

***National report of the Russian Federation to the SPRFMO Science
Working Group on the fisheries in the Pacific in 2008-2009***

1. Description of the fishery

1.1. Fishery in 1972-2009

Practically right after opening by the Russian researchers in second half 1970 – first half 1980th the huge congestions 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 maid 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 million t (in 1980th), including 16-25 millint 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 never reached 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 made 12.5-20.0 %, average value 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 2009

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		
Number of vessels	0	3	3	3	0	0	1	6		

Note: “?” means that the information is absent

Table 2. Number of the fishing vessels during the fishery in the Southwest Pacific from 1977 till 2009

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							
Number of vessels	0	0								

Note: “?” means that the information is absent.

Russian catches of jack mackerel and chub mackerel from 1972 to 2009 in the Southeast Pacific and from 1977 to 2006 in the Southwest Pacific are presented in Tables 3-4 and Figures 1-4 (catches jack mackerel and chub mackerel in Southeast Pacific are shown from 1972 to 2007).

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

Catch, t	Year									
	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
Catch, t	Year									
	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
Catch, t	Year									
	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
Catch, t	Year									
	2002	2003	2004	2005	2006	2007	2008	2009		
Jack	0	7540	62300	7040	0	0	4800	9113.197		

mackerel										
Chub mackerel	0	0	0	0	0	0	386.74	534.934		

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

Catch, t	Year									
	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
Catch, t	Year									
	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
Catch, t	Year									
	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 absent.

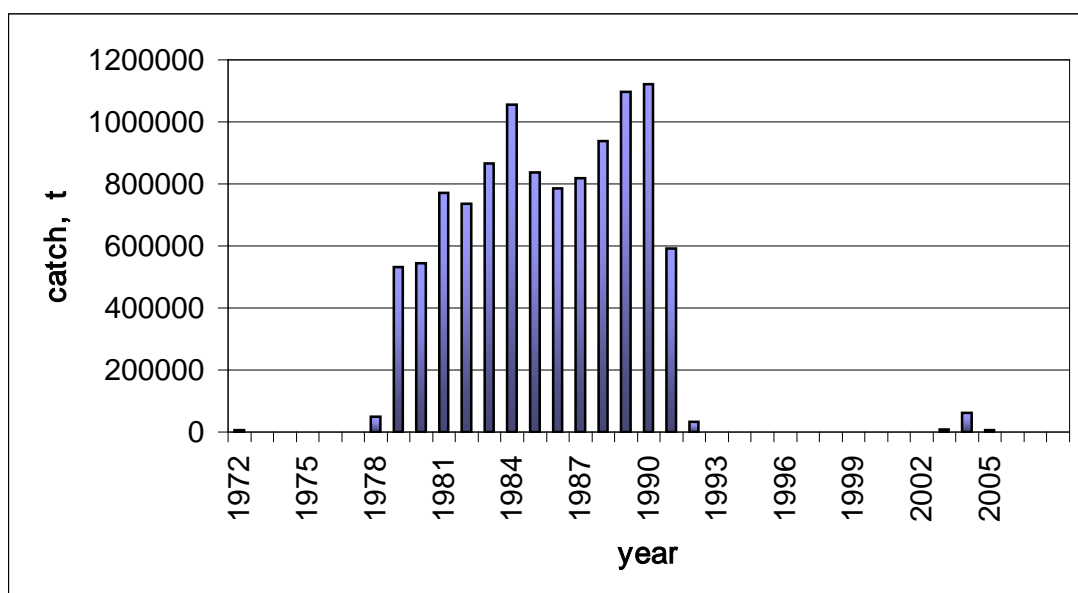


Figure 1. The Russian catch of jack mackerel in the Southeast Pacific

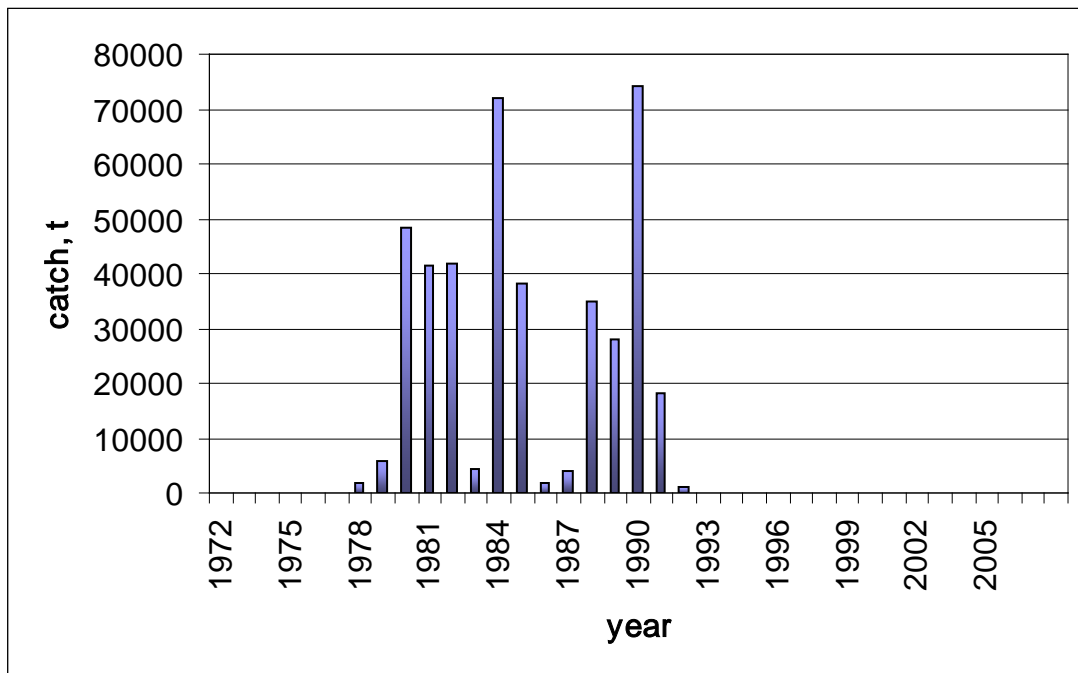


Figure 2. The Russian catch of chub mackerel in the Southeast Pacific

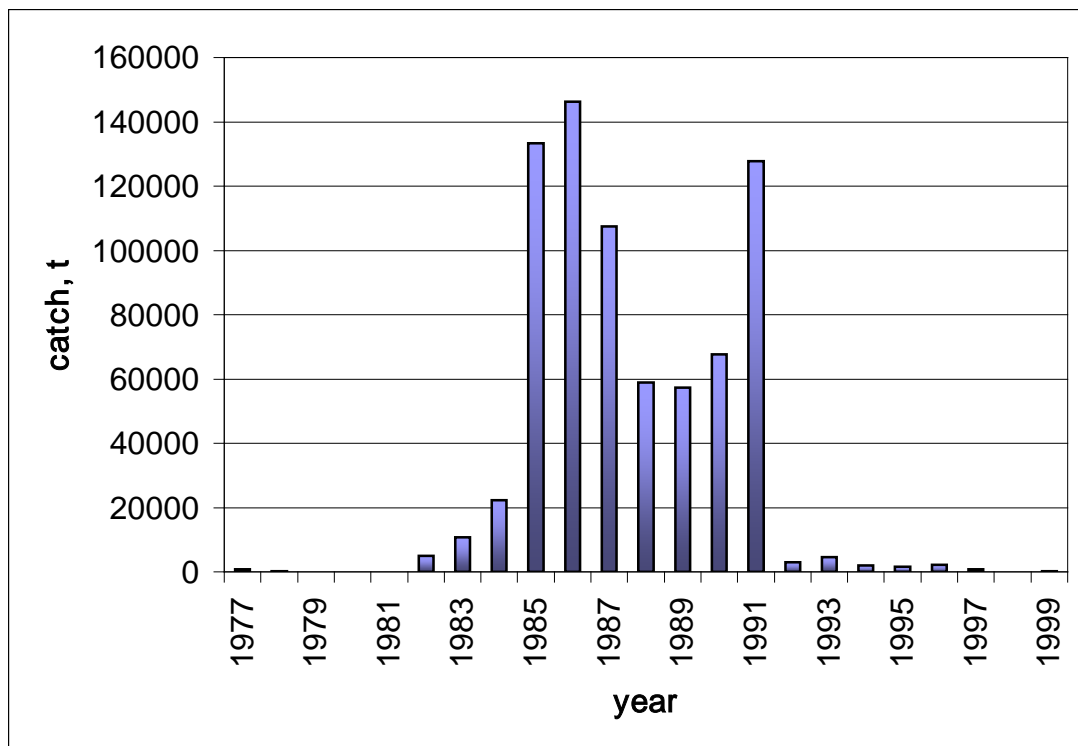


Figure 3. The Russian catch of jack mackerel in the Southwest Pacific

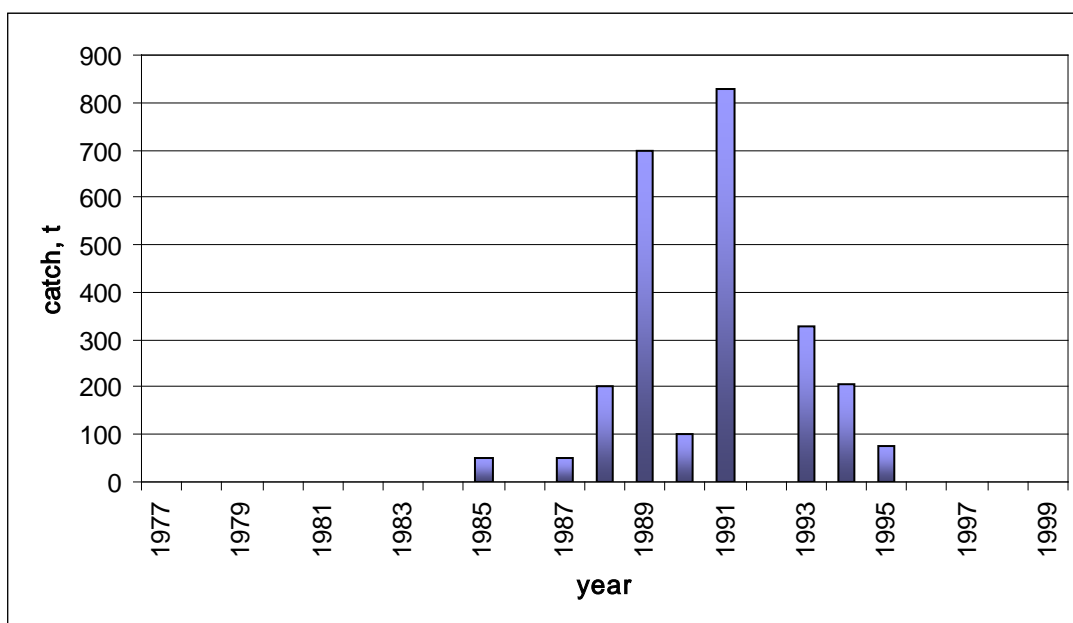


Figure 4. The Russian catch of chub mackerel in the Southwest Pacific

1.2. Fishery in 2008 and 2009

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", "Semiozerno", "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.

Table 5. Russian actively fishing vessels

year	name	GT
2008	Persei	4638
2009	Germes	4629
2009	Ivan Lyudnikov	6144
2009	Semiozerno	6231
2009	Kapitan Kuznetsov	6231
2009	Atlantida	2062
2009	Lafayett	49173
total for 2009		74470

Table 6. The information about fishery in the high seas of the South Pacific in 2008-2009

year	number of vessels	number of tows	number of fishing days
2008	1	96	62
2009	6	235	153

The vessels which were involved in this fishery use single midwater trawls. They operated in the area from 31.33472 S to 38.86778 S and from 85.33472 W to 100.63444 W in 2008 and from 34.65222 S to 43.97806 S and from 79.04889 W to 126.06806 W in 2009.

The Russian vessels operated in the area from July till October in 2008 and from May to September in 2009. The main catch in 2008 was taken in September and in 2009 – in July (Fig. 5, 6).

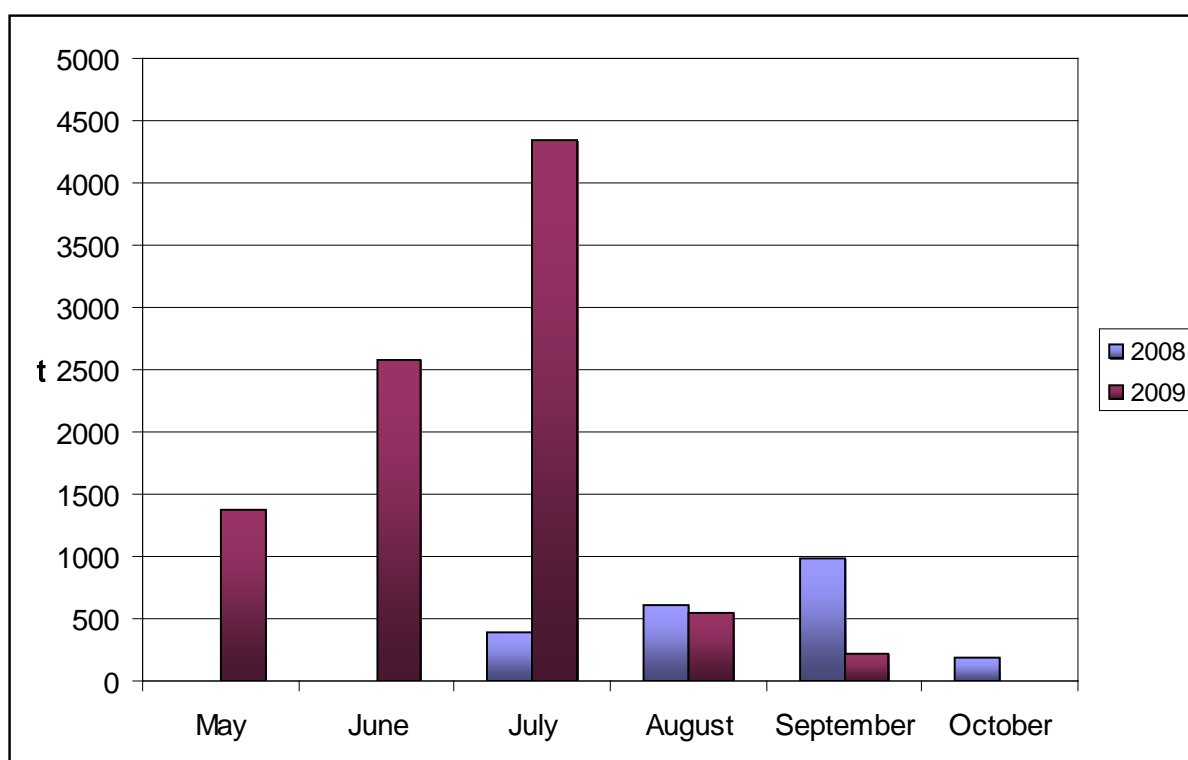


Figure 5. Monthly catch of jack mackerel by Russian vessels in 2008-2009

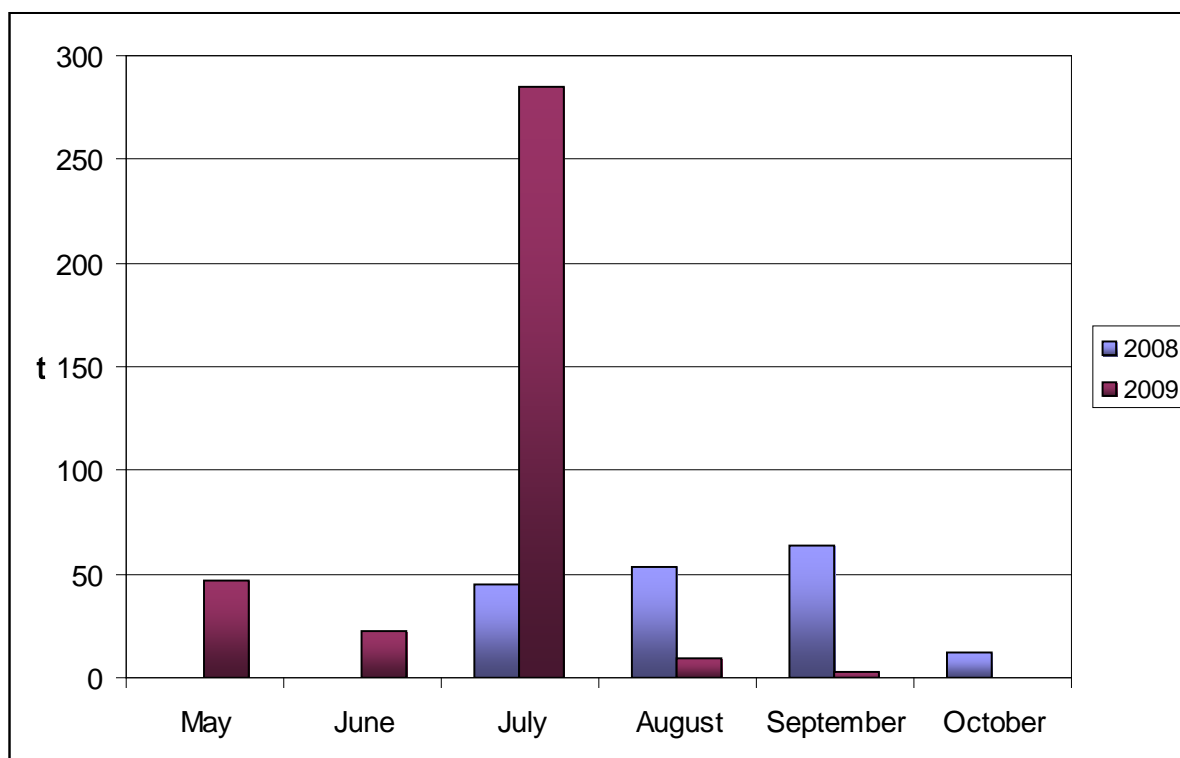


Figure 6. Monthly catch of chub mackerel by Russian vessels in 2008-2009

2. Catch, effort and CPUE summaries

Development of catch and effort in fishing of the jack mackerel and chub mackerel by Russian vessel is presented in the Table 7, 8 and in Figures 9, 10.

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	9113.197	534.934	7.94	0.57

Table 8. The average monthly catch and CPUE of jack mackerel and chub mackerel by Russian vessels in Southeast Pacific Ocean in 2008 and 2009

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

The CPUE of jack mackerel and chub mackerel in July-October in 2008 are shown in Figures 7 and 8.

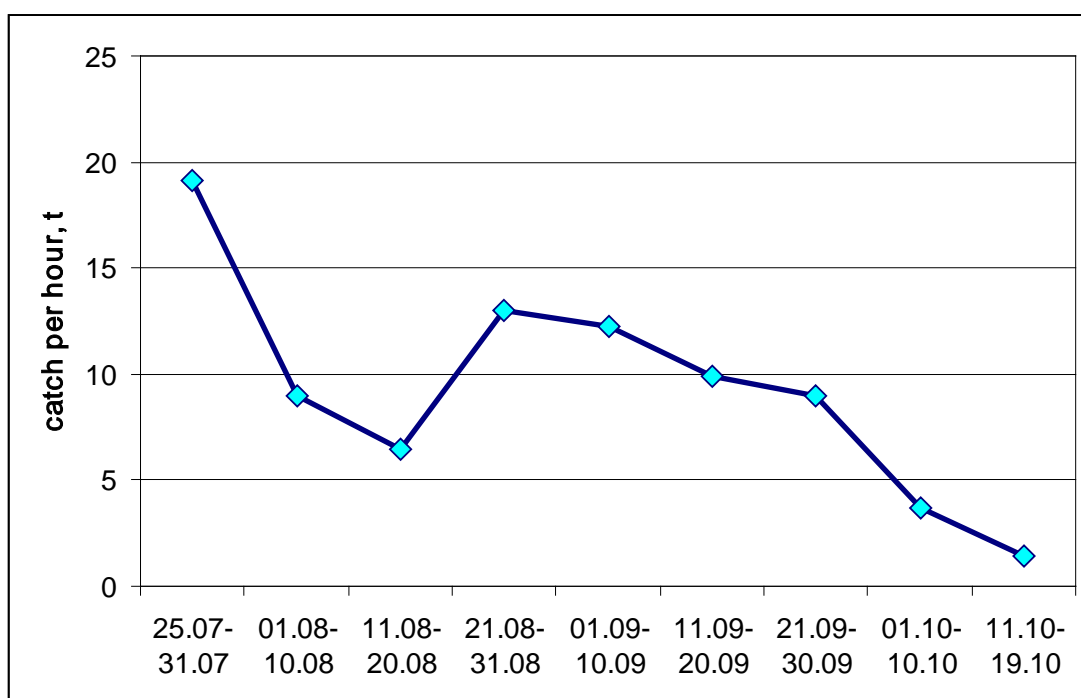


Figure 7. The CPUE of jack mackerel in July-October in 2008

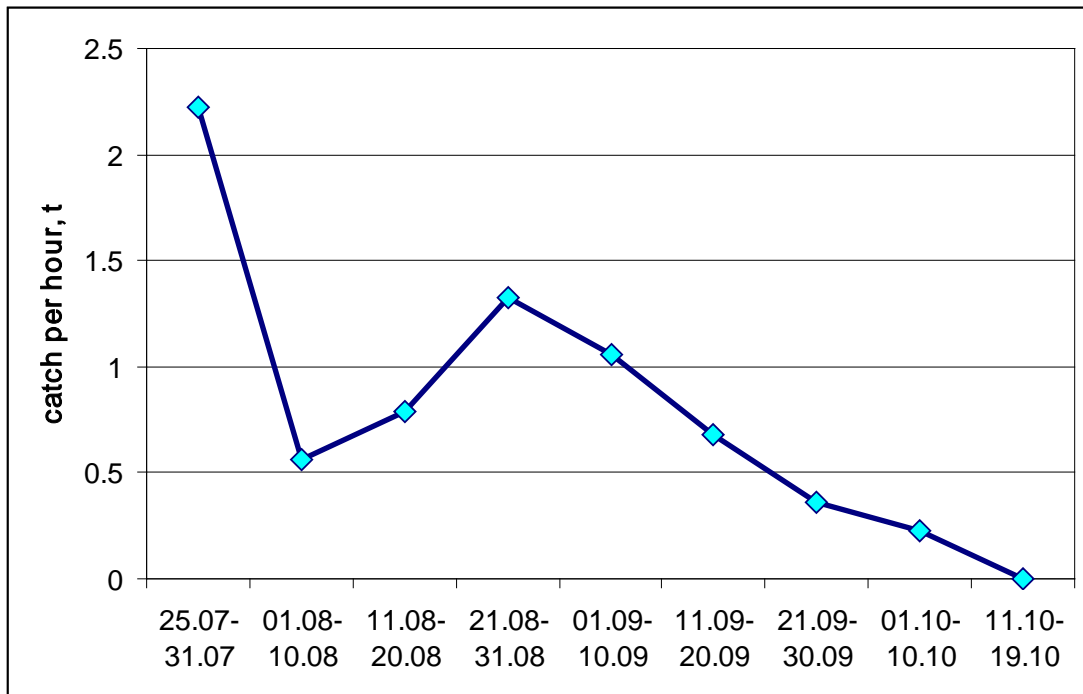


Figure 8. The CPUE of chub mackerel in July-October in 2008

The CPUE of jack mackerel and chub mackerel in May-September in 2009 are shown in Figures 9 and 10.

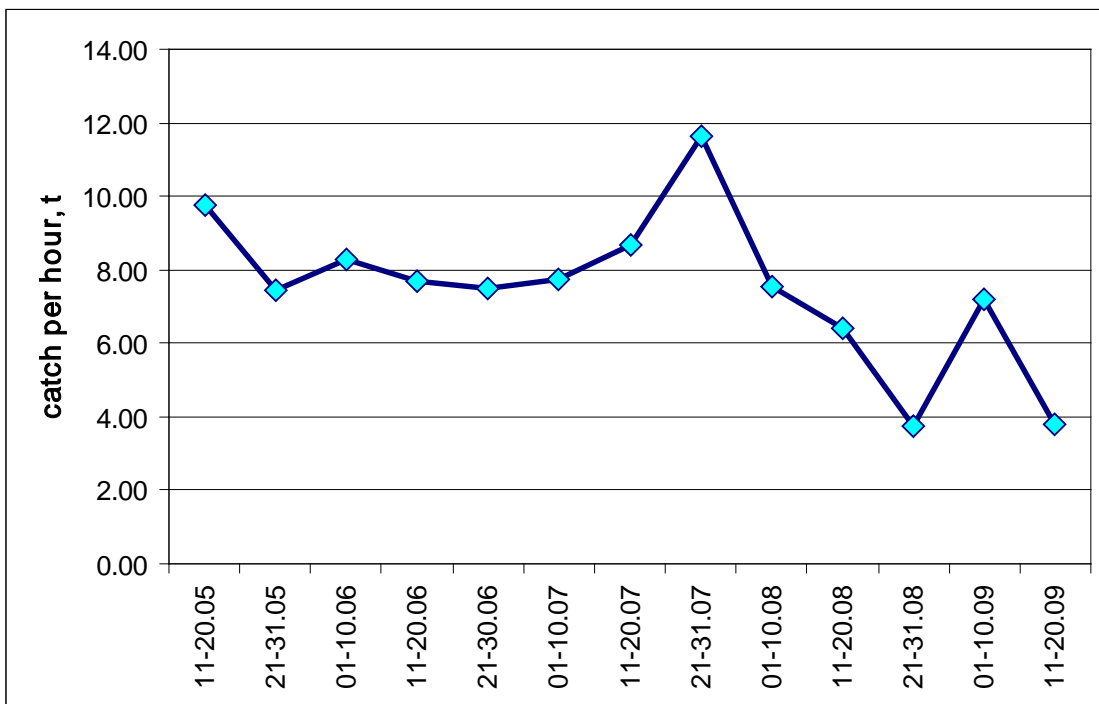


Figure 9. The CPUE of jack mackerel in May-September in 2009

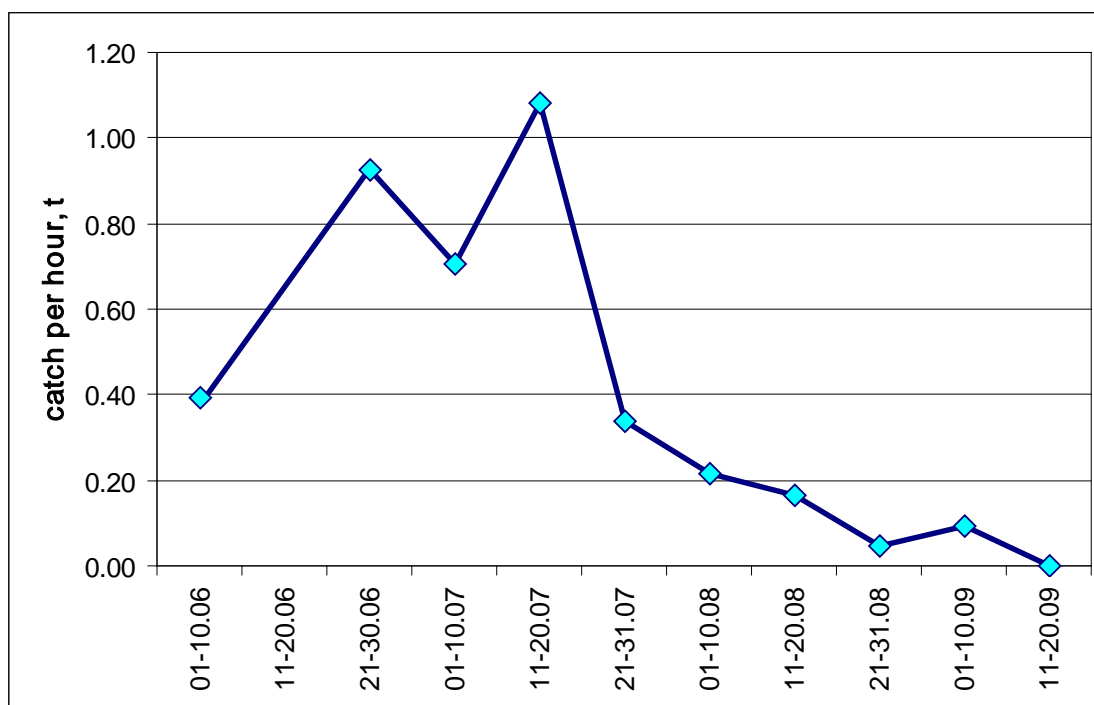


Figure 10. The CPUE of chub mackerel in June-September in 2009

3. Fisheries data collection and research activities

In August 2002 – January 2003 Russian R/V Atlantida after a 10-year break conducted researches of a condition of fishery resources of Southeast Pacific. The jack mackerel's biomass off Chilean EEZ to 105° W on water area of 362.1 square miles was estimated in 7.635 million t. The biomass from the same water area was estimated in 5.39 and 4.50 million t in 1985 and in 1987 accordingly. Hence, the size of the biomass of jack mackerel in 2002-2003 exceeded estimations which were made in 1980th. Besides, in the considerable quantity of young jack mackerel was noticed in 2002-2003. Thus, the stock conditions of oceanic jack mackerel in the Southeast Pacific was at stably high mean annual level.

Two independent programmes of data collection were carried out in 2008 and 2009: the collection of haul-by-haul information from the captains, and an observer programme that was aimed at obtaining detailed biological information on catches and discards.

Also in August-November 2009 Russian R/V "Atlantida" carried out scientific programme in Southeast Pacific. Acoustic transects of research cruise of R/V "Atlantida" is shown in Figure 11. During that cruise the scientific group carried out 42 tows in 35 fishing days. In catches dominated jack mackerel, sea breams and chub

mackerel (13.72, 1.3 and 0.33 t in accordance) (Fig. 12).

Distribution of surface density coefficient NASC ($m^2/mile^2$) in concentration of jack mackerel and chub mackerel was calculated on the results of scientific programme (Fig. 13).

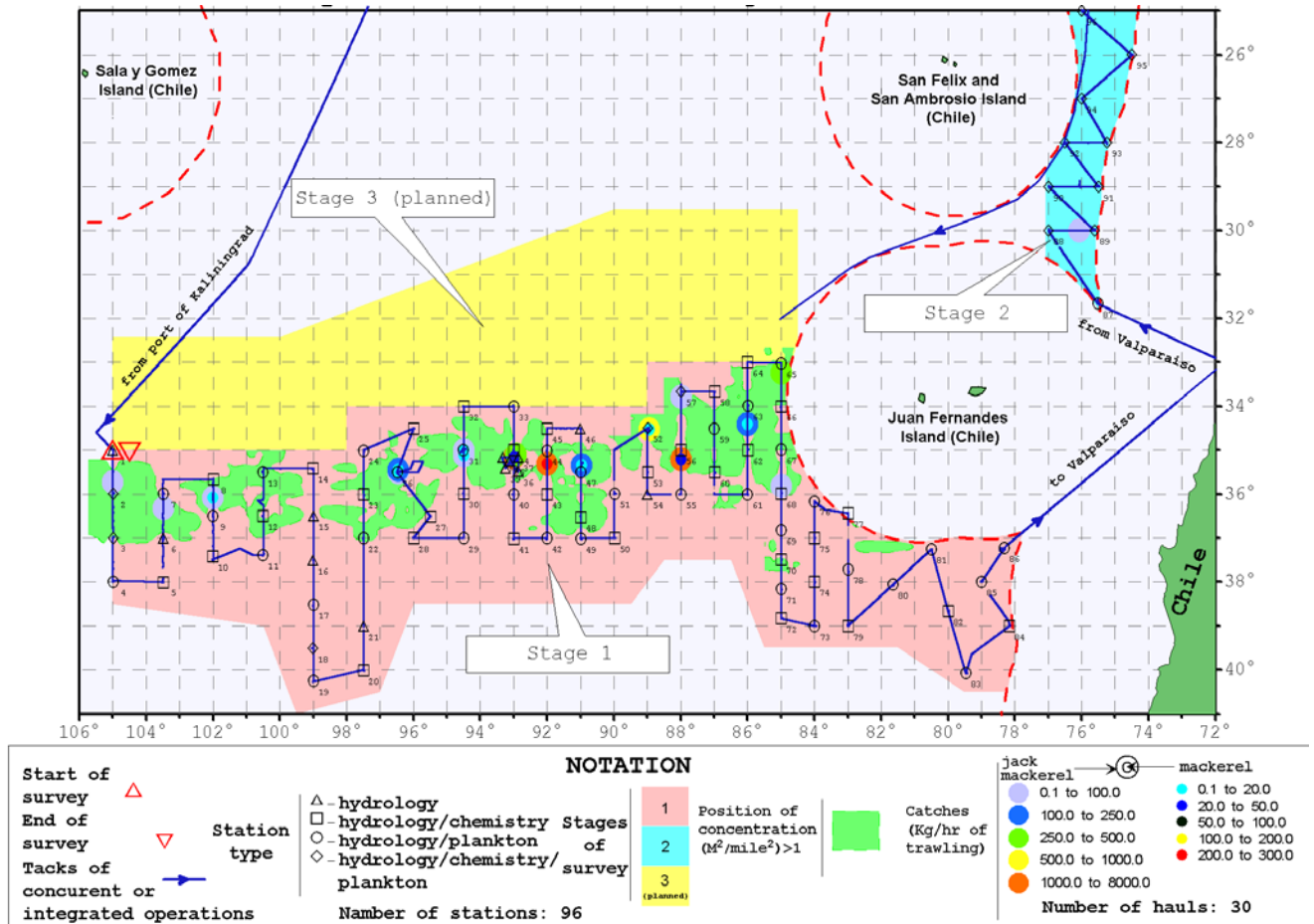


Figure 11. Research cruise of K-1704 "Atlantida" to southeast Pacific beyond the EEZ of Chile in August-October 2009

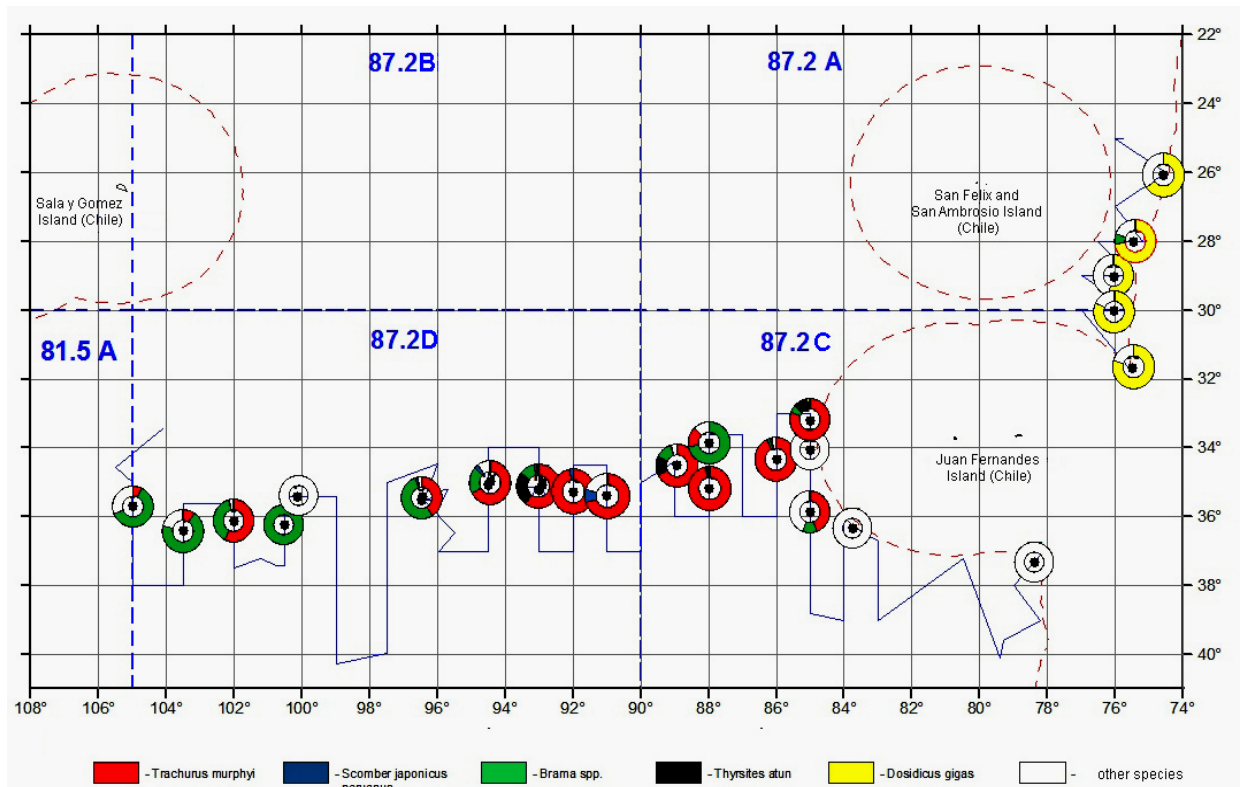


Figure 12. Composition and proportion of main fishing species (% of total catch weight) recorded in trawl catches during research cruise of R/V "Atlantida" in epipelagic waters of SEPO

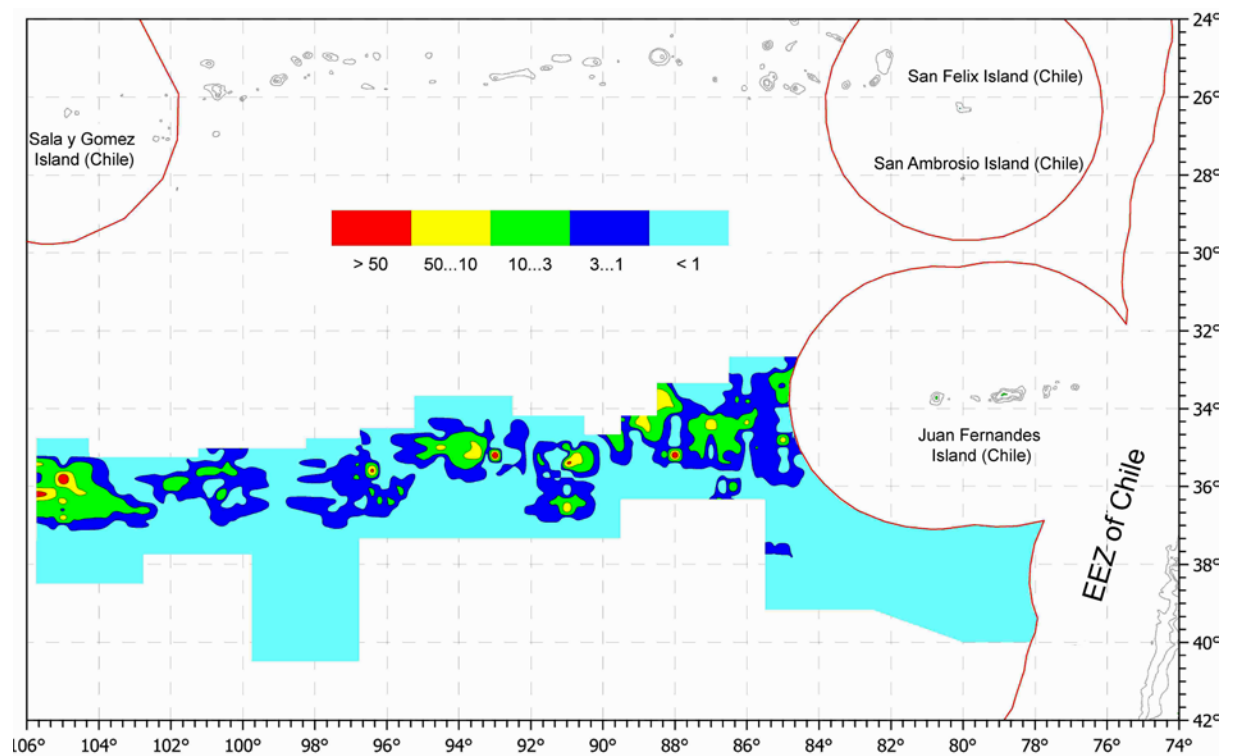


Figure 13. Distribution of surface density coefficient NASC (m²/mile²) in concentration of jack mackerel and chub mackerel

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; intended 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.

On board 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 14-15 present the length composition for 2008 and 2009. Figure 16 presents the length composition of jack mackerel, measured onboard of R/V "Atlantida".

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

Jack mackerel of 34-37 cm and 34-36 cm dominated in catches in 2008 and 2009 in accordance (Fig. 14, 15). Chub mackerel of 35-38 cm dominated in catches in 2008 and specimens of 27, 30 and 34-35 cm dominated in 2009 (Fig. 16).

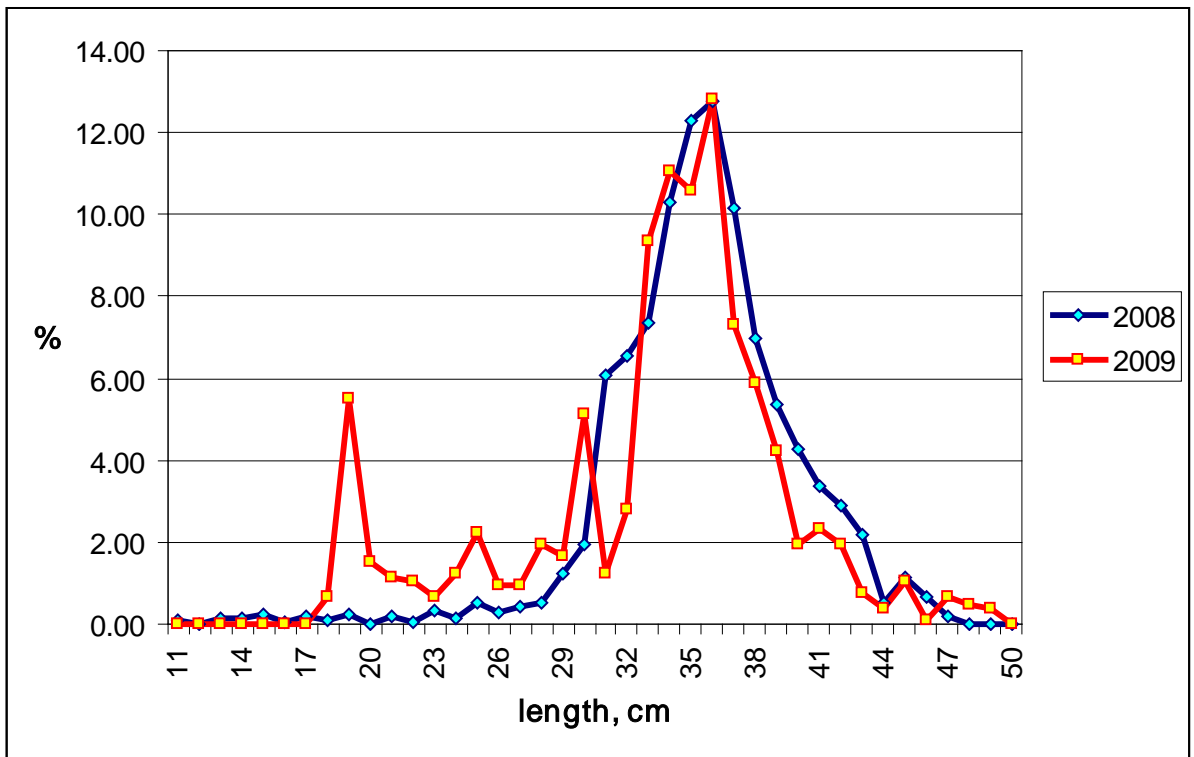


Figure 14. Length composition of jack mackerel in spring-autumn 2008-2009

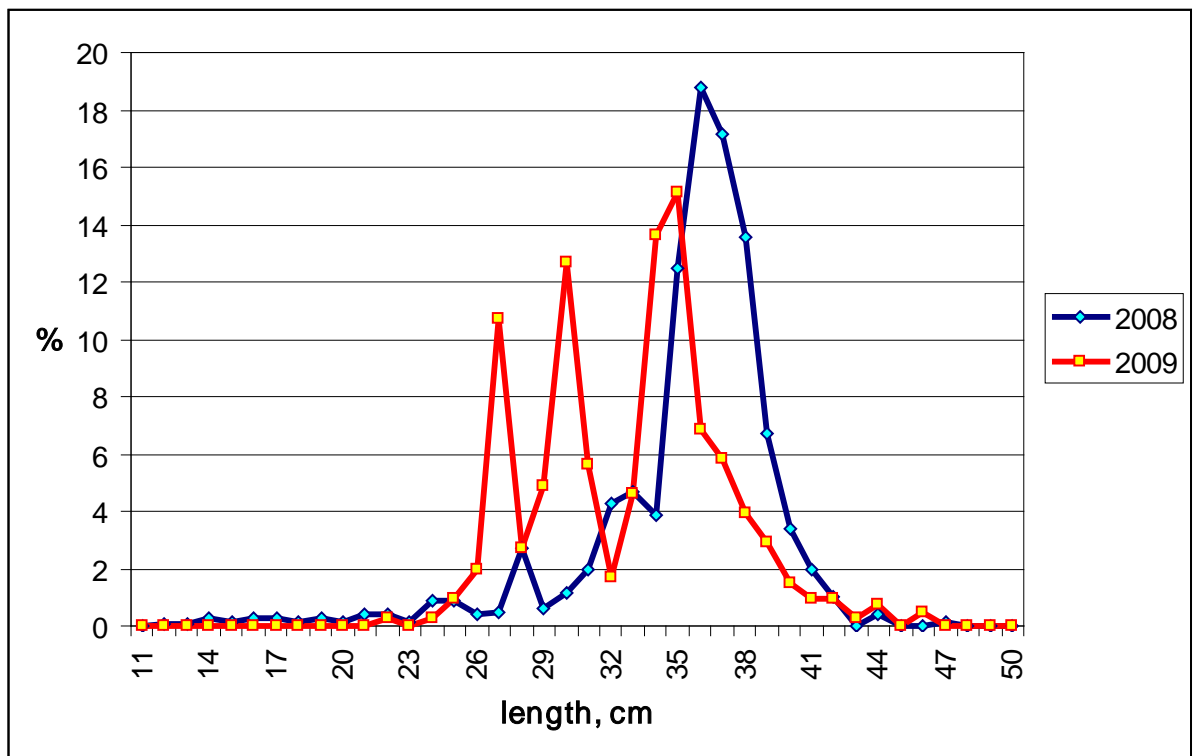


Figure 15. Length composition of chub mackerel in summer-autumn 2008-2009

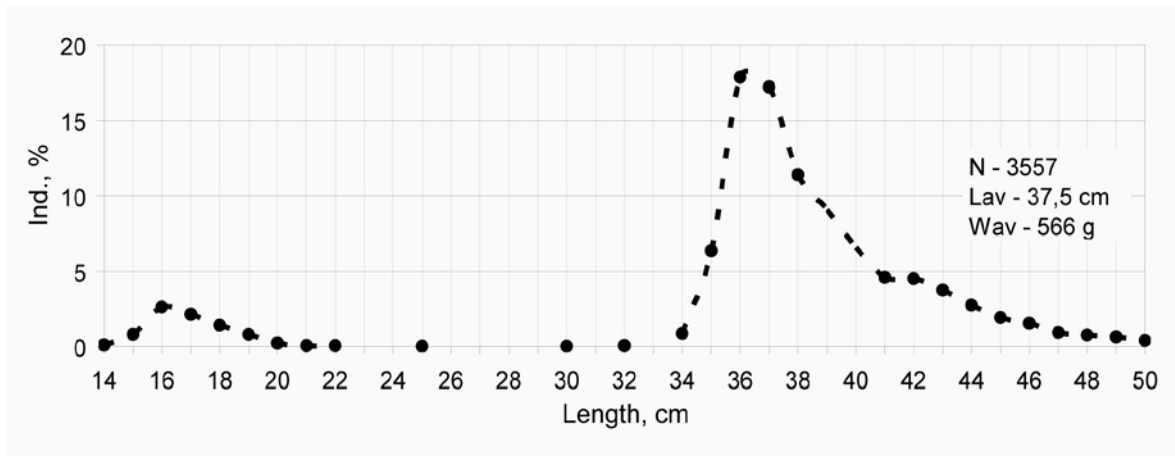


Figure 16. Length composition of chub mackerel measured onboard of R/V "Atlantida"

The average length of jack mackerel and chub mackerel by ten day period in 2008 and 2009 are shown in Figures 17-18.

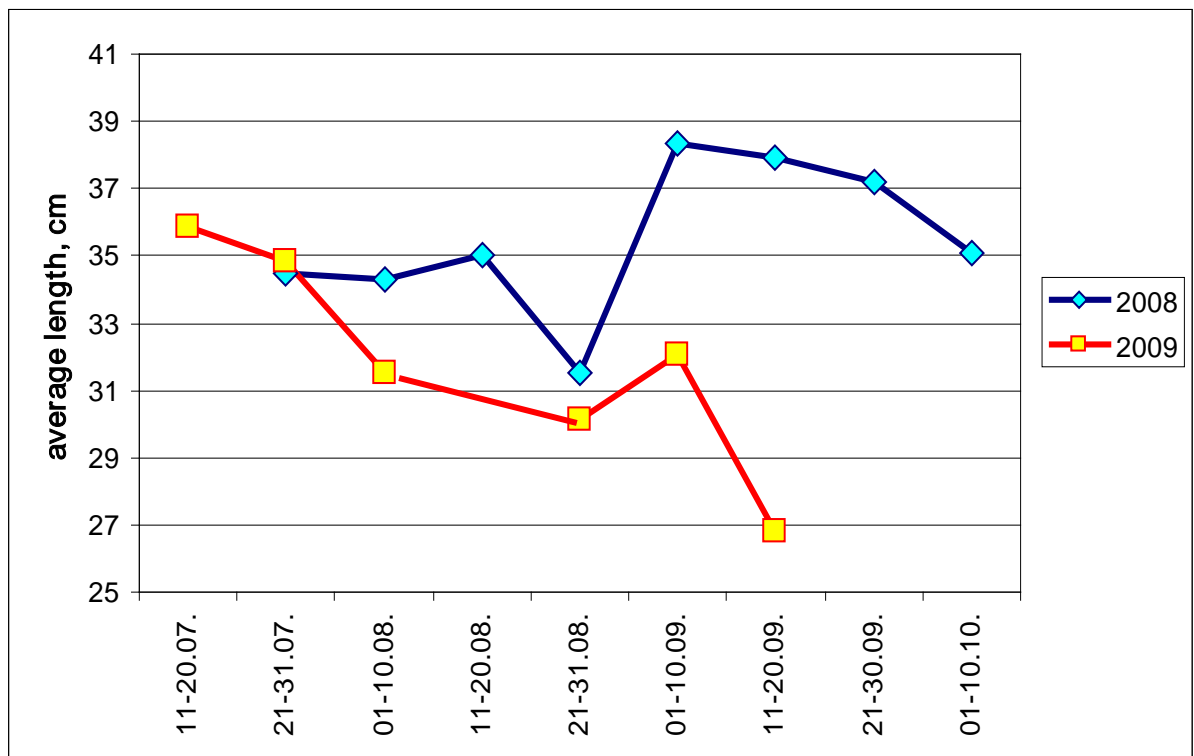


Figure 17. Average length of jack mackerel by ten day period in 2008-2009

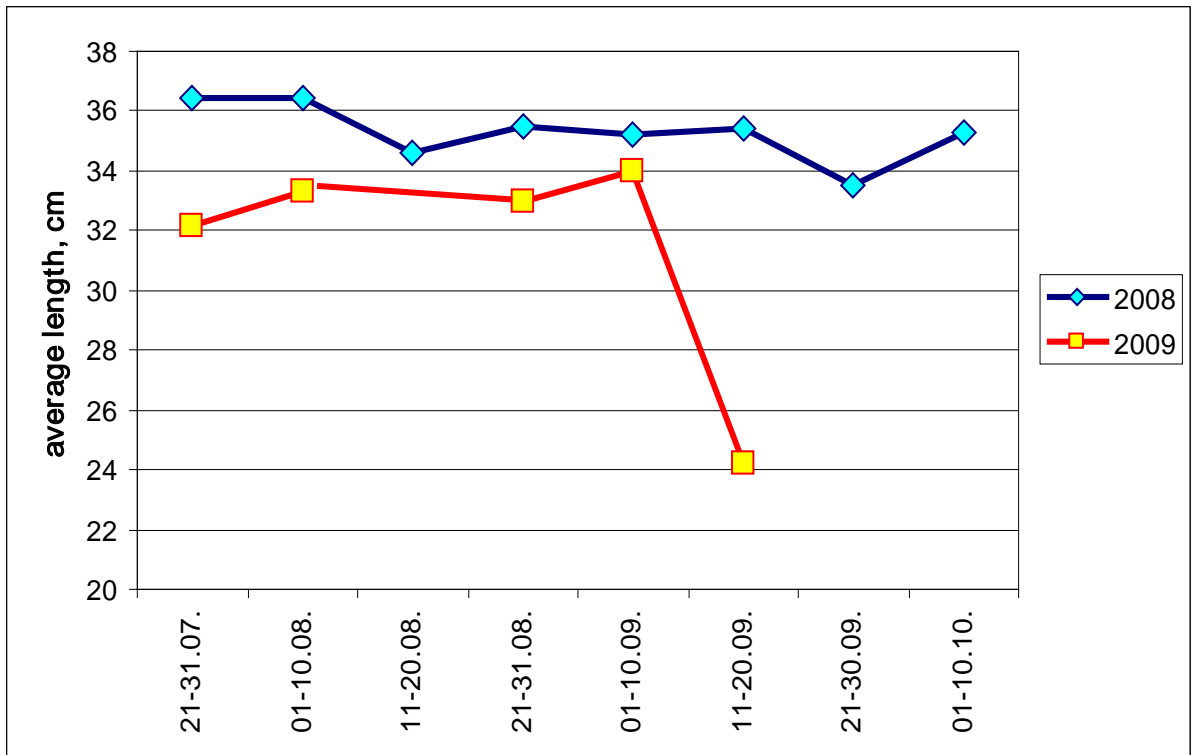


Figure 18. Average length of chub mackerel by ten day period in 2008-2009