

# **Chub mackerel (*Scomber Colias*)**

## **ICES area data from IEO**

### **Divisions 8.c and 9.a**

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# FISHERY DATA

## AVAILABLE SO FAR

**Yearly landings** of chub mackerel from the Spanish fleet in 9.a (North and South) and 8c ICES Divisions for the period 1982 to 2009 are available at the ICES data base (ICES, 2010).

This time series was updated with sales notes and logbooks for the period 2010-2018.

On the other hand, **the technical features of the vessels** were taken from the official census of the Spanish fleet.

- “ Catch estimates by area (Sub-divisions): 1982-2018
- “ Geographical distribution of catches: 2010-2016
- “ Effort of the Spanish purse seine fleets: 2010-2016

## FORTHCOMING AND FUTURE WORKS

Update until 2018 the data of the fishery:      Geographic distribution and Efforts of the purse seine fishery

# BIOLOGICAL DATA

## AVAILABLE SO FAR:

Biological samples from 2011 to 2019 taken in **Divisions 8.c and 9.a North**: Monthly (in 2011-2013 and 2018-2019) and quarterly (from 2014 to 2017) samples (around 100 fish each).

Samples obtained in the spring acoustic-trawl survey PELACUS and from the autumn bottom trawl survey DEMERSALES, conducted by the IEO in this area were also available.

Since 2019 it is also sampled in the Gulf of Cadiz (**Sub-division 9.a South**). Biological data are also available either since 2007 (ECOCADIZ acoustic & BOCADEVA anchovy DEPM surveys) or 2014 (ECOCADIZ-RECLUTAS acoustic surveys).

“ Length-weight relationship (2011-2018): Divisiones 8c and 9a North

“ Length Composition of Catch (2011-2018): Division 8c, Subdivisions 9a North and 9a South

“ Age Composition of Catch (2011-2018): Catch-at age by quarter and ICES Division for the period 2011-2018 was obtained by applying biannual length-age keys to the catch length distributions. In the case of the 9.a South area, catch-at-age matrix was estimated by applying the available ALKs from the Divisions 8c and 9a N.

“ Weights-at-Age in the Catch and Stock (2011-2018) by quarter for both, catches and stock, were calculated for the period 2011-18. Samples obtained in the second quarter in Division 8c (both from PELACUS and commercial fleets) were used as a proxy of the weight at age in the stock

“ Maturity ogives (2011-2016): by length and age were constructed using only data collected during the main spawning period, when a high percentage of mature (active stage) fish was observed (March to July).

## FORTHCOMING AND FUTURE WORKS

“ Since 2019 on, ALKs from the Spanish fishery off the Gulf of Cadiz will be available and, therefore, landings & discards could be disaggregated by age with their own ALKs

“ Study of growth and validation of the age estimation (data from 2011-2017, commercial catches and surveys, ICES Div. 8c and 9aN. ): Results by 2019 [ Navarro et al., 2019 (poster to Sclerochronology Conference ); paper to be published in 2019]

“ Study of the reproductive maturity and cycle (data from 2011-2019, commercial catches and surveys, ICES Div. 8c and 9aN): Results by 2020.

“ Study of the reproductive strategy and potential of chub mackerel of the N and NW Iberian Peninsula (estimation of number of oocytes, analysis of histological ovary sections, fecundity estimation). Data from 2020: Results by 2021?

“ Study of trophic ecology: analysis of stomach contents and isotopic signature. Data from 2018-2019, commercial catches and surveys, ICES Div. 8c and 9a North: Results by 2020/21

# FISHERY INDEPENDENT DATA: SURVEYS

## AVAILABLE SO FAR

### Acoustic-trawl Surveys:

~ Northern Acoustic Surveys (9.a North and 8.c areas): PELACUS survey started in 1991 covering in spring time (i.e. main spawning period for the most important pelagic fish species) the northern Spanish Atlantic and Cantabrian waters from the Spanish-Portuguese border to the French Spanish one (8.c and 9.a North). At present, only data since 2013 are available (chub mackerel data available mostly from 8c)

~ Southern Acoustic Surveys (9.a South area): ECOCADIZ and ECOCADIZ-RECLUTAS surveys. The series of Spanish acoustic surveys in the ICES Sub-division 9a South (Spanish and Portuguese waters) started in its current format in 2004 for the ECOCADIZ summer survey series and in 2012 for the ECOCADIZ-RECLUTAS autumn one, although the IEO had already conducted two previous surveys in 1993 and in 2002 which only surveyed the Spanish waters of the Gulf of Cadiz. Both surveys series provide acoustic estimates of chub mackerel. Biological data are available either since 2007 (ECOCADIZ) or 2014 (ECOCADIZ-RECLUTAS).

### DEPM Surveys:

~ Gulf of Cadiz anchovy DEPM, BOCADEVA surveys (9.a South area): triennial series. Started in 2005. Chub mackerel biological data are available from 2008 and 2011 surveys. Since 2014 on, biological samples are obtained from the ECOCADIZ acoustic survey, conducted shortly after the DEPM survey.

**Bottom Trawl surveys:** only include survey abundance indices and length distributions, no biological samplings or any additional information

~ Northern Bottom trawl Surveys (9.a North and 8.c areas): DEMERSAL surveys. This surveys are carried out annually in autumn (between September and October), and the time series available covers from 1983 to 2018. (chub mackerel data available mostly from 8c)

~ Southern Bottom trawl Surveys (9.a South area): ARSA surveys. In the Gulf of Cadiz two surveys are performed every year, one in the first quarter (February-March, from 1992 up to 2018 except in 2003), and another one in the fourth quarter (November from 1997 up to 2018).