

ACOUSTIC SURVEYS IN THE SPANISH MEDITERRANEAN SHELF (1982-1993)

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Since 1982, the Spanish Institute of Oceanography (IEO) has been doing systematic hydro-acoustical surveys to evaluate coastal pelagics in the Spanish Mediterranean shelf (20-200 m depth), covering the area between Punta Europa and Cabo de Creus. Five zones have been considered: Alborán, Vera, Alicante, Valencia and Cataluña.

Although sardine (*Sardina pilchardus*) and anchovy (*Engraulis encrasicolus*) are the target species, other important species are round sardinella (*Sardinella aurita*), horse mackerel (*Trachurus trachurus*; *T. mediterraneus* and *T. picturatus*) and mackerel (*Scomber scombrus* and *S. japonicus*).

These species are mixed and the echograms and catches are normally multispecific, being sometimes very difficult to allocate the echointegration.

Acoustic surveys have been carried out on R/V "Cornide de Saavedra", a 67 m long, 2500 HP stern trawler. Prior to each survey, the SIMRAD echosounder system was calibrated using a 60 mm copper standard target sphere with a TS = -33.6 dB. Biological data were collected using a pelagic trawl gear with a 20 mm codend and provided with a Simrad FR-500 netsonder. The average values by sector and strata were elaborated by means of NAKKEN & DOMMASSNES method (1975). Table I summarizes the cruise characteristics.

SURVEY	TIME	ECHOSOUNDER+ ECHOINT.	GEAR OPENING	SURVEYED AREA (nm ²)	TRACK MILES
1982	May	EK-400+QD	10 m	2890	795
1983	Sep-Oct	EK-400+QD	10 m	12504	1837
1984	Oct-Nov	EK-400+QD	10 m	16727	2177
1985	Oct	EK-400+QD	10 m	12504	1550
1987	Jul	EK-400+QD	10 m	9327	1628
1988	May-Jun	EK-400+QD	10 m	16199	3610
1990	Oct-Nov	EK-500	10 m	16163	3236
1991	Oct-Nov	EK-500	20 m	14352	2845
1992	Oct-Nov	EK-500	20 m	16199	3140
1993	Oct-Nov	EK-500	20 m	10709	1885

Table I. Acoustics surveys in Spanish Mediterranean shelf.

After 10 years, the method has been fully standardized and has therefore produced a time series of sardine and anchovy abundances comparable over the last years. The results of the evaluations (biomass) and the catches in these years are as follows:

SARDINE	1982	83	84	85	86	87	88	89	90	91	92	93
BIOMASS (1000 TM)	105 ₍₁₎	109	419	174	—	273 ₍₂₎	182	—	175	227	455	322 ₍₃₎
CATCHES (1000 TM)	36	43	35	45	47	40	41	39	38	45	50	46

(1) Underestimated, Valencia and Cataluña not surveyed

(2) Underestimated, Cataluña not surveyed

(3) Underestimated, Vera and Alicante not surveyed.

These data suggest a lack of pressure on this stock, which is probably due to low market demand. According to this, catches could be considered independent of existent biomass.

ANCHOVY	1982	83	84	85	86	87	88	89	90	91	92	93
BIOMASS (1000 TM)	60 ₍₁₎	47	44	—	—	4 ₍₂₎	28	—	34	24	23	18 ₍₃₎
CATCHES (1000 TM)	50	38	25	12	16	14	20	17	17	20	19	17

This species is the target of the purse seiner fleet, and its commercial value is much higher than the sardine one. The table shows a high fishing exploitation in accordance with this high demand.

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