

# LENGTH AND RECRUITMENT ANALYSIS OF SMALL PELAGICS OFF THE CANARY ISLANDS



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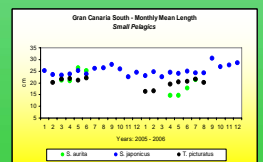
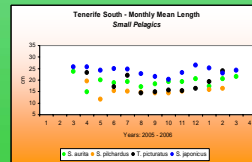
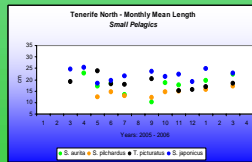
## GENERALITIES

- An analysis of the sizes of the main small pelagics caught in the Canary Islands was carried out
- Study area: Zones North-East (28°30'N-15°30'W) and South (27°30'N-16°30'W) of Tenerife, and South of Gran Canaria (27°30'N-15°30'W) (Canary Islands)
- Species: Mackerel (*Scomber colias* Gmelin, 1789), Round Sardinella (*Sardinella aurita* Valenciennes, 1847), Horse Mackerel (*Trachurus picturatus* Bowdich, 1825) and Sardine (*Sardina pilchardus* Walbaum, 1792)
- Period: Gran Canaria (January 2005-December 2006) and Tenerife (March 2005-2006)
- A total of 10 380 mackerels, 7 585 horse-mackerels, 8 131 round sardinellas and 6 489 sardines were measured
- Hypothetical geographical segregation by size in the small pelagic populations was studied using a graphic spatial-temporal analysis of mean lengths
- In order to detect the recruitment season and their possible relationship with the SST and SSTA values, a fortnightly analysis of the percentage of juveniles in the catches 2005-06 was carried out. Individuals of mackerel smaller than 16 cm, also in horse mackerel and round sardinella, and sardine smaller than 12 cm were used in this analysis
- Mean satellite-derived sea-surface temperature (SST) by month and oscillations of SSTA data during 2005 and 2006 were used. Source: IGOSS-IRI (International Research Institute for Climate Prediction, Columbia University)
- A summary of possible recruitment seasons for these species in the canaries waters is presented
- Those results were obtained from the Project ConAfrica (Cicyt CTM2004-02319)



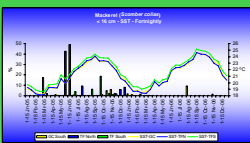
## MEAN LENGTH

Sampling by Zone			
Species	Zone	N	Size range (cm)
<i>S. colias</i>	North Tenerife	3 639	13.0 – 41.5
	South Tenerife	3 236	13.0 – 35.0
	South Gran Canaria	3 505	8.0 – 40.0
<i>T. picturatus</i>	North Tenerife	2 916	10.0 – 34.0
	South Tenerife	3 881	11.0 – 31.5
	South Gran Canaria	788	8.0 – 30.0
<i>S. aurita</i>	North Tenerife	2 932	6.5 – 29.5
	South Tenerife	4 480	6.5 – 29.0
	South Gran Canaria	719	6.5 – 31.0
<i>S. pilchardus</i>	North Tenerife	3 241	8.5 – 21.0
	South Tenerife	3 248	8.0 – 22.0



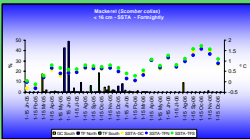
- The mean size of mackerel and horse mackerel in Gran Canaria were larger than those from Tenerife
- The individuals of mackerel, round sardinella and sardine were smaller in the North of Tenerife
- The fishing zone that showed the most stable mean sizes of round sardinella and sardine was located South of Tenerife
- In most of the samples, the size of sardine was lower to 19 cm TL. In this respect, in 1982 the percentage of *S. pilchardus* with size larger than 19 cm was of 42% (Delgado et al., 1982). On the other hand, Ramos and Santamaría (1998) observed that the greater yields for Sardine in North-West Africa occur between 19.93°C and 21.13°C of SST. The increase of the SST in the Canary waters since the 1990's (López Abellán et al., in preparation) could explain the greater amount of juveniles, due to be in waters with more favourable temperatures than the adults.
- Although a statistical analysis is necessary, apparently, no segregation of the population components by geographical area was observed

## RECRUITMENT - SEA SURFACE TEMPERATURE



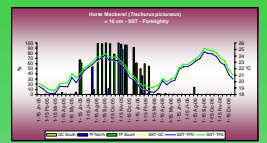
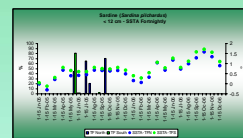
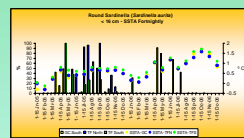
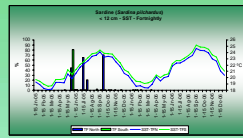
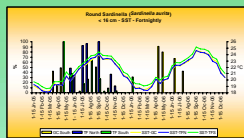
North Tenerife was the only area with a significant percentage of mackerel juveniles (43% in the second half of May and 49% in the first half of June)

This incorporation was preceded by a cooling process of the SST. However, those conditions were also present in the South of Tenerife and Gran Canaria, but this incorporation did not happen in those areas



It does not seem to be any pattern relating the recruitment of this species with certain conditions of SST and/or SSTA during the studied period

Even if the absence of monthly sampling of round sardinella in Gran Canaria prevents us from determine the precise time of recruitment, the percentages of juveniles were significant from April to July 2006 (81% to 42%) and March to April 2005 (49%), corresponding to periods of increasing SST and some stability of SSTA

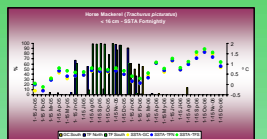


In Gran Canaria there was an incorporation of juveniles of horse mackerel in January-February 2006 (50% to 61%), at the same time of a significant decrease of the SST

In the North of Tenerife there were more than 91% of juveniles in November-December 2005, coinciding with periods of lower SST. However, in the first half of June (67%) and in the second half of July (55%) the temperatures increase

South Tenerife showed greater presence of juveniles continuously over a period of time: from August to December (60% - 100%), coincident with the greater values of SST and some stability in the anomalies

The recruitment of this species may be favoured by stable temperature conditions



In the North of Tenerife, the scarce presence of specimens of sardine (and also round sardinella) less than 12 cm long took place during the second and third quarters of the year, with a maximum of 70% in the second half of September 2005

In the South of Tenerife, their presence only occur in the second half of May (81%)

In both cases, their presence was related to the increasing SST and some stability of SST

However, in this case it was very difficult to detect recruitments due to the current legislation on minimum commercial sizes for this species

It was observed along the period studied that similar SSTA values could be favourable for the recruitment of horse mackerel, round sardinella and sardine. In the case of mackerel no pattern was found.

In spite of the lack of sampling during some months, a summary of possible recruitment seasons for these species in the canaries waters is presented (in bold the most important):

Zone	Species	Juveniles	Recruitment
North Tenerife	<i>S. colias</i>	My-Jun-Jul 05	
	<i>T. picturatus</i>	Jn-Jul-Nv-Dc 05	
	<i>S. aurita</i>	My-Jun-Jul-Sp-Oct 05	Summer
	<i>S. pilchardus</i>	My-Jul-Sp 05	
South Tenerife	<i>S. colias</i>	Ag-Sep 05	
	<i>T. picturatus</i>	2 <sup>o</sup> Semester 05 (Ag to Nv 05)	
	<i>S. aurita</i>	My 05	April-May 2005
	<i>S. pilchardus</i>	My 05	
South Gran Canaria	<i>S. colias</i>	Jan-Feb 06	March 2005
	<i>T. picturatus</i>	Jan-Feb 06	
	<i>S. aurita</i>	Mr-Apr 05	

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