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Ecuador

PUBLIC INSTITUTE FOR AQUACULTURE AND FISHERIES RESEARCH

2019 ECUADOR NATIONAL REPORT; FISHERIES AND BIOLOGICAL ASPECTS OF JACK MACKEREL (*Trachurus murphyi*) IN ECUADORIAN WATERS

1. INTRODUCTION

The small pelagic fishery represents one the most important fishery resource in Ecuadorian waters, its landings, processing (canned fish and flour fish) and exportations generate an important income to the country. Thread herring (*Opisthonema* spp.), chub mackerel (*Scomber japonicus*), Pacific anchoveta (*Cetengraulis mysticetus*), Frigate tuna (*Auxis* spp.), Round herring (*Etrumeus teres*), sardine (*Sardinops sagax*), anchovy (*Engraulis ringens*) and jack mackerel (*Trachurus murphyi*) are the most important fishing resources caught by the purse seine fleet distributed along the continental coast of Ecuador; Gulf of Guayaquil registered the highest catches and the minor in front of Manabí coast (González et al., 2008).

The present document presents historical biological and fishing information on jack mackerel, collected for the small pelagic fish monitoring program of the Public Institute for Aquaculture and Fisheries Research (before National Institute of Fisheries) by the Ecuadorian purse seine fleet, when this resource is available in Ecuadorians waters.

2. FISHING ASPECTS

2.1 FISHING EFFORT

Purse seine fleet for small pelagic fishes is made up of ships operating 20 to 22 days in month, during the period called “oscura” that correspond to new moon; fishing trips are daily and the activity begins from 20h00 to 05h00 hour (Aguilar, 1999).

Public Institute for Aquaculture and Fisheries Research in order to study the small pelagic fishes, classified these ships into four different class, related to Total Register Tonnage (TRT): Class I belongs to independent fishermen, the activity is close to the coast. The

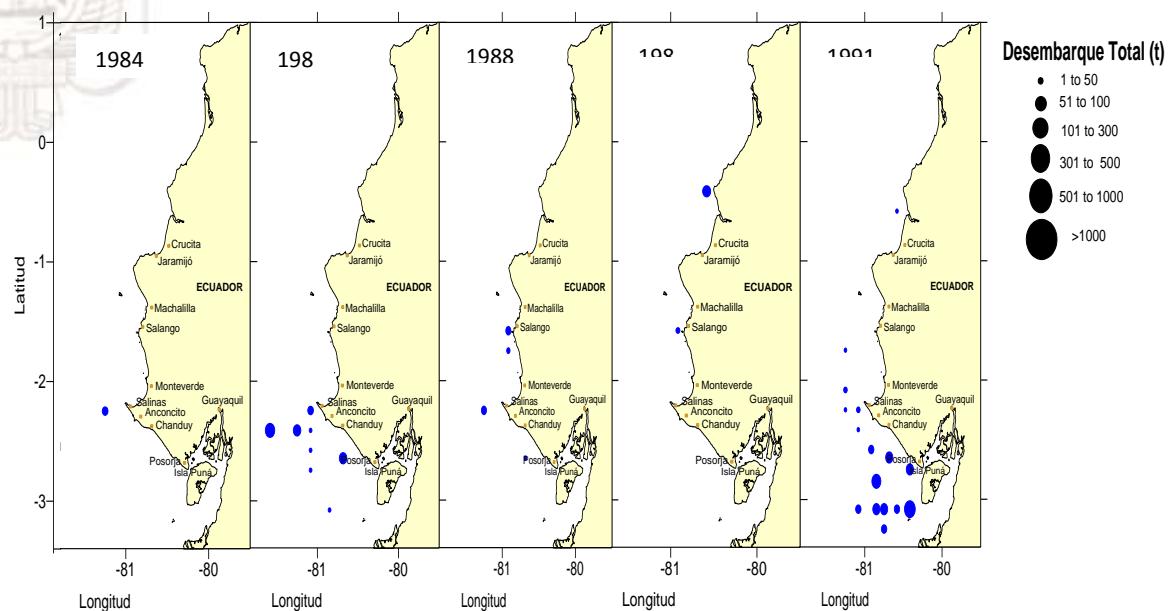
class II, III and IV belong to fisheries industries, and catch mackerel, *Etrumeus teres*, *Auxis* spp., jack mackerel and sometimes *Cetengraulis mysticetus* and *Opisthonema* spp.

It should be noted that when horse mackerel is present in Ecuadorian waters, class III and IV vessels capture this species (related to operational activity, 15 miles), while it is found near the coast, class I and II vessels can capture this species.

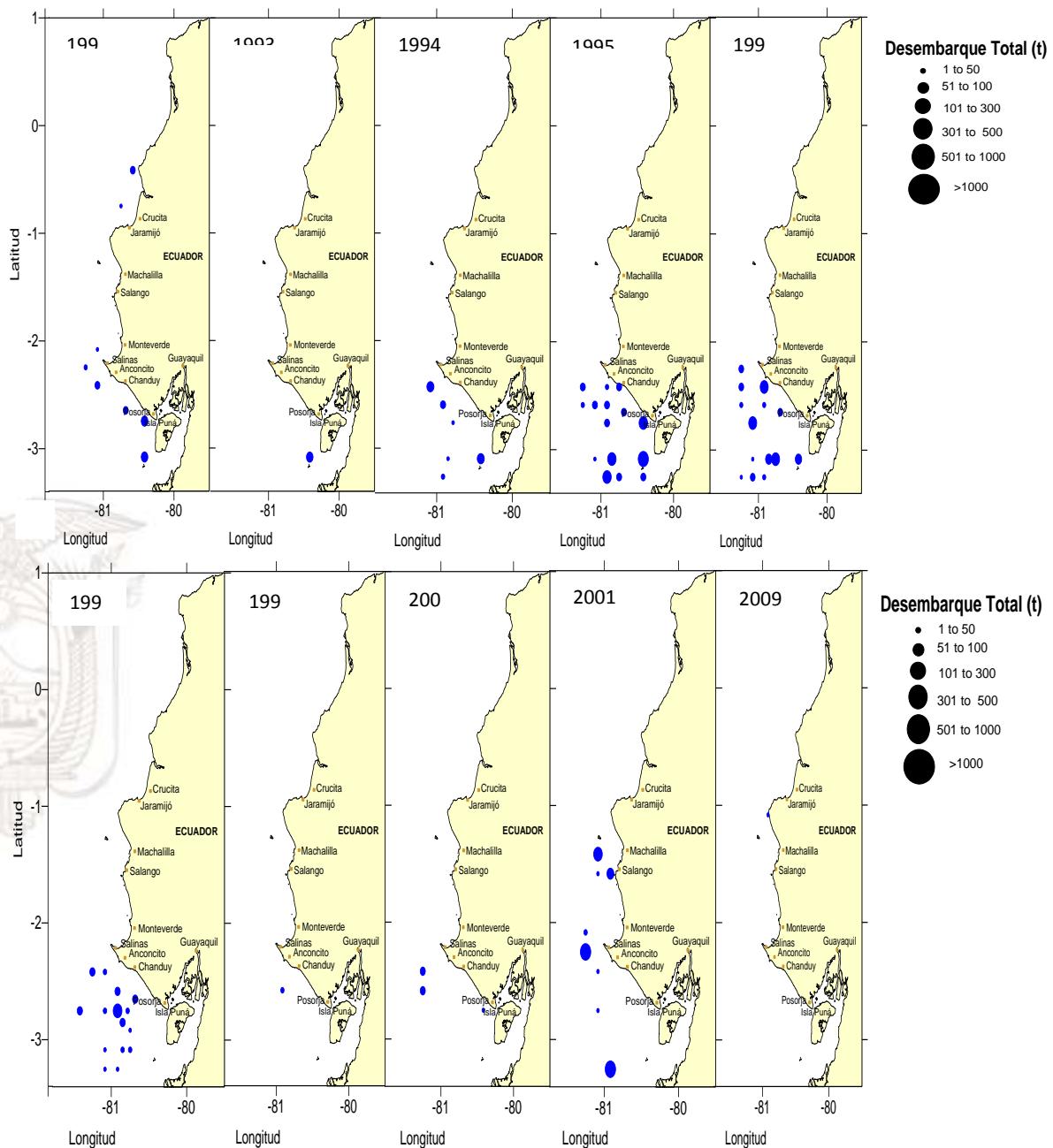
2.2 FISHING ZONES

The principal fishing zones when Jack Mackerel (JM) is available in Ecuadorian waters are recorded in the Gulf of Guayaquil and around Peninsula de Santa Elena; catch information of JM is recorded in the Public Institute for Aquaculture and Fisheries Research data base since 1984; during 1991, 1995 - 1996 were registered catches in the internal part of Gulf of Guayaquil; being around Santa Clara Island 1 600 t reported in both periods. In 2001 were reported catches in front of Manabí Coast, and south of Isla de la Plata.

For 2011 fishing zones were reported in front of Province of Manabí, being this around Peninsula de Santa Elena where were registered the higher concentrations of jack mackerel (figure 1).



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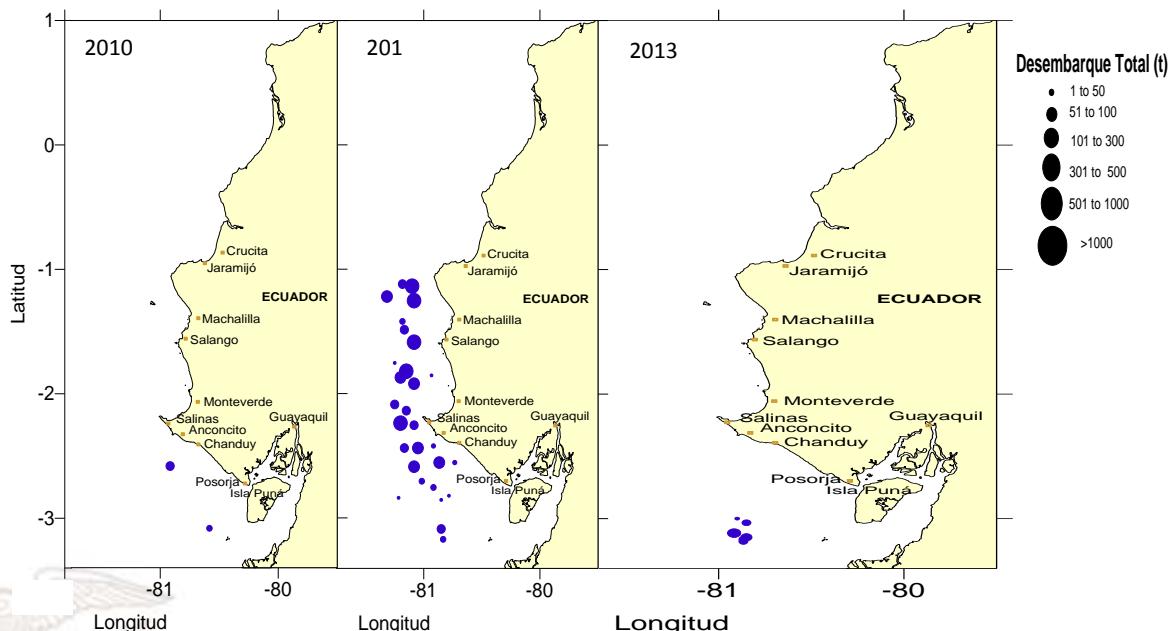


Figure 1. Historical distribution of jack mackerel catches in Ecuadorian waters.



2.3 LANDINGS

In Ecuadorian waters, first reports of this species were identified for Massay (1983); afterwards, in 1984 and 1990, has been reported irregular catches (September - October), located in the southern of Gulf of Guayaquil (Aguilar, 1992); the landings were associated to secondary species in the small pelagic fishery.

During 1990 jack mackerel represented 4 144 t of the total landings of small pelagic fish, reaching in 1991 a total of 45 313 t; fishing records of this species were variable in subsequent years, reporting in 1995 up to 174 393 t.

For the period 2002 - 2009, catches of this resource was minimal and isolated in 2002, 2007 and 2009 (604, 927 and 1 935 t, respectively).

From the last week of December 2010 were reported catches of jack mackerel off the coast of Ecuador, the same corresponded the 25% of total landings (4 613 t), for the first quarter 2011 important landing were registered (69 153 t), then disappearing in landings of small pelagic fishes, until August 2012 with 77 t. By 2013 there were 3 563 t; For the last years the catch records have been minimal in relation to the previous years (Table 1, figure 2).

Table 1. Historical catches (t) of Jack mackerel in Ecuadorian Waters

Years	Small Pelagic Fishes	Jack Mackerel
1981	1043115	-
1982	1158282	-
1983	546863	-
1984	1343433	-
1985	1998587	-
1986	1267501	-
1987	753668	-
1988	949327	-

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1989	691373	-
1990	234747	4144
1991	230767	45313
1992	211239	15022
1993	349709	2673
1994	239493	36575
1995	247541	174393
1996	566733	56782
1997	391207	30302
1998	163182	25900
1999	237208	19072
2000	410047	7122
2001	299926	133969
2002	179346	604
2003	201039	-
2004	175948	-
2005	235534	-
2006	223183	-
2007	214942	927
2008	245791	-
2009	244521	1935
2010	198937	4613
2011	157774	69373
2012	203016	77

2013	202112	3563
2014	253807	9
2015	284732	289
2016	389147	-
2017	336999	54
2018	169836	23

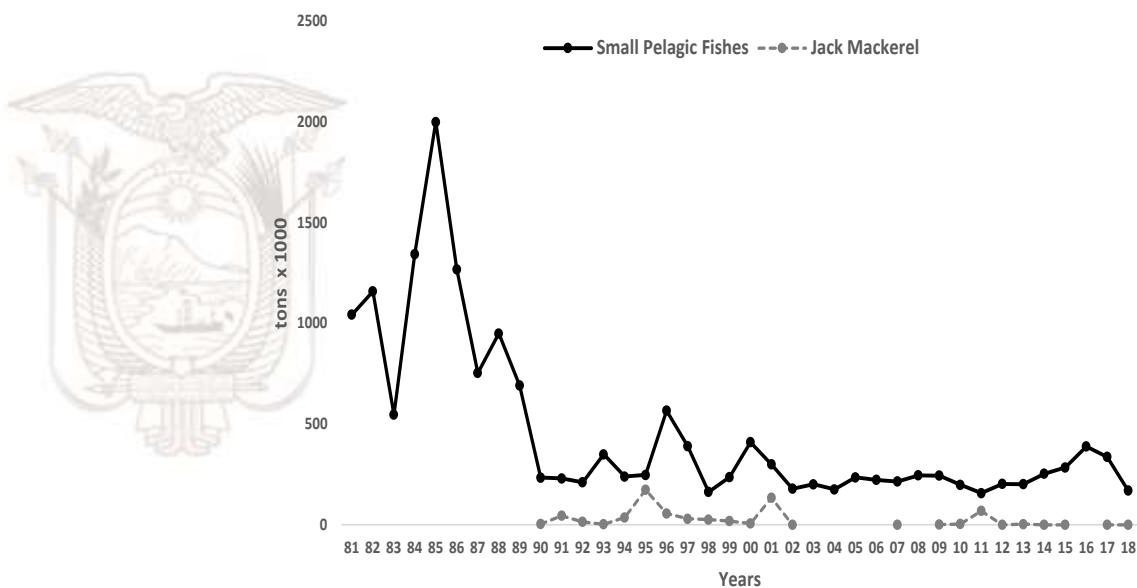


Figure 2. Total annual landing (t) of small pelagic fishes versus Jack Mackerel.

3. BIOLOGICAL ASPECTS

3.1 SIZE STRUCTURE

The size structure ranges from 14 to 66 cm TL, denoting the presence of three groups of size classes (19 - 31, 32 - 51, and 55-65 TL), as well as two strong modal groups (28 and 29 cm TL) (figure 3 and 4).

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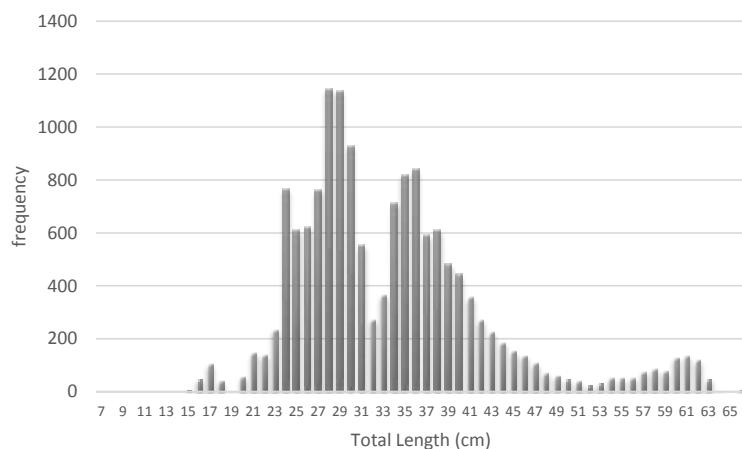


Figure 3. Length composition of Jack Mackerel, registered in Ecuadorian waters.



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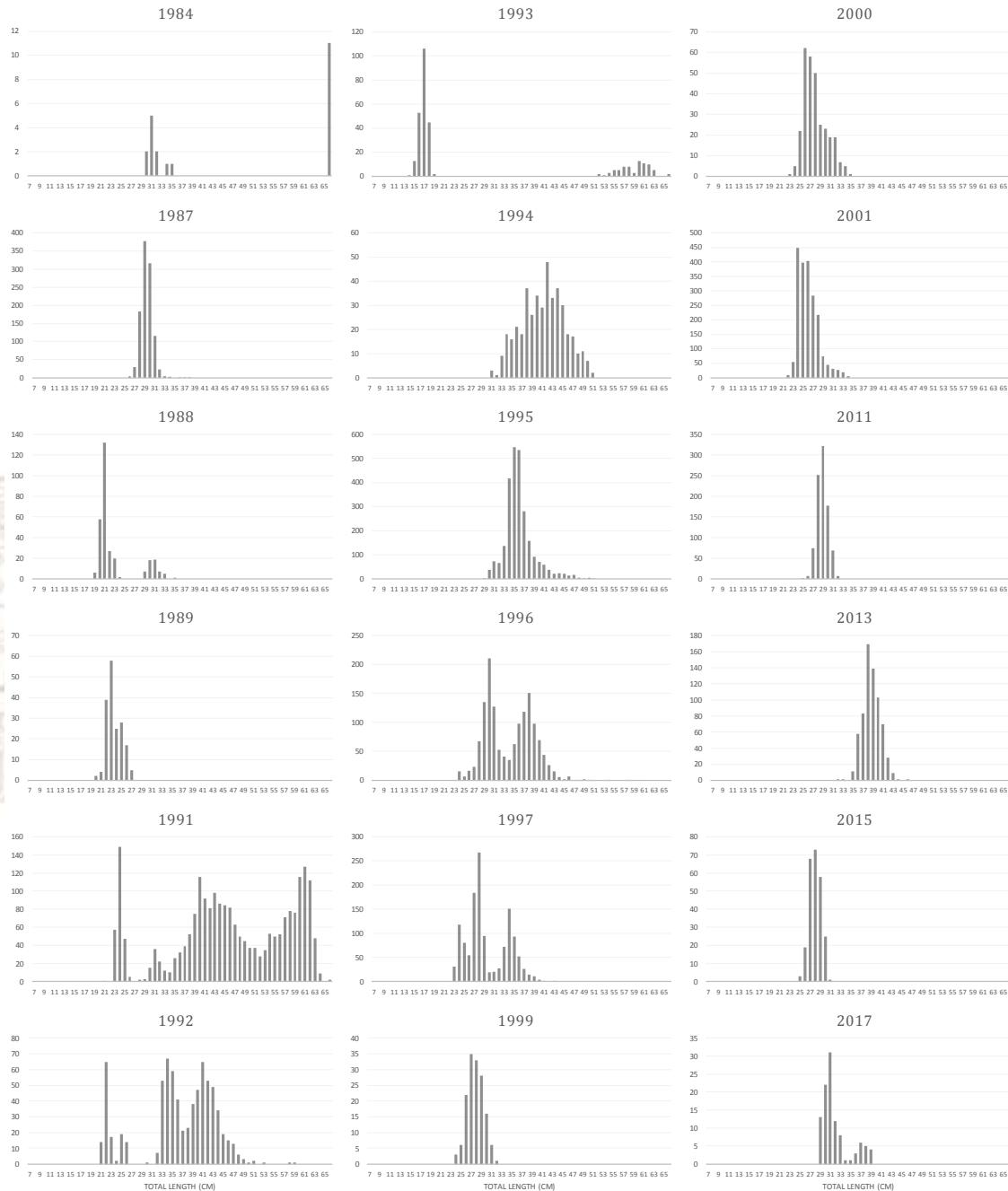


Figure 4. Historical Size structure of Jack mackerel in Ecuadorian waters.

4. REFERENCES

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