

"Spatial LPUE Estimation of Horse Mackerel in Northern Spain"

Rodríguez-Basalo A. ¹, Punzón A. ¹ and Ceballos E. ¹

¹ Instituto Español de Oceanografía. Promontorio de San Martín SN. 39080 Santander. PO BOX 240.

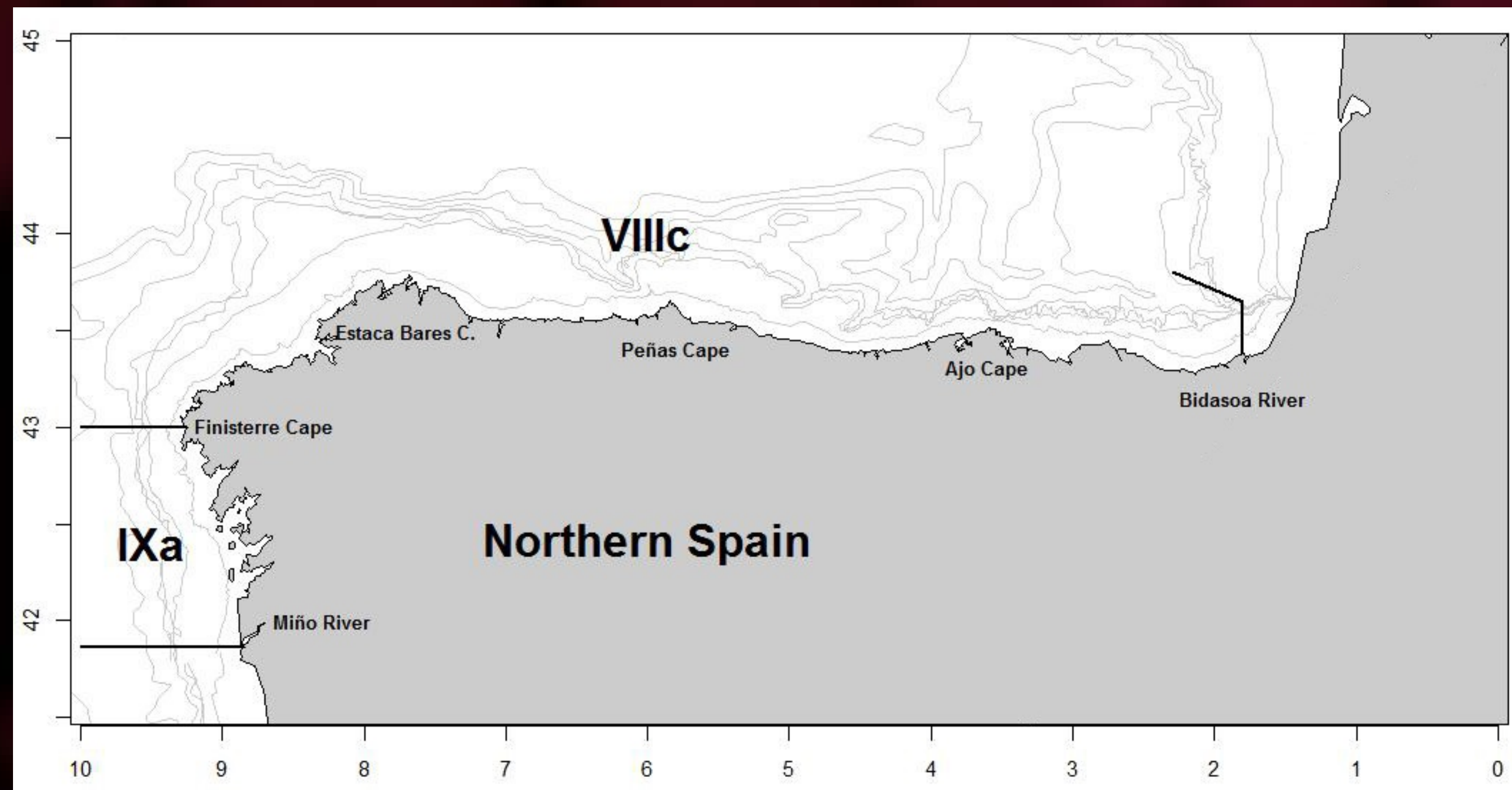
Introduction

The horse mackerel (*Trachurus trachurus*) is one of the target species of fishing effort of the Iberian Peninsula. Purse-seine and trawl fisheries are developed on this species in the north of Spain and it is also captured with bottom longlines and gillnets. A significant part of this fleet (vessels over 15 meters) carries VMS on board.

Material and Methods



Trachurus trachurus



Spatial distribution of the activities of the industrial fleet → logbooks and VMS (provided by the Spanish Ministry of Agriculture, Food and Environment : MAGRAMA, for its initials in Spanish)

Period of study: 2007-2010

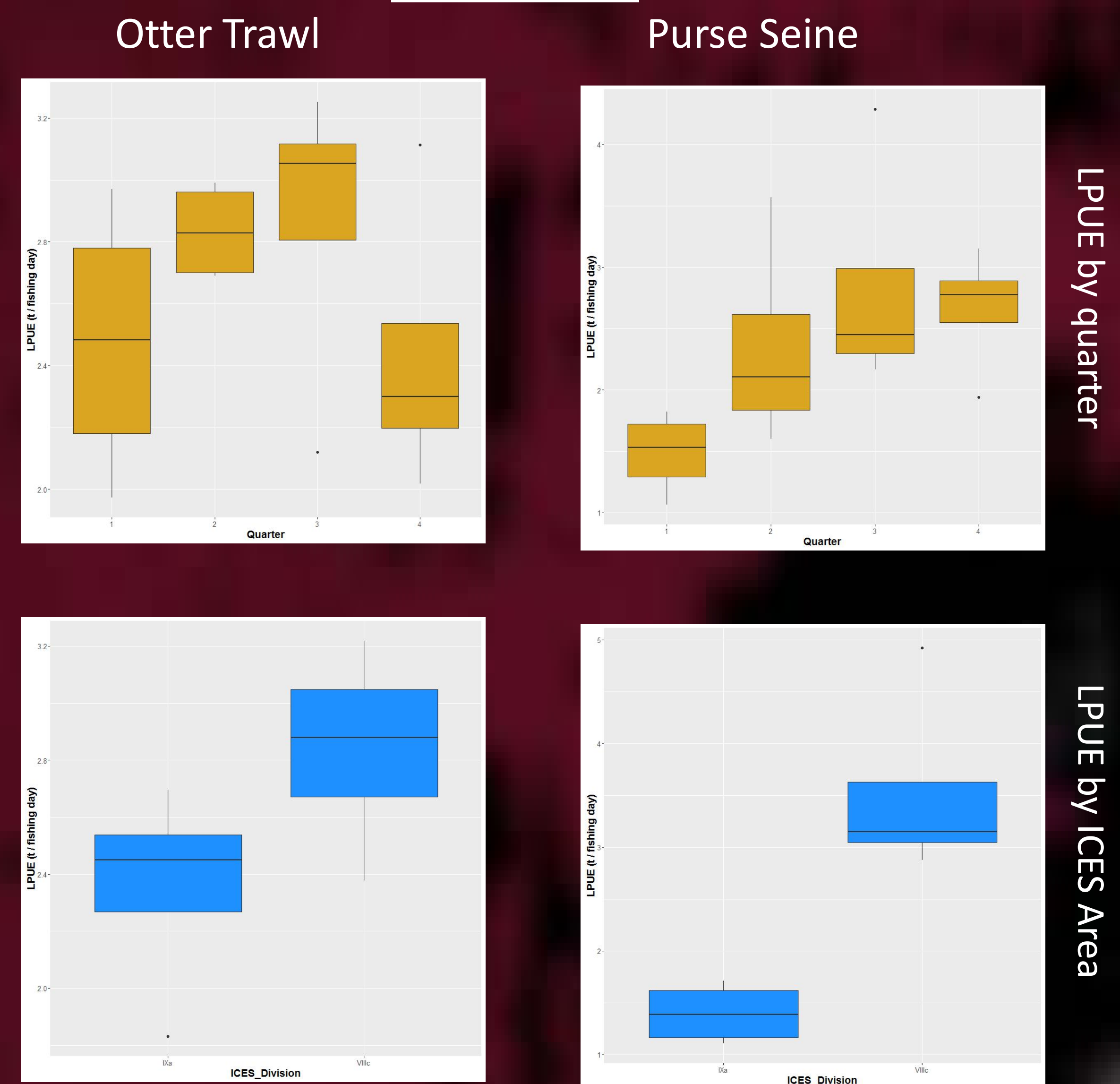
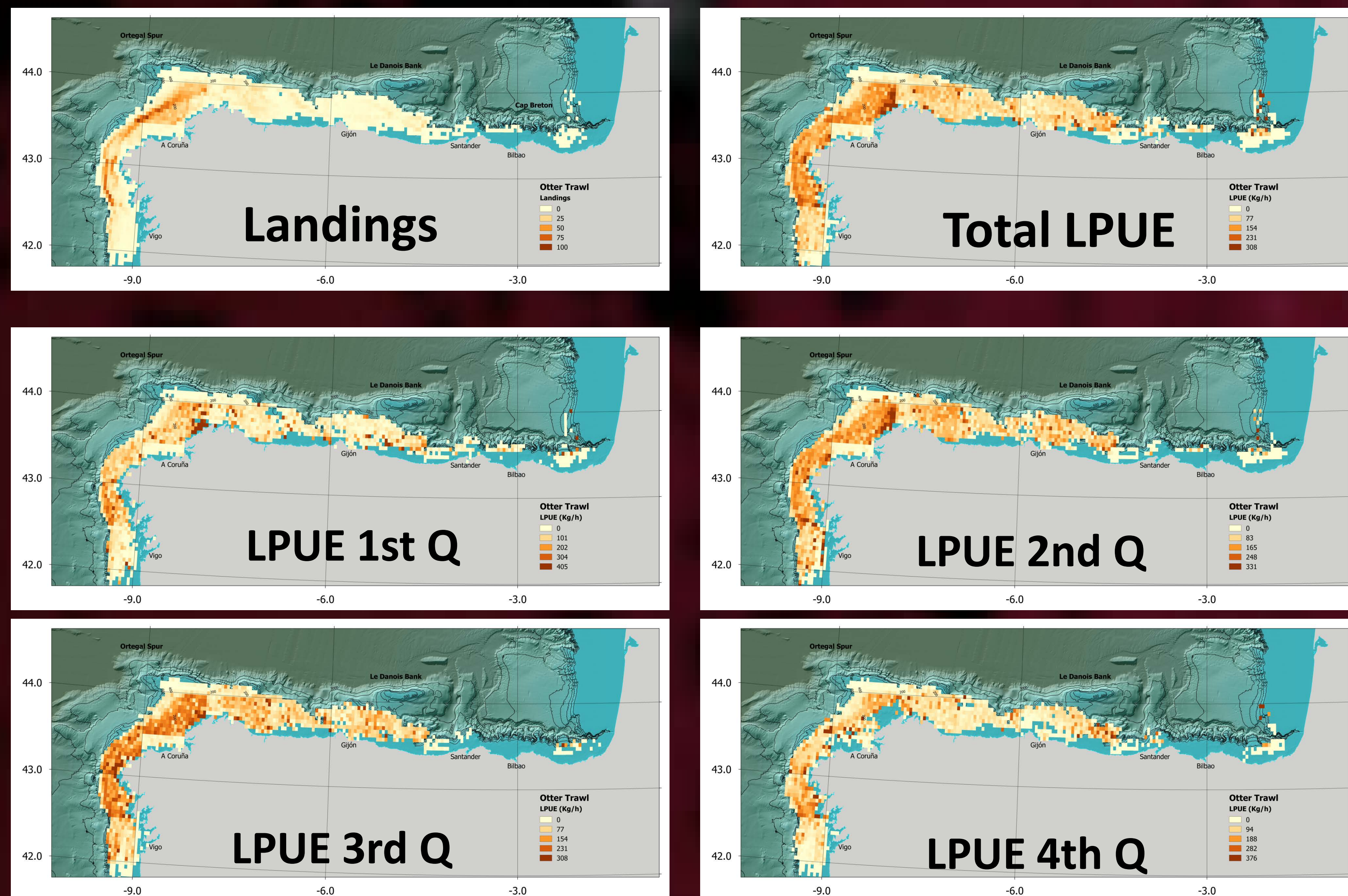
VMS → sends a signal every two hours (ping) that records the code of the emitting ship, date, time, position (latitude and longitude), speed in knots, course and whether the ship is carrying out fishing operations or not. We applied filters and processing techniques to eliminate signals not related to fishing activity (Hintzen et al., 2011). The landings were split among pings according to Hintzen et al. (2011)

LPUE → obtained from the division of the layers of landings and effort

Units: for fishing tactic characterization was used the "fishing day" for effort and "tones" for landings, for spatial characterization was used fishing time in hours for effort, and landings in kg.

Results

Otter Trawl



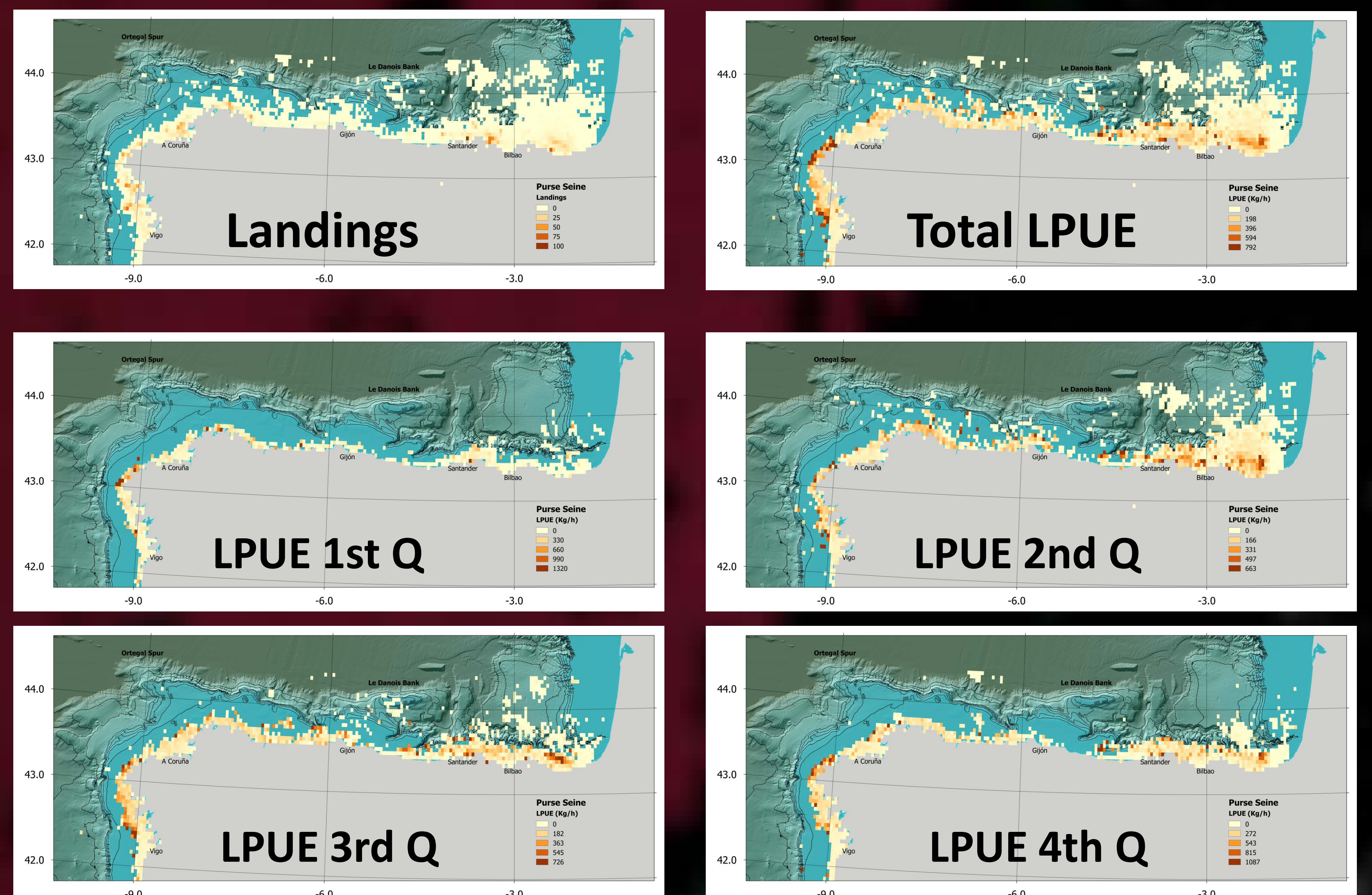
LPUE by quarter

LPUE by ICES Area

Two fisheries targeting horse mackerel have been identified, purse seine (PS_HOM) and otter trawl (OTB_HOM). The biggest LPUE is obtained in VIIIc area in both cases, being bigger during the second and third quarters of the year (Q) in otter trawl and increasing throughout the year in purse seine, being maximum during the fourth quarter.

The spatial distribution of the effort can be seen in the poster: "Spatial Characterization of the Horse Mackerel (*Trachurus trachurus*) Fisheries in Northern Spain". In the case of otter trawl the landings are mainly concentrated in the west of VIIIc area. LPUE are homogeneously distributed, being bigger in the west of VIIIc area and maximum off the Estaca de Bares Cape. Focusing on seasonality, the LPUE's are very low during the first and fourth quarters of the year, especially in IXa area. A very similar pattern is found in the central part of VIIIc area, with an important decline at the beginning and the last part of the year. The highest LPUE's are obtained in the west part of the VIIIc area during all the quarters.

Purse seine landings targeting horse mackerel are concentrated in the coastal zone, being maximum off the Finisterre Cape and between Ajo and Machichaco Capes in the east zone of VIIIc area. The LPUE spatial distribution is similar in the west area (north and south of Finisterre Cape), while in the east zone of VIIIc area is homogeneously distributed throughout the self. As in otter trawl LPUE's decrease in IXa area and east of VIIIc area during first and fourth quarters. An increment on LPUE's can be seen during the second quarter of the year off the Estaca de Bares Cape, matching with a decline at the north of Finisterre Cape.



Purse Seine