Estimated from historical age composition data as 3)
Index series		
6)	Acoustic survey in central and southern Chile	Estimated from age composition data. Two time-blocks were considered 1970-2004; 2005-2012.
7)	Acoustic survey in northern Chile	Assumed to be the same as 1)
8)	Central and southern fishery CPUE	Assumed to be the same as 2)
9)	Egg production survey	Estimated from age composition data. Two time-blocks were considered 1970-2002; 2003-2012.
10)	Chinese fleet CPUE (from FAO workshop)	Assumed to be the same as 3)
11)	Vanuatu & EU fleets CPUE	Assumed to be the same as 3)
12)	ex-USSR CPUE	Assumed to be the same as 3) but for earlier period

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Table A1.13. Description of JJM model components and how selectivity was treated for the single stock cases.

Item	Description	Selectivity assumption
Fisheries		
1)	Chilean northern area fishery	Estimated from age composition data. Two time-blocks were considered 1970-1986; 1987-2012.
2)	Chilean central and southern area fishery	Estimated from age composition data. Four time-blocks were considered 1970-1987; 1988-1992; 1993-2003; 2004-2012.
3)	Peruvian and Ecuadorian area fishery	Estimated from length composition data (converted to age inside the model). Two time-blocks were considered, before and after 2002.
4)	Recent offshore trawl fishery and	Estimated from age composition data. Two time-blocks were considered 1970-1995; 1996-2012.
5)	Ex-USSR trawl fishery	Estimated from historical age composition data as 2)
Index series		
6)	Acoustic survey in central and southern Chile	Estimated from age composition data. Two time-blocks were considered 1970-2005; 2006-2012.
7)	Acoustic survey in northern Chile	Assumed to be the same as 1)
8)	Central and southern fishery CPUE	Assumed to be the same as 2)
9)	Egg production survey	Estimated from age composition data. Two time-blocks were considered 1970-2004; 2005-2012.
10)	Acoustic survey in Peru	All age groups are available (without selectivity)
11)	Peruvian fishery CPUE	Assumed to be the same as 3)
12)	Chinese fleet CPUE (from FAO workshop)	Assumed to be the same as 4)
13)	Vanuatu & EU fleets CPUE	Assumed to be the same as 4)
14)	ex-USSR CPUE	Assumed to be the same as 4) but for earlier period

Table A1.14. Particular specifications for the different models applied.

Model	Description
1	New maturity, new Peruvian CPUE, wt-at-age for Peru and Peruvian growth curve estimates
2	Use new Peruvian acoustic index
3	Model 1 but M average between regions (0.28)
4	Model 2 but M average between regions (0.28)
5	Model 4 but early stock recruitment period (1970-1999)
6	Model 4 but recent stock recruitment period (2000-2012)
7	Model 1 but with changes in selectivity to better match mean ages observed (more variability in selectivity)
8	Addition of model N3 + S2.
Far North stock	
N0	Original acoustic
N1	Original acoustic, lognormal prior on q=1, sigma=0.15
N2	As N1 but new acoustic
N3	Fix q=1 for new Peru acoustic survey and shift in M to reflect natural mortality change in 2000.
South stock	
S1	As Model 1
S2	As with Model 7

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Table A1.15. Coefficients of variations considered on the base case

Index	No. years	cv
Acoustic Chile CS	13	0.2
Acoustic Chile N	10	0.5
CPUE Chile	30	0.2
DEPM Chile	9	0.5
Acoustic Peru	26	0.2
CPUE Peru	10	0.2
CPUE China	11	0.2
CPUE Vanuatu & EU	9	0.2
CPUE USSR	8	0.4

Supporting Material 5

Title:	***Annex K of the Report of the First Meeting of the Commission of the South Pacific Regional Fisheries Management Organisation. Russian Federation Statement.***
Code:	Annex K.
Author:	Russian Federation.
Recipient:	All the participants of *First Meeting of the Commission*.
Type of document:	Statement.
Relevant passages:	All the document.

Supporting Material 5

The Russian Federation held position that the CMM for *Trachurus murphyi* and the calculation for financial contributions to the Organization were based on incomplete data in that those data not include data reported by the Russian Federation to the Interim Secretariat in 2010.

We are not in the position to support the decision unjustifiably discriminates in form or in fact against the member of the Commission, or is inconsistent with the provisions of this Convention or other relevant international law as reflected in the 1982 Convention or the 1995 Agreement.

The Russian Federation, based on its *Trachurus murphyi* catch data for 2010 reported in the Interim Secretariat in the amount of the 41 315 tons, will limit its catch in 2013 within the total allowable catch recommended by the Science Working Group. The Russian Federation will notify the SPRFMO Secretariat about its limitations in due course.

We also do not support budget of the Commission without full reflections of Russian catch data for 2010 in the budget calculation.

Supporting Material 6

Title:	***Conservation and Management Measure for Trachurus murphyi.***
Code:	CMM 1.01.
Author:	Commission.
Recipient:	SPRFMO Members and Cooperating Non-Contracting Parties.
Type of document:	Conservation and Management Measure.
Relevant passages:	Paragraphs 3 and 4.

Supporting Material 6

Annex G

CMM 1.01

Conservation and Management Measure for *Trachurus murphyi*

The Commission of the SPRFMO,

Noting that despite the efforts that have been made to arrest the depletion of the *Trachurus murphyi* stock, it remains at very low levels;

Concerned in particular with the low levels of the current biomass, high fishing mortality and the high degree of associated uncertainties;

Taking into account the outcomes of the stock assessment carried out in October of 2012 and the advice of the Scientific Working Group (SWG) established by the Preparatory Conference,

Bearing in mind the commitment to apply the precautionary approach and take decisions based on the best scientific and technical information available as set out in Article 3 of the Convention;

Recognizing that a primary function of the Commission is to adopt conservation and management measures to achieve the objective of the Convention, including, as appropriate, conservation and management measures for particular fish stocks;

Affirming its commitment to rebuilding the stock of *Trachurus murphyi* and ensuring its long term conservation and sustainable management in accordance with the objective of the Convention,

Recognizing the need for effective monitoring and control and surveillance of fishing for *Trachurus murphyi* in the implementation of this measure pending the establishment of monitoring, control and surveillance measures pursuant to Article 27 of the Convention;

Recalling Articles 4(2), 20(4) and 21(2) of the Convention;

Adopts the following conservation and management measure in accordance with Article 8 of the Convention:

General Provisions

1. This Conservation and Management Measure (CMM) applies to fisheries for *Trachurus murphyi* undertaken by Members and Cooperating Non-Contracting Parties (CNCPs) in the Convention Area and, in accordance with Article 20(4)(a)(iii) and with the express consent of Chile, to fisheries for *Trachurus murphyi* undertaken by Chile in areas under its national jurisdiction.

2. Only fishing vessels duly authorized pursuant to Article 25 of the Convention that are flagged to Members and Cooperating Non-Contracting Parties (CNCPs) shall participate in the fishery for *Trachurus murphyi* in the Convention Area.

3. The provisions of this CMM and those of the 2011 and 2012 Interim Measures for pelagic fisheries are not to be considered precedents for future allocation or other decisions taken in accordance with Article 21 of the Convention relating to participation in fisheries for *Trachurus murphyi* in the Convention Area and in adjacent areas of national jurisdiction in

the circumstances provided for in Article 21(4)(ii) and (iii) with the consent of the relevant Coastal State Contracting Party or Parties, and are not to affect the full recognition of the special requirements, including the fisheries development aspirations and interests, of developing States, in particular small island developing States and territories and possessions in the region, in accordance with the Convention. In particular, catches from 2011 to until at least this CMM is reviewed in accordance with paragraph 26will not be considered in future allocation decisions.

4. In recognition that Article 21(1)of the Convention requires that the Commission take into account the status of the resource for decisions regarding participation in fishing for fishery resources, implementation of and compliance with this CMM, as well as the Interim Measures for pelagic fisheries of 2007 as revised in 2009, 2011 and 2012, which are designed to promote the rebuilding of the *Trachurus murphyi* stock, compliance with them are to be considered when adopting future decisions under Article 21 for *Trachurus murphyi.*

Effort management

5. Members and CNCPs shall limit the total gross tonnage (GT)[1] of vessels flying their flag and participating in the *Trachurus murphyi* fisheries in the Convention Area to the total tonnage of their flagged vessels that were actively fishing in 2007 or 2008 or 2009 in the Convention Area and as set out in Table 1. Members and CNCPsmay substitute their vessels as long as the total level of GT for each Member and CNCP does not exceed the level recorded in Table 1.

Catch management

6. In 2013the total catch of *Trachurus murphyi* in the area to which this CMM applies in accordance with paragraph 1 shall be limited to 360,000 tonnes. Members and CNCPs are to share in this total catch in the same proportions as their2010 catches as reported to the Executive Secretary in the area to which this CMM applies and in the tonnages set out in Table 2.

7. However, having regard to the current specific circumstances of the *Trachurus murphyi* fishery, on a one-off basis 10% of the tonnages set out in Table 2 of Belize, China, European Union, Faroe Islands, Korea, Peru, and Vanuatu are to be transferred to Chile. As a consequence, the catch limits to be applied in 2013 in the areas to which this CMM applies shall be those set out in Table 3.

8. In the event that a Member or CNCP reaches 70% of its catch limit set out in Table 3, the Executive Secretary shall inform that Member or CNCP of that fact, with a copy to all other Members and CNCPs. That Member or CNCP shall close the fishery for its flagged vessels when the total catch of its flagged vessels is equivalent to 100% of its catch limit. Such Member or CNCP shall notify promptly the Executive Secretary of the date of the closure.

[1]In the event that GT is not available, Members and CNCPs shall utilise Gross Registered Tonnage (GRT) for the purposes of this CMM.

9. The provisions of this CMM are without prejudice to the right of Members and CNCPs to adopt measures limiting vessels flying their flag and fishing for *Trachurus murphyi* in the Convention Area to catches less than the limits set out in Table 3.In any such case, Members and CNCPs shall notify the Executive Secretary of the measures, when practicable, within 1 month of adoption. Upon receipt, the Executive Secretary shall circulate such measures to all Members and CNCPs without delay.

10. A Member may transfer to another Member all or part of its entitlement to catch up to the limit set out in Table 3, subject to the approval of the receiving Member. Before the transferred fishing takes place, the transferring Member shall notify the transfer to the Executive Secretary for circulation to Members and CNCPs without delay.

11. Notwithstanding paragraphs6 and 7, Members and CNCPs agree, having regard to the advice of the Scientific Working Group that fishing mortality of *Trachurus murphyi* in 2013 throughout the range of the stock should be maintained at or below 2012 levels, that total catches of *Trachurus murphyi* in 2013 should not exceed 438,000 tonnes – the total catch for 2012 reported to the Executive Secretary by 20 January 2013.

Data collection and reporting

12. Members and CNCPs participating in the *Trachurus murphyi* fishery shall report in an electronic format the monthly catches of their flagged vessels to the Secretariat within 10 days of the end of the month, in accordance with the Data Standards and using templates prepared by the Secretariat and available on the SPRFMO website.

13. The Executive Secretary shall circulate monthly catches, aggregated by flag State, to all Members and CNCPs on a monthly basis.

14. Except as described in paragraph 12above, each Member and CNCP participating in the *Trachurus murphyi* fishery shall collect, verify, and provide all required data to the Executive Secretary, in accordance with the Data Standards and the templates available on the SPRFMO website, including an annual catch report.

15. The Executive Secretary shall verify the annual catch reports submitted by Members and CNCPs against the submitted data (tow-by-tow in the case of trawlers, and set by set or trip by trip in the case of purse-seine fishing vessels). The Executive Secretary shall inform Members and CNCPs of the outcome of the verification exercise and any possible discrepancies encountered.

16. Members and CNCPs participating in the *Trachurus murphyi* fisheries shall implement a vessel monitoring system (VMS) in accordance with the SPRFMO Data Standards. These VMS data shall be provided to the Executive Secretary within 10 days of each quarter in the format prescribed by the SPRFMO Data Standards and using the templates on the SPRFMO website-

17. Each Member and CNCP participating in the *Trachurus murphyi* fishery shall provide the Executive Secretary a list of vessels[2] they have authorized to fish in the fishery in

[2]Fishing vessels as defined in Article 1(h) of the Convention.

accordance with Article 25 of the Convention and shall provide data in respect of those vessels in accordance with the SPRFMO Data Standards. They shall also notify the Executive Secretary of the vessels that are actively fishing or engaged in transshipment in the Convention Area within 10 days of the end of each month. The Executive Secretary shall maintain lists of the vessels so notified and will make them available on the SPRFMO website.

18. The Executive Secretary shall report annually to the Commission on the list of vessels having actively fished or been engaged in transshipment in the Convention area during the previous year using data provided under the Data Standard.

19. In order to facilitate the work of the Scientific Committee, Members and CNCPs shall provide their annual national reports, in accordance with the existing guidelines for such reports, in advance of the 2013 Scientific Committee meeting. Members and CNCPs shall also provide observer data for the 2013 fishing season to the Scientific Committee to the maximum extent possible. The reports shall be submitted to the Executive Secretary at least one month before the 2013 Scientific Committee meeting in order to ensure that the Scientific Committee has an adequate opportunity to consider the reports in its deliberations.

20. In accordance with Article 24(2), all Members and CNCPs participating in the *Trachurus murphyi* fishery shall provide, at least 10 days before the meeting of the Compliance and Technical Committee (CTC), a report describing their implementation of this CMM. On the basis of submissions in the first year the CTC shall develop a template to facilitate reporting in the following years. The implementation reports will be made available on the SPRFMO website.

21. The information collected under paragraphs 12, 14, and 19, and any stock assessments and research in respect of *Trachurus murphyi* fisheries shall be submitted for review to the Scientific Committee. The Scientific Committee will conduct the necessary analysis and assessment, in accordance with its Programme agreed by the Commission, in order to provide updated advice on stock status and recovery.

22. Contracting Parties and CNCPs, as port States, shall, subject to their national laws, facilitate access to their ports on a case-by-case basis to reefer vessels, supply vessels and vessels fishing for *Trachurus murphyi* in accordance with this CMM. Contracting Parties and CNCPs shall implement measures to verify catches of *Trachurus murphyi* caught in the Convention Area that are landed or transhipped in its ports. When taking such measures, a Contracting Party or CNCP shall not discriminate in form or fact against fishing, reefer or supply vessels of any Member or CNCP. Nothing in this paragraph shall prejudice the rights, jurisdiction and duties of these Contracting Parties and CNCPs under international law. In particular, nothing in this paragraph shall be construed to affect:

    (a) the sovereignty of Contracting Parties and CNCPs over their internal, archipelagic and territorial waters or their sovereign rights over their continental shelf and in their exclusive economic zone;

    (b) the exercise by Contracting Parties and CNCPs of their sovereignty over ports in their territory in accordance with international law, including their right to deny entry thereto as well as adopt more stringent port State measures than those provided for in this CMM.

23. Until the Commission adopts an Observer Programme in accordance with Article 28 of the Convention, all Members and CNCPs participating in the *Trachurus murphyi* fishery shall ensure a minimum of ten % scientific observer coverage of trips for vessels flying their flag and ensure that such observers collect and report data as described in the SPRFMO Data Standards. In the case of the flagged vessels of a Member or CNCP undertaking no more than 2 trips in total, the 10% observer coverage shall be calculated by reference to active fishing days for trawlers and sets for purse seine vessels.

Cooperation in respect of fisheries in adjacent areas under national jurisdiction

24. Members and CNCPs participating in *Trachurus murphyi* fisheries in areas under national jurisdiction adjacent to the area to which this CMM applies in accordance with paragraph 1 shall cooperate with other Members and CNCPs in ensuring compatibility in the conservation and management of the fisheries. Such Members and CNCPs are invited to apply the measures set out in paragraphs 12 – 23, insofar as they are applicable, to vessels associated with the *Trachurus murphyi* fisheries in their areas under national jurisdiction. They are also requested to inform the Executive Secretary of the conservation and management measures in effect for *Trachurus murphyi* in areas under their national jurisdiction.

Special requirements of developing States

25. In recognition of the special requirements of developing States, in particular small island developing States and territories and possessions in the region, Members and CNCPs are urged to provide financial, scientific and technical assistance, where available, to enhance the ability of those developing States and territories and possessions to implement this CMM.

Review

26. This Measure shall be reviewed by the Commission in 2014. The review shall take into account the latest advice of the Scientific Committee and the CTC and the extent to which this CMM, as well as the Interim Measures for pelagic fisheries of 2007, as amended in 2009, 2011 and 2012, have been complied with.

Supporting Material 6

Table 1: Gross Tonnage limits as referred to in paragraph 5

Member / CNCP	GT or GRT
Belize	9,814 GT
Chile	96,867.24 GT + 3,755.81 GRT
China	74,516 GT
Cook Islands	12,613 GRT
European Union	78,600 GT
Faroe Islands	23,415 GT
Korea	15,222 GT
Peru	75,416 GT
Russian Federation	74,470 GT[3]
Vanuatu	31,220 GRT

3 This total includes the vessel Lafayette. Operational fishing data, in accordance with the consolidated data standards, has not been supplied to the Interim Secretariat in respect of this vessel and information supplied by some delegations indicates that the vessel probably was not capable of fishing in either 2009 or 2010. Some delegations requested the GT for this vessel (49,173 GT) should be held in abeyance pending receipt of operational fishing information. The Russian delegation stated that vessel Lafayette has duly obtained all certificates from the Russian Maritime Register of Shipping to be qualified for the fishing class; the vessel has undergone initial physical inspections and subsequent annual surveys to confirm its ability to be engaged in direct fishing operations.

Supporting Material 6

Table 2: Tonnages in 2013 fishery as referred to in paragraph 6[4]

Member / CNCP	Tonnage
Belize	1,145
Chile	237,551
China	32,507
European Union	34,496
Faroe Islands	5,950
Korea	4,182
Peru	20,707
Vanuatu	23,462
Total	360,000

[4]The Russian Federation notified the Commission that it considers it had a legitimate right to a share in the fishery notwithstanding the situation referred to in footnote 3 and asserts its right to participate in the fishery in 2013 in a proportion calculated by reference to the fishing activities it reported to the Executive Secretary for 2010.

Supporting Material 6

Table 3: Catch Limits in 2013 as established in paragraph 7

Member / CNCP	Catch Limit
Belize	1,031
Chile	249,796
China	29,256
European Union	31,046
Faroe Islands	5,355
Korea	3,764
Peru	18,636
Vanuatu	21,116
Total	**360,000**