

ICES WGCEPH 2009 Working Document 1

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LONG FINNED SQUID (*Loligo vulgaris*) FISHERY LANDINGS OF THE SPANISH FISHING FLEET OPERATING IN THE NORTHERN ATLANTIC OF THE IBERIAN PENINSULA

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INTRODUCTION

This study is based on the *Loligo spp.* commercial landing records of the Spanish fishery operating in the Galician and Cantabrian waters for the period 2000 to 2007.

The fishery for long-finned squid in the Northern Iberian Peninsula waters during the study period took almost exclusively *Loligo vulgaris* (Lamarck, 1798), appearing only a few a few specimens of *L. forbesi* (Steenstrup, 1856) mixed with the *L. vulgaris* landings. This scarcity on *L. forbesi* was investigated by Chen *et al.* (2006), who noted the dramatic decline of *L. forbesi* abundance in the Iberian Peninsula in the 1990s and suggested that environmental changes could have been responsible.

The long-finned squid represents only the 3% of cephalopod weight landings in the Northern Spain, but it constitutes the second cephalopod species in gastronomic and economic importance for this region, after the common octopus.

METHODS

This study was carried out on a long-finned squid population, from the Galician (ICES Divisions Western VIIIc and Northern IXa) and Cantabrian (ICES Division Eastern VIIIc) coasts, which is caught by the Spanish fleet operating in this area from 2000 to 2007. **Figure 1** shows the main fishing ports for long-finned squid landings within the study area.

Data used in the present study came from the *Loligo spp.* monthly landing records in the 45 most important ports from the Galician and Cantabrian coasts. Moreover, monthly market samples of *Loligo vulgaris* body weights from landings were carried out in the "Muros" and "Santa Uxía de Ribeira" ports. A total of 25744 specimens of *Loligo vulgaris* was obtained, weighed to the nearest 5 g, from 293 samples in the two Galician ports. Data were collected by the "Instituto Español de Oceanografía" (IEO) Sampling and Information Network.

RESULTS

Landings by port

The most important port in long-finned squid landings from the Northern Iberian Peninsula during the period 2000 to 2007 was Santander, with 23% of the *Loligo spp.* annual landings, followed by Avilés, with 19%, Gijón (12%), Burela (6%), Cambados (6%), Marín (5%) and Santa Uxía de Ribeira (4%). (Figure 2)

Retained catches by fishing gear

Figure 3 shows the long-finned squid monthly landings by gear-type in the Northern Spain from 2000 to 2007. The trawling fleet was responsible of the highest landing values (around 56%), in spite of targeting finfish and squid was caught as a by-catch in the study area (Guerra *et al.* 1994). The artisanal fleet, the second in importance landing the 37% of *Loligo spp.*, comprises boats using several traditional fishing gears, some of which (such as hand-jig and "boliche") are the only ones targeting long-finned squid in the study area. The hook and purse-seine fleets, targeting finfish, landed as a by-catch the 4% and 2% of the recorded *Loligo spp.* landings respectively.

Annual and Seasonal trend of landings

The *Loligo spp.* annual landings recorded in the Northern Iberian Peninsula are shown in figure 3. An increase from 2000 to 2004 and a strong decrease in 2005 and 2006 can be observed. After that, a recovery on landings took place in 2007, mainly due to the Cantabrian ports (Gijón and Santander), nevertheless the level of long-finned squid landings in Galician ports kept a very low values.

The long-finned squid monthly landings showed a marked seasonal pattern, more evident for the artisanal fleet, reaching its maximum values in summer and autumn, agree with published by Guerra *et al.* in 1994.

Body weight composition

Monthly market samples of *Loligo vulgaris* body weights were carried out on the *Loligo spp.* retained catches in the "Muros" and "Santa Uxía de Ribeira" markets (Galician coast) from 2000 to 2007. Presence of *L. forbesi* in the Galician waters was scarce during the study period, with only a few individuals *L. forbesi* appearing not often in samples from *L. vulgaris* landings. This is the opposite to the situation described by Pierce *et al.* (1994) in the Scottish waters.

The mode of *Loligo vulgaris* landing body weight range observed in samples was 70-100g and represented 26% of the sampled specimens.

Monthly size distributions

A marked seasonal pattern was observed in the monthly body weight distributions of *Loligo vulgaris* landed in the Galician ports for the period 2000-2007. Figure 4, where the monthly sampled specimen number was raised to 1000, suggests the effect of recruitment to the commercial fishery in July, August and September, in contrast to the findings of Guerra and Rocha (1994), who observed that recruits of *L. vulgaris* were present throughout the year, representing a higher percentage of the catch in spring and autumn for the Galician waters. By other hand, this shift in the recruitment patterns of *Loligo vulgaris* has been hypothesized also for *Loligo forbesi* (Pierce *et al.* 2005).

Annual size distributions

Figure 5 shows the *L. vulgaris* yearly body weight distributions from landings in the Galician coast from 2000 to 2007. Size distributions were raised to 1000. High recruitment values can be seen in the years 2001, 2003 and 2006. These recruitment peaks agree with the subsequent increase observed in landings during the next years (2002, 2004 and 2007) (Figure 2).

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REFERENCES

- Chen, C. S., G. J. Pierce, J. Wang, J. P. Robin, J. C. Poulard, J. Pereira, A. F. Zuur, P. R. Boyle, N. Bailey, D. J. Beare, P. Jereb, S. Ragonese, A. Mannini and L. Orsi-Relini, 2006. The apparent disappearance of *Loligo forbesi* from the south of its range in the 1990s: Trends in *Loligo* spp. Abundance in the northeast Atlantic and possible environmental influences. *Fisheries Research*, **78**: 44-56.
- Guerra, A. and F. Rocha, 1994. The life history of *Loligo vulgaris* and *Loligo forbesi* (Cephalopoda: Loliginidae) in Galician waters. *Fisheries Research*, **21**: 43-69.
- Guerra, A., P. Sánchez and F. Rocha, 1994. The Spanish fishery for *Loligo*: recent trends. *Fisheries Research*, **21**: 217-230.
- Pierce, G. J., A. F. Zuur, J. M. Smith, M. B. Santos, N. Bailey, C-S. Chen and P. R. Boyle, 2005. Interannual variation in life-cycle characteristics of the veined squid (*Loligo forbesi*) in Scottish (UK) waters. *Aquatic Living Resources*, **18**: 327-340.
- Pierce, G. J., P. R. Boyle, L. C. Hastie and L. Key, 1994. The life history of *Loligo forbesi* (Cephalopoda: Loliginidae) in Scottish waters. *Fisheries Research*, **21**: 17-41.

FIGURES

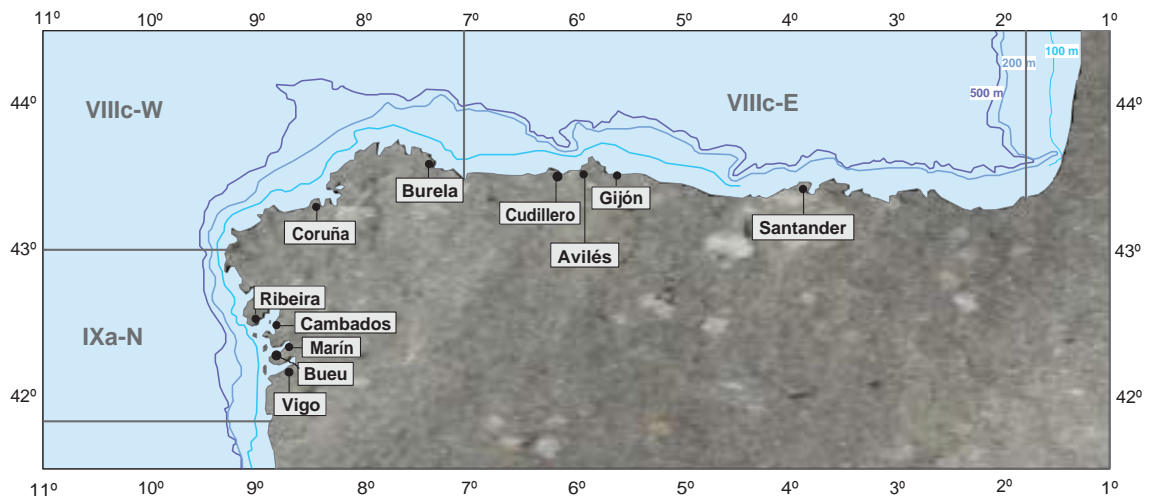


Figure 1.- Map of the study area, showing the main ports for *Loligo spp.* landings.

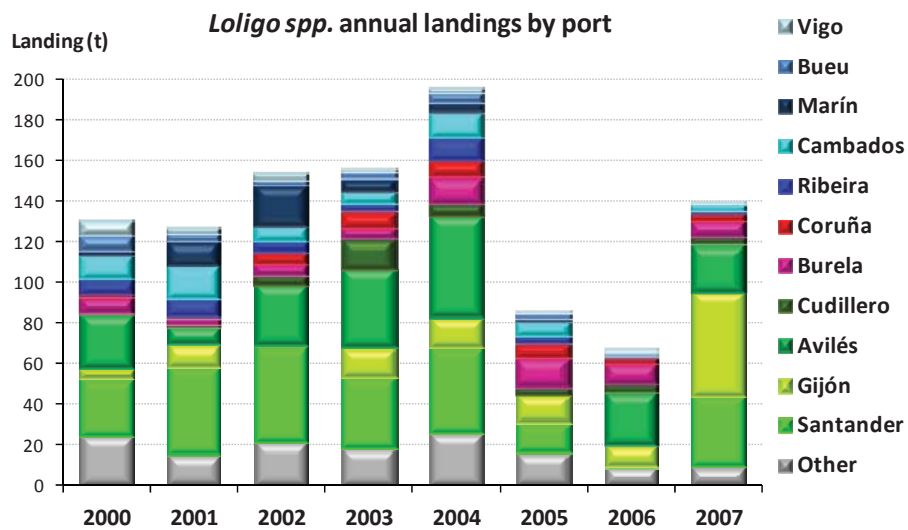


Figure 2.- *Loligo spp.* annual landing records by port along the Galician coast (ICES Division IXa-North in blue and XIIIc-West in red) and the Cantabrian coast (ICES Division VIIIc-East in green) from 2000 to 2007.

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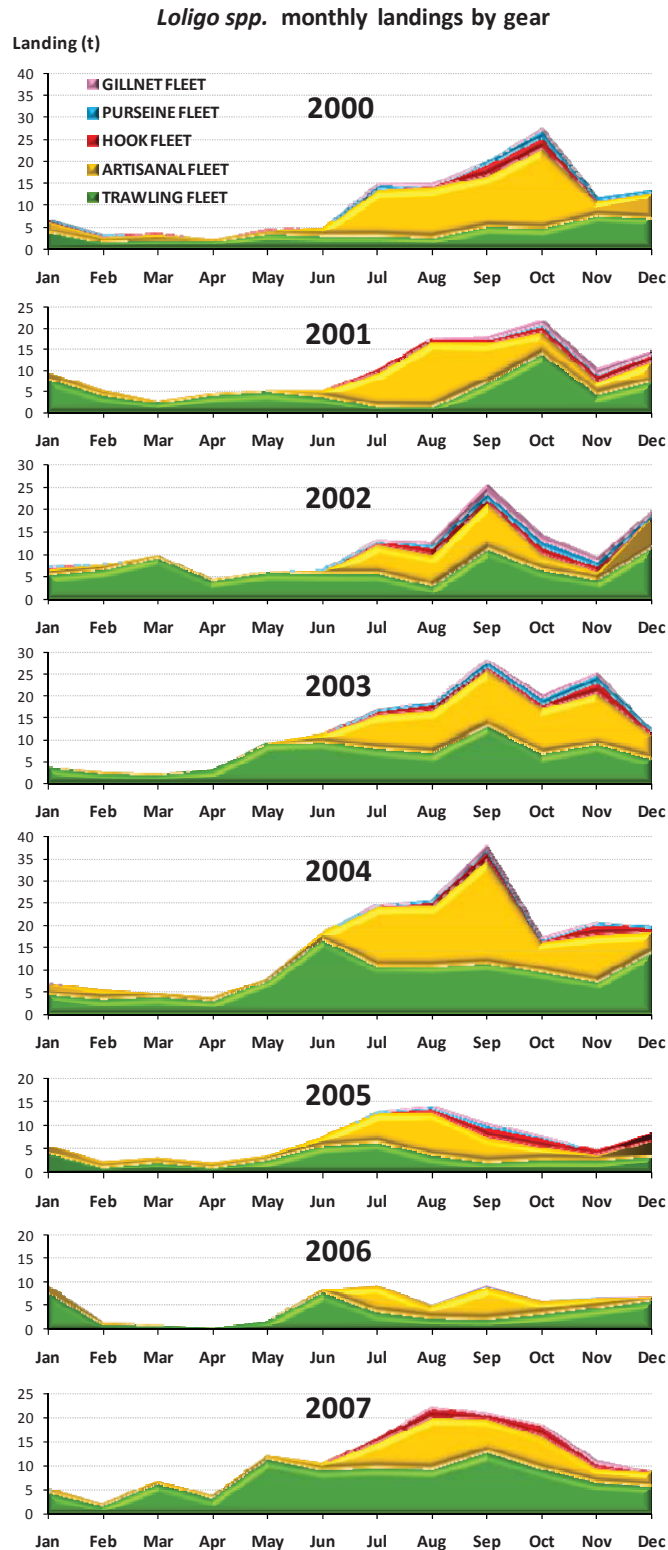


Figure 3.- *Loligo spp.* monthly landings by gear-type in the Northern Atlantic Iberian Peninsula for the period 2000-2007.

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Loligo vulgaris monthly body weight composition

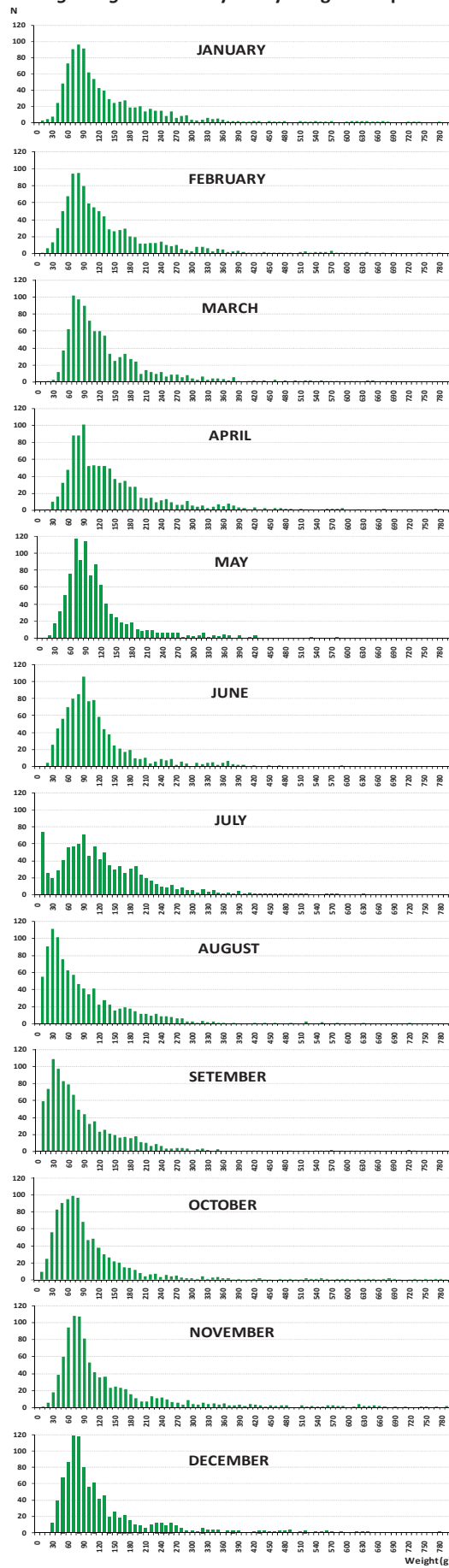


Figure 4.- Mean monthly body weight compositions for *Loligo vulgaris* in Galicia waters for the period 2000-2007. Size distributions were raised to 1000.

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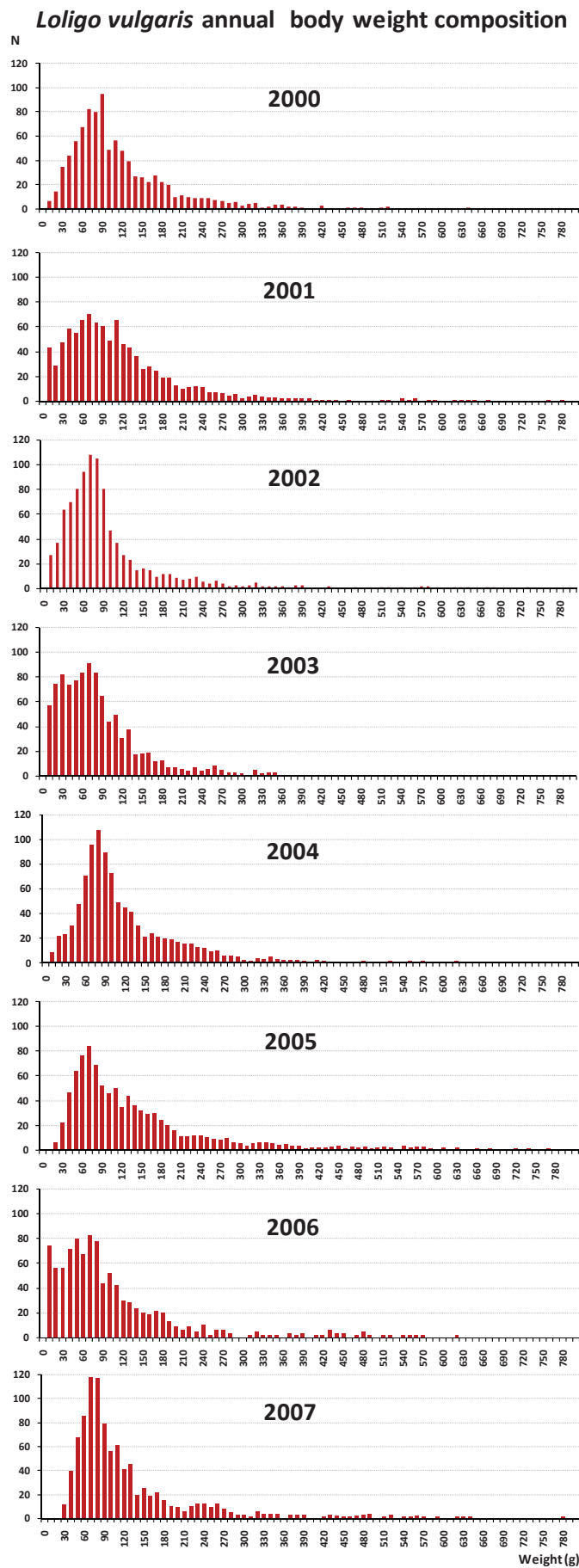


Figure 5.- Mean yearly body weight compositions for *Loligo vulgaris* in Galicia waters for the period 2000-2007. Size distributions were raised to 1000.