ICES CM 2014/3748 L:20

Pelagic Surveys series for sardine and anchovy in ICES Areas VIII and IX (WGACEGG) 2003-2012

Towards an ecosystem approach - A Cooperative Research Report

Jacques Massé[(1)], Andrés Uriarte[(2)], Maria Manuel Angelico[(3)], Pablo Carrera[(4)] & all members of WGACEGG[(5)]

[(1)]IFREMER, Nantes, France - [(2)] AZTI, S. Sebastian, Spain - [(3)] IPMA, Lisbon, Portugal - [(4)] IEO, Vigo, Spain - [(5)] ICES Working Group on Acoustic & EGgs surveys in divisions VIII and IX for sardine & anchovy

Acoustic and Egg (DEPM) surveys over the European Southwestern Atlantic areas have been coordinated since 2005 by the ICES Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES areas VIII and IXa (WGACEGG). Beyond coordination and update on methods, WAGACEGG has produced a common data base and a synoptic overview of the distribution, abundance and population structure of sardine and anchovy, to understand their spatial pattern and dynamics.

This coordinated monitoring will be published in a Cooperative Research Report. It culminates more than 30 years of collaboration between Portugal (IPMA), Spain (IEO and AZTI) and France (IFREMER). From unofficial collaboration, in 80s-90s, to WGACEGG annual working group (ICES), in the past decade, each country and each institution have carried out progresses, over the years, which allowed a better monitoring of the pelagic species and their ecosystem.

Table 2 - Calendar of surveys (Seasons) along the 10 years for each institution

	Year	2003				2004				2005				2006				2007				2008				2009				2010				2011				2012			
Institution	Season	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A	W	S	S	A
IEO	Gulf of Cadiz						X				X				X					X			X	X	X		X	X	X				X				X				X
IPMA	Portugal & Bay of Cadiz	X	X					X		X	X		X		X		X		X		X	X	X		X				X				X	X						
IEO	Galice + south Biscay		X				X				X	X			X				X				X	X			X				X				X	X				X		
AZTI	Bay of Biscay		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
IFREMER	Bay of Biscay		X				X				X				X				X				X				X				X				X				X		

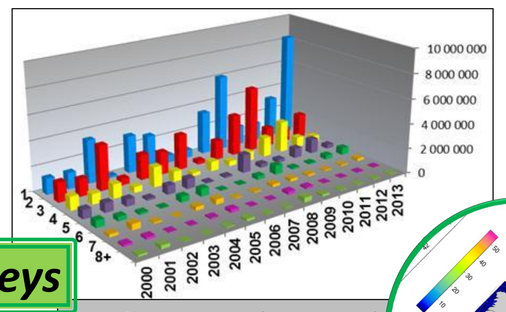
Table 1 - List of parameters taken into account :

Anchovy acoustic energies (NASC)
Sardine acoustic energies (NASC)
Sea surface temperature
Sea surface salinity
Number of anchovy eggs (CUFES)
Number of sardine eggs (CUFES)
Number of anchovy eggs (Pairovet)
Number of sardine eggs (Pairovet)
Number of birds observed
Number of mammals observed

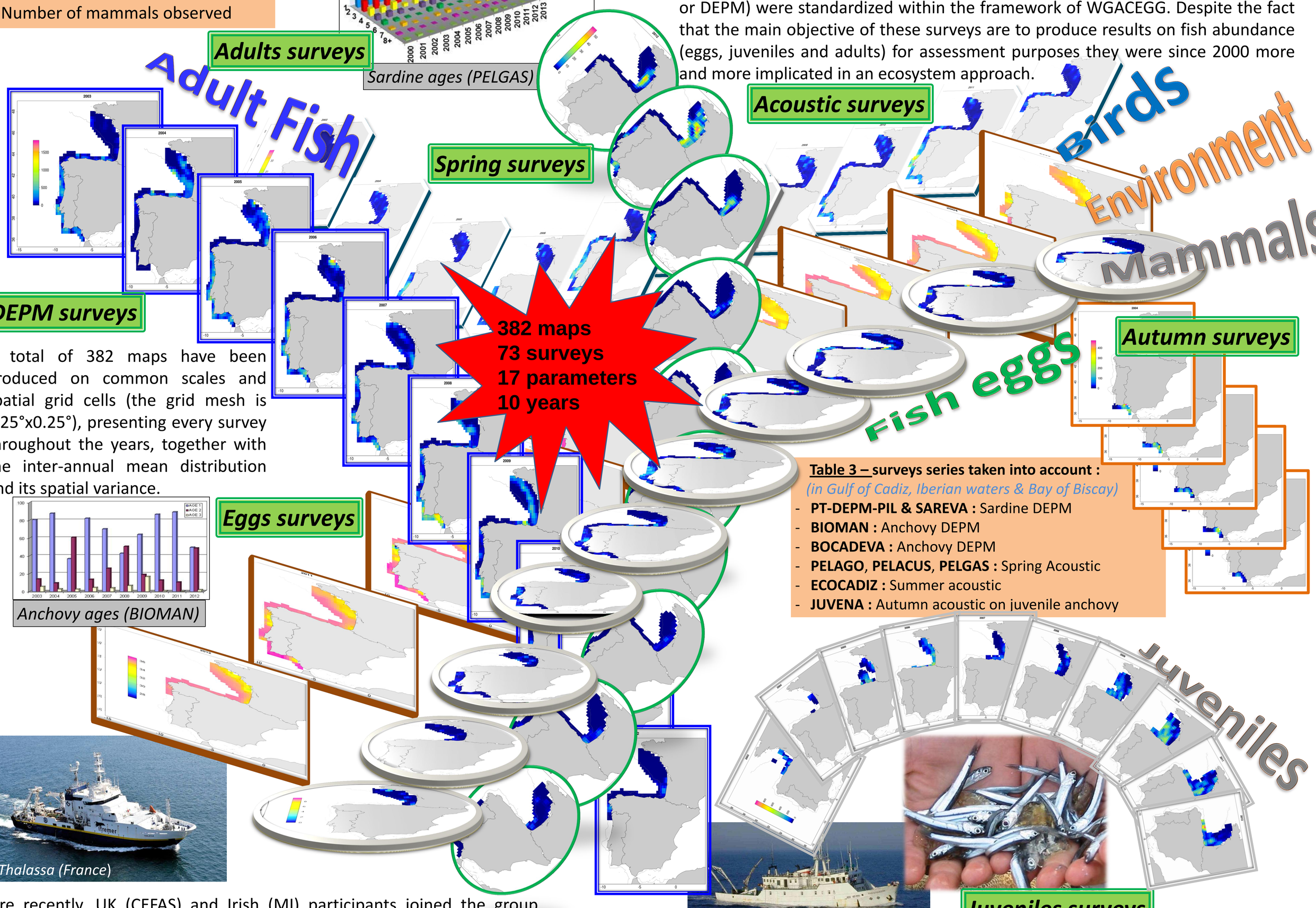
R/V Noruega (Portugal)

A series of gridded data files was created by blocking the raw data from each survey, each institution and for all available parameters (Table 1) : densities of eggs, juveniles and adults of anchovy and sardine, physical parameters and top predators abundances, all data collected simultaneously and continuously along the ship sailing track).

As a whole, 73 surveys carried out between 2003 and 2012 were taken into consideration and 39 blocked data files were created. Some of the surveys were annual, some were triennial and some were irregular over the years and seasons (Table 2&3). Nevertheless, they were coordinated and methods (acoustics, CUFES or DEPM) were standardized within the framework of WGACEGG. Despite the fact that the main objective of these surveys are to produce results on fish abundance (eggs, juveniles and adults) for assessment purposes they were since 2000 more and more implicated in an ecosystem approach.



Sardine ages (PELGAS)



A total of 382 maps have been produced on common scales and spatial grid cells (the grid mesh is 0.25°x0.25°), presenting every survey throughout the years, together with the inter-annual mean distribution and its spatial variance.

Anchovy ages (BIOMAN)

Table 3 – surveys series taken into account :
(in Gulf of Cadiz, Iberian waters & Bay of Biscay)

- **PT-DEPM-PIL & SAREVA :** Sardine DEPM
- **BIOMAN :** Anchovy DEPM
- **BOCADEVA :** Anchovy DEPM
- **PELAGO**, **PELACUS**, **PELGAS :** Spring Acoustic
- **ECOCADIZ :** Summer acoustic
- **JUVENA :** Autumn acoustic on juvenile anchovy

R/V Thalassa (France)

R/V Investigador (Spain)

More recently, UK (CEFAS) and Irish (MI) participants joined the group contributing with data on sardine, anchovy and other pelagic fish species from acoustic surveys in ICES area VII.

This CRR will serve as a reference point on the small pelagics and ecosystem overviews of the European Southwestern Atlantic region in future studies. As such, these suveys, beyond the estimation of the target species, are already contributing to the ecosystem monitoring sought by the new Common Fisheries Policy (CFP) and the Marine Strategy Framework Directive (MSFD).