



PARECER 80 SOBRE A REDUÇÃO DO TAMANHO DA ANCHOVA COMUM OU EUROPEIA NO PESQUEIRO CANÁRIO.

1º) Situação actual. Dificuldades relacionadas com a pesca da anchova.

A pesca da anchova comum ou europeia (localmente designada por: *longorón*, *anchoa* ou *boquerón*) pratica-se desde há imenso tempo nas Ilhas Canárias Orientais. Várias gerações conheceram e trabalharam um dos produtos transformados típicos das Canárias: os «*pejines*»¹. A elaboração dos *pejines*, confeccionados a partir de anchovas e sardinhas e de *jareas*², outro produto autóctone transformado realizado a partir de outros peixes (salema e peixe-papagaio essencialmente) permitiu conservar os peixes durante mais tempo, numa época em que não existia nenhum método de refrigeração, garantindo assim, durante décadas, o consumo de peixe nos lares canários. Actualmente, a tradição gastronómica e cultural mantém-se, bem enraizada em toda a sociedade canária.

Até 1998, o tamanho mínimo dessa espécie era determinado pela regulamentação nacional, a qual previa os tamanhos mínimos das capturas, de acordo com o *Decreto Real 560/1995*. Essa regulamentação previa 9 cm. Com a entrada em vigor, a 1 de Janeiro de 2000, do *Regulamento (CE) n.º 850/1998 de 30 de Março de 1998*, o tamanho mínimo da anchova passou de 9 cm para 12 cm (Anexo XII), autorizando uma percentagem adicional de capturas de peixes imaturos de 10 % em peso vivo do total das capturas da espécie (artigo 19.2.a). A alteração introduzida pelo *Regulamento (UE) n.º 227/2013 do Parlamento e do Conselho, de 13 de Março de 2013*, integra a possibilidade de capturar uma quota de 90 indivíduos/kg ou um tamanho mínimo de 12 cm.

Esta última alteração do Regulamento 850/98 pode facilitar um pouco as presas, mas é claramente insuficiente caso se pretenda explorar esse recurso.

Desde a entrada em vigor da regulamentação comunitária, o sector organizou várias reuniões com as administrações competentes, Ministério da Agricultura, Alimentação e Ambiente e Ministério Regional da Pesca e Águas do Governo das Canárias, de modo a salientar as restrições e dificuldades que pressupunha essa regulamentação para o desenvolvimento das pescarias; tendo, por esse motivo, sido

¹ *Pejines*: pedaços de sardinha e anchova, salgados (sal directamente imerso em salmoura) e postos a secar ao sol.

² *Jareas*: peixes abertos, eviscerados, imersos em salmoura durante algum tempo e secos ao sol. Várias espécies podem ser utilizadas, sendo geralmente salemas e peixes-papagaios.





requerida uma alteração do tamanho. Ambas as autoridades responderam que se tratava de uma regulamentação comunitária e que, para pedir à Comissão a referida redução de tamanho, era preciso apresentar um estudo que sustentasse o pedido.

2º) Antecedentes do CCR: projectos de pareceres e notas de resposta da Comissão.

Através do CCR Sul, o sector canário dirigiu-se à Comissão por várias ocasiões, para explicar a situação actual, a necessidade dessa pesca e as consequências positivas sobre a sustentabilidade do pesqueiro, acarretando um desenvolvimento considerável do sector. Foi requerida a realização de estudos, que permitissem a redução de tamanho solicitada, bem como uma ajuda financeira.

Nesse sentido, convém destacar os seguintes documentos:

- Texto das Federações Provinciais, redigido na sequência das Jornadas do CCR Sul, que decorreram em Maspalomas (Gran Canaria) de 3 a 5 de Março de 2009.
- Conselho de 15 de Julho de 2009: «Pedido do CCR Sul de realização de um estudo sobre a população de anchovas (*Engraulis encrasicolus*) pescadas no pesqueiro das Canárias».
- Nota 09178, de 5 de Agosto de 2009, da Comissão Europeia, em resposta ao Conselho de 15 de Julho de 2009.
- Parecer nº 55 de 24 de Novembro de 2011: «Pedido do CCR Sul relativo ao co-financiamento de um estudo científico sobre a população de anchovas no arquipélago das Canárias».
- Nota 307149 de 24 de Novembro de 2011, da Comissão Europeia, em resposta ao Parecer nº 55.
- Resposta de D. Cleofé Carballo Morera à informação solicitada pela Comissão na nota acima referida 307149 relativamente à realização de um estudo.

3º) Situação actual: Consulta do Comité Científico, Técnico e Económico da Pesca (CCTEP ou STECF) por parte da Comissão.

A Comissão pediu ao STECF uma revisão da literatura sobre biologia, pescaria e mercado da anchova europeia (*Engraulis encrasicolus*) explorada nas águas das Ilhas Canárias e a avaliação dos seguintes aspectos:

1. Distribuição geográfica e identificação do stock de anchovas à volta das Ilhas Canárias.
2. Localização das zonas e definição das épocas de desova.
3. Características das pescarias de anchovas na zona.
4. Composição sazonal dos tamanhos das capturas de anchovas.



5. Tamanho de primeira maturidade das anchovas machos e fêmeas nas águas das Ilhas Canárias.
6. Últimas tendências de preços no mercado para os diferentes tamanhos de anchovas.

Esse pedido bem como a resposta do CCTEP constam do documento denominado «Relatório da 42ª Reunião Plenária do STECF ou CCTEP (PLEN-13-01). 8-12 de Abril de 2013». Mais precisamente, na secção 6.9 Pedido de avaliação do tamanho mínimo da anchova (pp. 63 a 69). Junta-se uma cópia da referida secção às presentes.

Os seis pontos seguintes foram aí tratados. Tendo em conta as principais conclusões relativas ao Tamanho de primeira maturidade, TPM ou L_{50} , utilizado para estabelecer o tamanho mínimo da anchova, convém realçar os seguintes elementos:

- O CCTEP indica que apenas o trabalho de Hernández (2012) avaliou o TPM da anchova nas Canárias. Para tal, usou amostras capturadas por navios de pesca entre Abril e Dezembro de 2011. Esse estudo baseia-se num estudo macroscópico e microscópico da maturidade. O autor avaliou diferentes valores de TPM, usando 4 estados de maturidade para os estudos macroscópicos (estádio III- Pré-desova V-parcial Pós-desova; $IGS > 1,5$; $IGS > 2,0$; e $IGS > 2,5$) e o início da vitelogénese ou a vitelogénese avançada para os estudos microscópicos.

- O STECF indica que o TPM nas fêmeas varia de 78 mm (estudo macroscópico) para 101 mm (estudo microscópico). O STECF conclui também que, apesar de o número de amostras para as análises histológicas ser inferior ao utilizado para as análises macroscópicas, **admite-se, de forma geral, que a estimativa da maturidade sexual (TPM) baseada em análises histológicas seja mais fiável (Brown-Peterson e colaboradores, 2011).**

Os resultados de ambos os estudos, constantes da Tabela 6.10.1 do Relatório Plenário do STECF e do Resumo ou Extracto do Relatório Técnico citado, indicam:

- TPM baseado em análises histológicas: TPM fêmeas: 93 mm/TPM machos: 94 mm.

- TPM baseado em análises macroscópicas: TPM fêmeas: 83 mm/TPM machos: 90 mm.

Com base nestes dados, um tamanho de 9 cm parece ser um pedido razoável e sustentável.



Table 6.10.1 Size at first maturity (L_{50}) and size at massive maturity (L_{95}) by sex estimated using different maturity threshold from Hernandez (2012).

Maturity threshold	N		Length range		L_{50} (mm)		L_{95} (mm)	
	Females	Males	Females	Males	Females	Males	Females	Males
Macro stages III-V	889	745	55-146	55-140	83	90	110	128
GSI > 1.5	889	745	55-146	55-140	78	86	115	131
GSI > 2.0	889	745	55-146	55-140	96	95	142	148
GSI > 2.5	889	745	55-146	55-140	101	na	105	na
Histological staging	331		na		93	94	125	132

4º) Conclusões sobre a distribuição do stock nas Canárias. Contribuições do sector.

- O relatório do CCTEP indica que a distribuição da anchova nas Ilhas Canárias: é abundante nas Ilhas Orientais e escassa nas Ilhas Ocidentais (Hernández, 2012). Por conseguinte, na ausência de estudos sobre a composição do stock, **o Grupo de Estudo do CECAF (COPACE) de avaliação dos pequenos pelágicos do Noroeste de África considera que todas as anchovas no Noroeste de África, incluindo as anchovas capturadas nas proximidades das Ilhas Canárias, constituem um só stock (FAO, 2011).**

A distribuição das anchovas nas Canárias cinge-se às Ilhas Orientais (Lanzarote, Fuerteventura e Gran Canaria), e só muito ocasionalmente é que a espécie aparece nas Ilhas Ocidentais e associada a estruturas oceanográficas. Na nossa opinião, estes resultados parecem reforçar a hipótese segundo a qual a presença de ovas e larvas resulta do transporte efectuado pelas correntes profundas do afloramento saariano, mais do que da presença de populações locais de anchovas nas Ilhas Orientais (segunda hipótese). Neste último caso, que não nos parece verosímil, a sobrevivência destas populações locais eventuais dependeria quase, com toda a certeza, das contribuições permanentes do afloramento saariano, tendo em conta as características de produtividade do pesqueiro. As águas são oligotróficas (muito pobres em nutrientes), ao contrário das águas ricas em nutrientes (eutróficas) do afloramento saariano. Por conseguinte, não se verificam condições adaptadas ao desenvolvimento de uma população estável.

O Presidente de Corralejo, D. Cleofé Carballo, indica que os cardumes de anchovas em Fuerteventura são esporádicos, o que não sustenta a hipótese de populações locais. De facto, este afirma que, em 2013 no Norte e no Oeste da Ilha (Corralejo e Cotillo), nenhum cardume de anchovas foi observado. Só foram detectados cardumes de passagem no Sul da Ilha (Morrojaible e Gran Tarajal), permanecendo mais tempo a Leste, ao nível de Puerto del Rosario. Nos anos





anteriores, observaram-se cardumes durante 4 ou 5 meses, por vezes mais, mas, em todo o caso, essas anchovas parecem provir das costas africanas.

O STECF indica que, mais recentemente (2007-2012), as capturas de anchovas nas Canárias ocorreram entre Janeiro e Setembro, com um pico de Março a Maio. D. Cloefé acrescenta que a pesca da anchova, com um tamanho de 9 cm, permitiria pescar maiores quantidades de Fevereiro a Abril, sendo estes os meses em que as capturas de peixes demersais são inferiores, devido às tempestades nessa altura do ano. Contudo, a anchova aproxima-se, geralmente, mais das costas, o que possibilita a sua captura. Isto melhoraria a estabilidade económica da Confraria. Para além disso, durante os períodos sem tempestades, a captura da anchova permitiria reduzir a pressão exercida nos recursos demersais. Uma gestão sustentável do pesqueiro canário implica a necessidade de diversificar os sistemas de pesca utilizados, pois a falta de plataformas insulares condiciona a abundância dos recursos demersais e facilita a sua sobreexploração. Este recurso poderia ser vendido fresco ou seco (*pejines*), o que permitiria manter uma prática e tradição muito enraizada, que remonta a várias gerações. Tudo isto iria favorecer o desenvolvimento sustentável do pesqueiro, o desenvolvimento económico e social da pesca artesanal e a conservação das tradições culturais e pesqueiras da Ilha de Fuerteventura.

5º) Pedido de redução do tamanho mínimo da anchova de 12 cm para 9 cm.

Com base em:

- Dados biológicos de TPM da anchova nas Canárias, determinantes no Tamanho mínimo de captura
- Considerações relativas ao stock de anchovas nas Canárias/Marrocos.
- Desenvolvimento sustentável de um ponto de vista biológico do pesqueiro e de um ponto de vista económico e social do sector.

Os membros do CCR das Canárias e, em específico, as 3 Confrarias de Fuerteventura, pedem à Comissão a redução do tamanho mínimo de captura da anchova europeia de 12 para 9 cm no pesqueiro canário. Para tal, requer-se a alteração do Regulamento 850/98 (Anexo XII).

Em caso de impossibilidade, pede-se para se proceder à análise, junto do sector, da oportunidade e conveniência de incluir a referida redução de tamanho no Projecto de Regulamento de adopção de medidas técnicas (Omnibus).

As confrarias de Majoreras estão cientes de que existem lacunas sobre a biologia desta espécie nas Canárias, pelo que estão frequentemente a propor a sua colaboração em vários estudos previstos para o futuro, facilitando o acesso aos levantamentos, embarque de cientistas, etc. Estas também estariam dispostas a adoptar algumas medidas complementares simples, que garantiriam uma exploração racional e sustentável do recurso, como a criação de quotas de captura. Essas medidas poderiam ser incluídas na Regulamentação Nacional, estudando-se a possibilidade de elaborar um plano de gestão que integrasse essas medidas simples, podendo estas serem alteradas a cada ano, em função da evolução das pescarias.





De mesmo modo, considera-se que essa redução do tamanho mínimo teria um impacto positivo no contexto actual, que prevê introduzir na nova PCP a obrigação de desembarque de todas as capturas, a supressão dos tamanhos mínimos de captura e a introdução dos tamanhos mínimos de referência de conservação (artigo 15 da Proposta de Regulamento sobre a Política Comum da Pesca).

Contribuições: Membros canários do CCR Sul.

Redacção e síntese: José Manuel Ortiz Sánchez (Consultor Técnico do Grupo de Trabalho da Subdivisão Insular do CCR Sul).

Sexualidad y Reproducción del boquerón o longorón *Engraulis encrasicolus* (Osteichthyes: Clupeiformes: Engraulidae) en aguas de Gran Canaria

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Resumen

El boquerón o longorón, *Engraulis encrasicolus*, es una especie de alto interés pesquero y comercial en aguas de Canarias, sobre todo en las islas orientales, en las que se ha pescado tradicionalmente, debido a la ausencia o presencia muy ocasional en el resto de islas. En términos reproductores, se trata de una especie gonocórica, ovípara, con fecundación externa y desove fraccionado a lo largo del año. Altamente migratoria, cuyos parámetros biológicos son desconocidos en estas aguas, especialmente los aspectos reproductores. Los ejemplares analizados fueron recolectados en pescas realizadas entre los meses de abril y diciembre de 2011, con barcos artesanales pertenecientes a las cofradías de Gran Canaria, cuyo arte de pesca utilizado fue el cerco con jareta o argollas (traíña). Se analizaron 1735 individuos de *E. encrasicolus*, asignándoles estado de madurez sexual macroscópicamente (escala de 5 puntos), de los cuales se hicieron estudios de histología gonadal a 653, en su mayoría hembras, para dar énfasis a los procesos de maduración sexual y para verificar la asignación de los estados de madurez sexual de manera macroscópica. A cada ejemplar, además, se le tomaron medidas de longitud total y furcal (al mm), y peso total, gonadal y eviscerado (0,01 g). La proporción de sexos presentó diferencias significativas con la relación teórica 1:1, a favor de las hembras. Las tallas de primera madurez en machos y hembras fueron 90 y 83 mm, respectivamente, mientras que la talla de madurez masiva fue de 128 y 110 mm, respectivamente.

Palabras clave: Sexualidad; Reproducción; Anchoa; Islas Canarias; Madurez sexual.

Abstract

The anchovy or longoron, *Engraulis encrasicolus*, is a species of high interest and commercial fishing in the waters of the Canary Islands, especially in the eastern islands, which traditionally fished due to the absence or very occasional presence in the other islands. In terms of reproduction, this is a gonochoric species, oviparous with external fecundation and fractionated spawning throughout the year. Highly migratory, whose biological parameters are unknown in these waters, especially reproductive aspects. The specimens were collected from catches made between April and December 2011, with artisanal vessels belonging to the guilds of Gran Canaria, whose fishing gear used was purse seines or rings (traíña). 1735 individuals were analyzed for *E. encrasicolus*, assigning macroscopic sexual maturity stages (5-point scale), of which gonadal histology studies were done to 653, mostly females, to

emphasize the sexual maturation process and to verify the assignment of the sexual maturity stages macroscopically. For each sample, in addition, they took measures of total and fork length (to mm) and total, gonadal and gutted weight (0.01 g). The sex ratio differed significantly from the theoretical ratio 1:1 in favour of females. The size at first maturity in males and females were 90 and 83 mm respectively, while the size at massive maturity was 128 and 110 mm respectively.

Keywords: Sexuality, Reproduction, Anchovy, CanaryIslands; Sexual Maturity.



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operation in the Slovenian territorial waters. However, from the information presented in the plan, STECF is unable to assess either the impact of the requested derogation on exploited stocks or the impact on the benthic community resulting from the likely contact with the seabed during purse seine fishing operations.

STECF notes that the results from the pilot survey being carried out in 2013 may help to inform on the potential impacts of this gear. Such a pilot study should cover representative and quantitative information about the complete catch composition including all organisms caught and their landed proportions together with corresponding size compositions. Furthermore, the time, gear dimensions and fishing effort deployed should be reported in units of fishing time (See response under ITEM 1).

6.9. Request for advice on minimum size for anchovy

Background

The minimum landing size for anchovy exploited in the waters around the Canary Islands is laid down in Annex XII of Council Regulation (EC) No 850/98 for the conservation of fishery resources through technical measures for the protection of juvenile marine organisms. Minimum landing sizes are set at the size of first maturity to protect juveniles from fishing pressure. In order to effectively manage the exploitation on the anchovy stock and to avoid fishing it below the minimum conservation size, the STECF is requested to provide relevant biological and fishery-related information.

Terms of Reference

The STECF is requested to review relevant literature on the biology, fisheries and markets for European anchovy (*Engraulis encrasicolus*) exploited in waters around the Canary Islands and advise on the following:

- The geographical distribution and stock identity of anchovy around the Canary Islands
- The location and timing of any known spawning areas
- The characteristics of the fisheries exploiting anchovy in this area (specification of gears used, seasonal catch compositions etc.)
- The seasonal size composition of anchovy catches
- The size at first maturity in males and females of anchovy occurring in waters around the Canary Islands
- Recent trends in market prices for the different sizes of anchovy

STECF observations

European anchovy, *Engraulis encrasicolus*, is widely distributed through the North Atlantic to the South Atlantic through west coast of Africa and in the North Sea, Mediterranean Sea and Black Sea (Motos, 1994). With regard to the Canary Islands, anchovy is commonly distributed in the eastern islands and appears occasionally in the western Islands (Hernández, 2012).

There is not much information available on stock structure of anchovy in the northwest Africa and on the relationship between anchovy around Canary Islands and the African coast. Thus, in the

absence of any study on stock structure, the CECAF working group on the assessment of small pelagics fish off northwest Africa considers that all anchovy off northwest Africa, including anchovy caught in the vicinity of the Canary Islands, constitute a single stock (FAO, 2011). A meristic study analysing the number of fin rays and branchial spines concluded that there were no statistical differences neither in the mean number of any fin rays nor in the number of branchial spines between Canary Island and Moroccan anchovy (García-Martín et al., 2012). Although based on few and old samples, Ivanova and Dobrovolev (2006) found genetic differences between samples taken in Canary Islands and African coast.

Anchovy in the Canary Islands is a very important fishery resource for the artisanal seiner fleet between 10 and 16 meters long, called *traíñas*, which harvest anchovy together with other small pelagics resources such as sardines and sardinellas mainly along the coast of eastern islands from January to October (Martín-Sosa, 2012). Although there is no historical time series of anchovy landings in Canary Islands, the information on anchovy catches in recent years is being collected in a more standardized format by the Institute of Oceanography (IEO) of Canary Islands (Martín-Sosa, 2012). However, there are still some problems and gaps with data collection that need to be addressed by the regional authorities (Martín-Sosa, 2012).

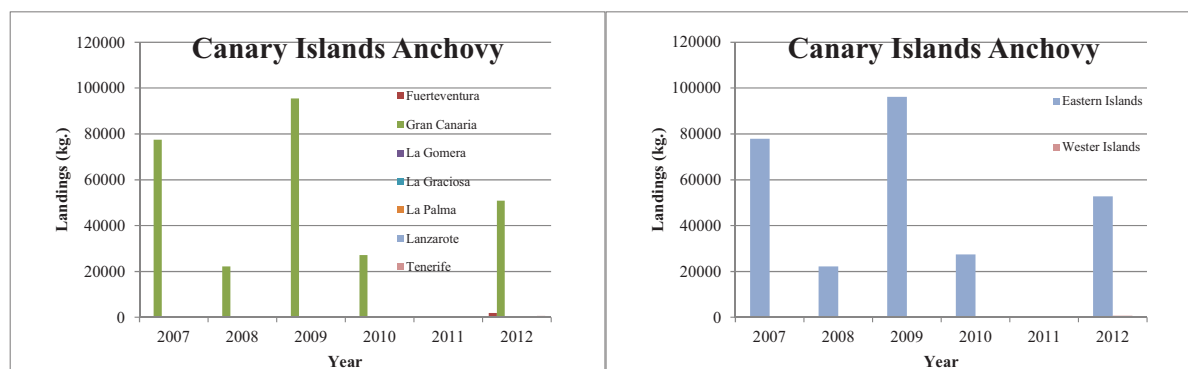


Figure 6.10.1 Canary anchovy landings by islands (left) and region (right) for the last 6 years recorded in the first sale point.

Canary Islands anchovy landings varies greatly between years with a maximum of a slightly less than 100 tonnes landed in 2009 (Figure 6.10.1). Figure 6.10.2 shows the seasonality of the catches, where major catches are observed between March and May in most recent periods. There is not size composition data available for the catches of anchovies in the Canary Islands; however, Hernandez (2012) in a reproductive study based on a sampling of 4225 individuals collected randomly aboard of commercial vessels showed that the length range of the sampling was between 45 and 145 mm with a mode around 85 mm. The mean length of the sampling by sexes showed statistical significant differences, with an average length for females of 89.7 mm and 86.3 mm for males. On the contrary, the mode of the size frequency of anchovy catches in Moroccan waters ranged between 125 and 145 mm (García-Isarch et al., 2012).

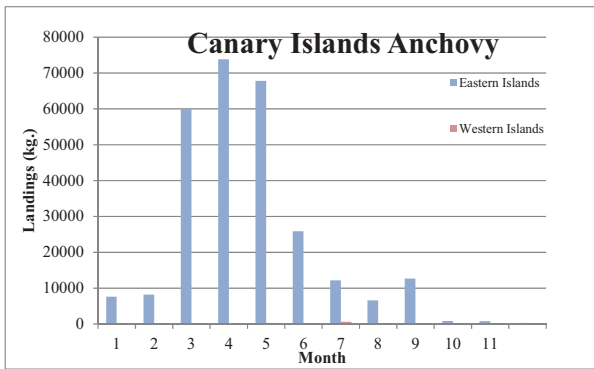


Figure 6.10.2 Canary Islands anchovy landings by month for the period of 2007-2012.

In contrast, the catches of anchovy in West Africa region of Morocco and Mauritania increased constantly through the 90s to reach the highest historic catch of around 175,000 tonnes (Figure 6.10.3). Since then, catches decreased to around 75,000 tonnes in 2005 and have been maintained between 100,000 and 125,000 tonnes during the last years.

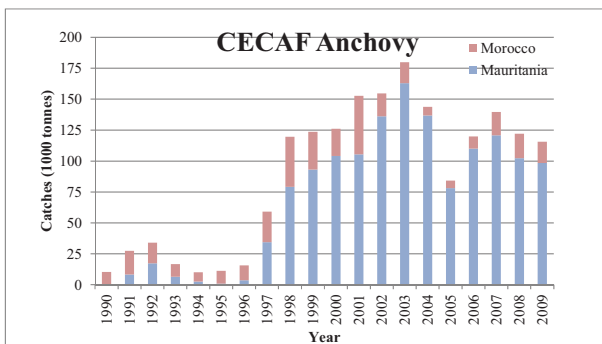


Figure 6.10.3 Anchovy catches in the CECAF area from 1990 to 2009 (FAO, 2011)

The Moroccan sub-region of the Canary Current system is characterized by permanent upwelling (Barton *et al.*, 1998) which is maintained year around by the presence of favorable northeasterly winds, although trade winds and upwelling are more intense during the summer months (Arístegui *et al.*, 2006). Upwelling filaments that transport water offshore from African Coast to the Canary Islands are recurrent structures in this area, which transport biogenic such as eggs and larvae from African coast to offshore as far as 400 km (Pelegrí *et al.*, 2006). The western limit of those upwelling filaments is considered to be Gran Canaria Island (Arístegui and Montero, 2005; Brochier *et al.*, 2008).

Thus, historically two hypotheses have been forwarded to explain the presence of anchovy in the Canary Island: (1) eggs/larvae are transported by upwelling filaments from anchovy spawning areas in African coast to Canary Islands and (2) the existence of anchovy local population in the eastern islands of Canary.

The catches of anchovy in Canary Island are restricted to the Eastern Islands and specially the Gran Canaria which is supposed to be the western limit of the African flow current of the upwelling (Brochier *et al.*, 2008). A high catch in the Canary Island western islands is documented for 1999, with the population and catches declining to normal (occasional and rare) levels afterwards. The high 1999 catch was attributed to a larger than average flow of water from African coast in that particular year (Brito *et al.*, 2002). Although the anchovy in Canary Islands appears occasionally,

anchovy larvae was the predominant component of the larvae fish community in Canary islands in 1999 (Rodriguez et al., 2004). Moreover, a relatively high density of anchovy spawning in the African shelf, where the upwelling filaments originate, was observed during a research survey in 1999 and the anchovy eggs were observed in depth layers susceptible to be transported through the upwelling filaments (Rodriguez et al., 2004). All this is in favour of the hypothesis of a continuous flow of anchovy eggs/larvae from African coast to Canary Islands. On the other hand, Bécognée et al. (2006) observed that, contrary to what happen with sardine, anchovy larvae were not always associated with upwelling filaments which may suggest some anchovy adult spawning near the archipelago.

The main spawning period for anchovy in African coast is thought to be in summer when the sea surface temperature is warmer (Ettahiri *et al.*, 2003; Berraho, 2007). There is no growth rate of anchovy published in this area but the spawning period of anchovy in the African coast could be matched with the Canary Islands anchovy fishery season and anchovy size under the hypotheses of anchovy transportation from African coast to Canary Islands.

However, Hernandez (2012) based on macroscopic staging (n=1735) found individuals from around Gran Canaria in pre-spawning and spawning condition during a 9 month period of sampling from April to December 2011 (20-40 % individuals in pre-spawning condition and 50-70% of individuals in spawning condition, Figure 6.11.4). The females mean values of the gonadosomatic index were kept high throughout the study period with a peak in the GSI index in July 2011. This observation seems to favour the hypothesis of a population in the Canary Islands but cannot refute the alternative hypotheses of the drift of anchovy from African coast to Canary Islands.

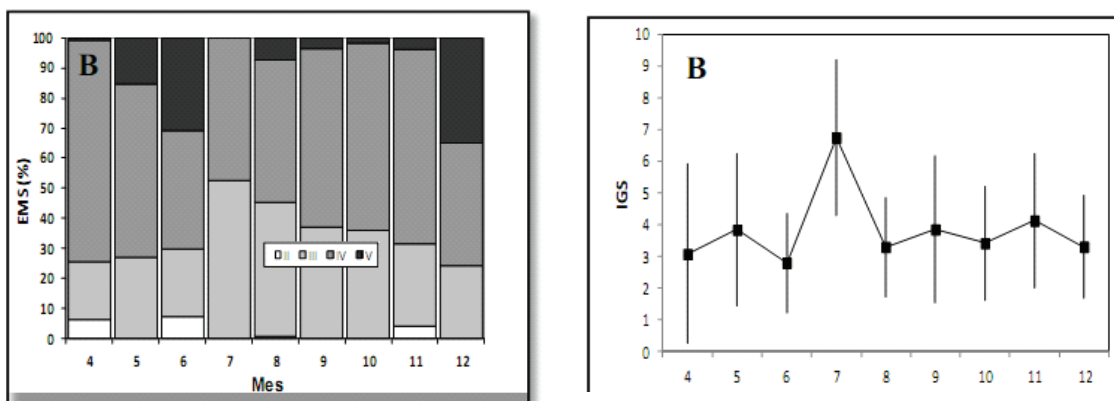


Figure 6.10.4 Females proportion of different macroscopic maturity stages (left) and females GSI monthly trend (right) from Hernandez (2012).

Hernandez (2012) also estimated the size at first maturity of anchovy macroscopically (n=1634 individuals) and microscopically (n= 331) based on the same sampled collected around Gran Canaria between March and December 2011. They estimated the size at first maturity of anchovy of samples collected using 4 maturity threshold for macroscopic staging (stages III-pre-spawning to V-partial post-spawning; GSI > 1.5; GSI > 2.0; and GSI > 2.5) and the advance vitellogenesis for microscopic staging (Table 6.10.1). Table 6.11.1 summarizes the range of length at first maturity (L_{50} where 50 % of individuals are matured) and L_{95} (where 95 % of individuals are matured). Although the number of samples used for histological analysis is lower than the macroscopic approached, it is commonly accepted that the estimation of maturity based on histological analysis is more accurate (Brown-Peterson et al., 2011).

Table 6.10.1 Size at first maturity (L_{50}) and size at massive maturity (L_{95}) by sex estimated using different maturity threshold from Hernandez (2012).

Maturity threshold	N		Length range		L_{50} (mm)		L_{95} (mm)	
	Female s	Males	Female s	Males	Female s	Males	Female s	Males
Macro stages III-V	889	745	55-146	55-140	83	90	110	128
GSI > 1.5	889	745	55-146	55-140	78	86	115	131
GSI > 2.0	889	745	55-146	55-140	96	95	142	148
GSI > 2.5	889	745	55-146	55-140	101	na	105	na
Histological staging	331		na		93	94	125	132

STECF responses

- *The geographical distribution and stock identity of anchovy around the Canary Islands*

STECF notes that anchovy is commonly distributed in the eastern islands and appears occasionally in the western Islands (Hernández, 2012). There is not much information on stock structure of anchovy in the northwest Africa and on the relationship between anchovy around Canary Islands and the African coast. In the absence of any study on stock structure, STECF notes that CECAF working group on the assessment of small pelagic fish off northwest Africa considers that all anchovy in the northwest Africa, including that from Canary Islands, constitute a single stock (FAO, 2011).

STECF notes that historically two hypotheses have been forwarded to explain the presence of anchovy in the Canary Island: (1) eggs/larvae are transported by upwelling filaments from anchovy spawning areas in African coast to Canary Islands and (2) the existence of anchovy local population in the eastern islands of Canary. STECF notes that more investigations are needed in order to determine which of the preceding hypotheses is likely to be true.

- *The location and timing of any known spawning areas*

STECF notes that main spawning period for anchovy in African coast is thought to be in summer when the sea surface temperature is warmer (Ettahiri *et al.*, 2003; Berraho, 2007). STECF also noted that Hernandez 2012 based on macroscopic staging (n=1735) found individuals in spawning capable phase during a 9 month period of sampling from April to December 2011 in eastern Canary islands.

- *The characteristics of the fisheries exploiting anchovy in this area (specification of gears used, seasonal catch compositions etc.)*

STECF notes that anchovy in the Canary Islands is harvested by artisanal purse seiners between 10 and 16 meters long, called *traíñas*, together with other small pelagic resources such as sardines and sardinellas mainly along the coast of eastern islands from January to September (Martín-Sosa, 2012).

STECF notes that anchovy catches in Canary Islands are observed mainly between January and September with major catches between March and May in most recent period.

- *The seasonal size composition of anchovy catches*

STECF notes that there is not size composition information available for the catches of anchovies in the Canary Islands; however, Hernandez (2012) in a reproductive study based on a sampling of 4225 individuals collected randomly aboard of commercial vessels showed that the length range of the sampling was between 45 and 145 mm with a mode around 85 mm. The mean length of the sampling by sexes showed statistical significant differences, with an average length for females of 89.7 mm and 86.3 mm for males.

- *The size at first maturity in males and females of anchovy occurring in waters around the Canary Islands*

STECF notes that only the work of Hernandez (2012) estimated the first maturity of anchovy in Canary Islands using samples collected aboard of commercial vessels between April and December 2011 based on macroscopic (n= 1634 individuals) and microscopic (n= 331) maturity staging. STECF notes that Hernandez (2012) estimated different maturity values using 4 maturity threshold for macroscopic staging (stages III-pre-spawning to V-partial post-spawning; GSI > 1.5; GSI > 2.0; and GSI > 2.5) and the advance vitellogenesis threshold for microscopic staging. STECF notes that the size at first maturity in females ranged between 78 mm (macroscopic staging) to 101 mm (microscopic staging). STECF notes that, although the number of samples used for histological analysis is lower than the macroscopic approached, it is commonly accepted that the estimation of maturity based on histological analysis is more accurate (Brown-Peterson et al., 2011).

- *Recent trends in market prices for the different sizes of anchovy*

STECF notes that most of the anchovy caught in Canary Islands is sold in the market for fresh consumption but no information about the recent trends in market prices for the different sizes of anchovy is available (Martín-Sosa, 2012).

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