

**SKATES AND RAYS IN ICES AREAS
VI and VII
IEO SPANISH CONTRIBUTION**

IEO Instituto Español de Oceanografía (SPAIN)

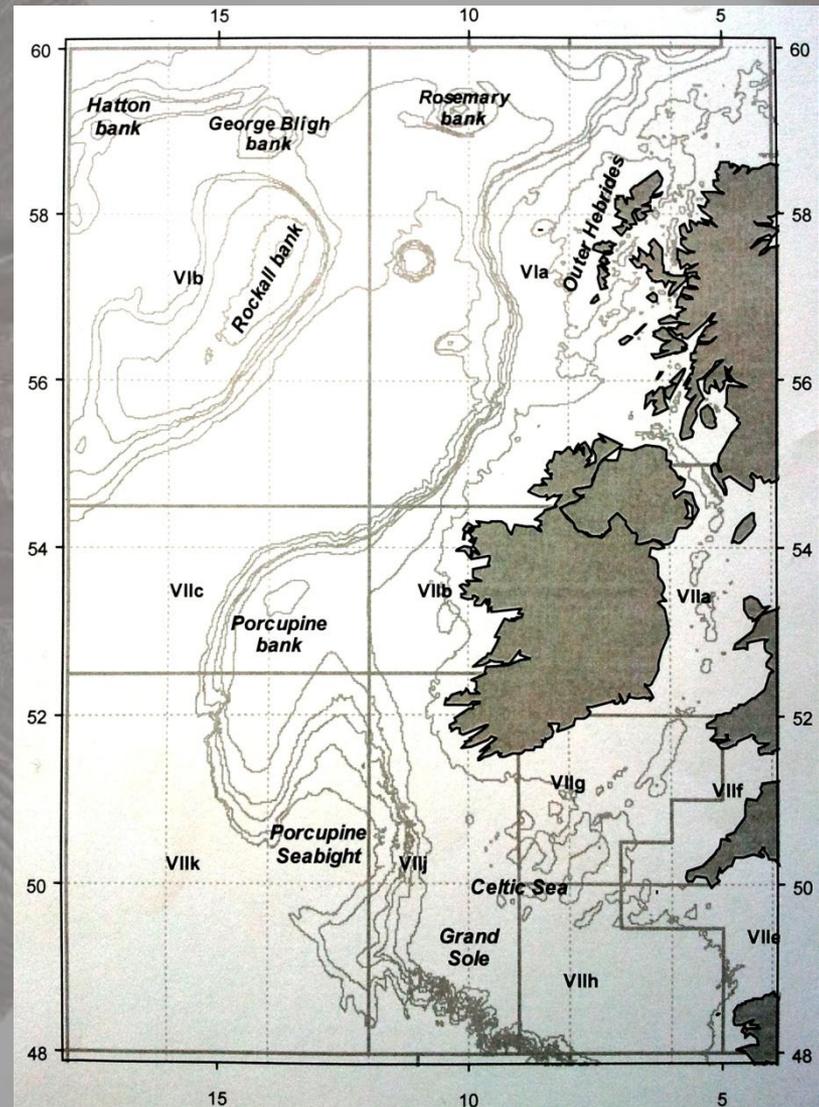
North Western Waters Regional Advisory Council (NWWRAC)

Paris, 29 Febrero 2012

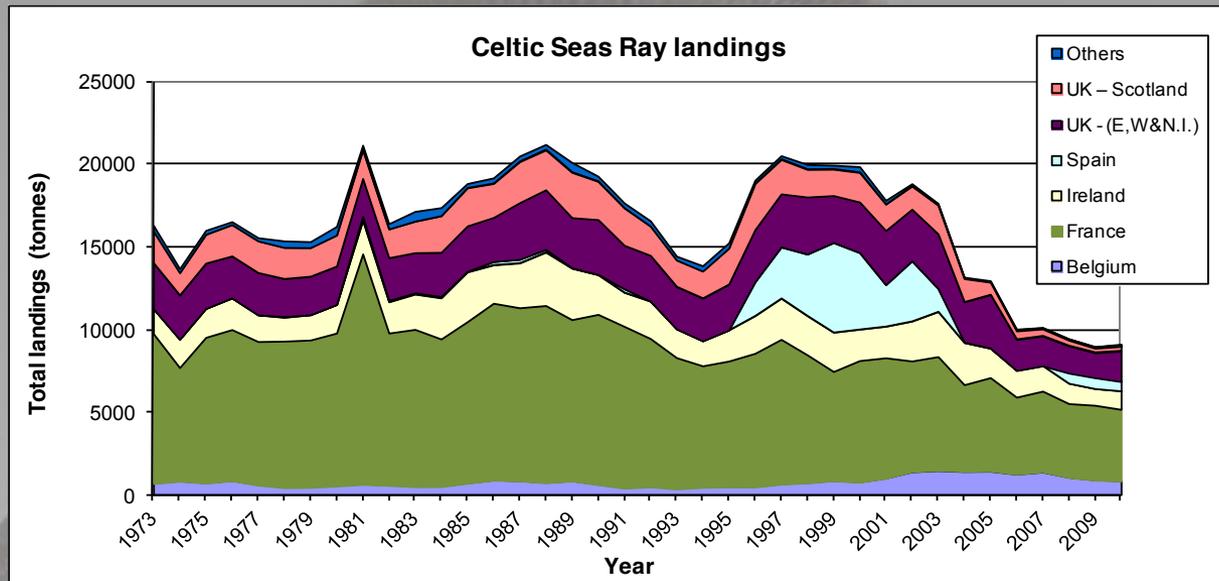
INTRODUCTION

We present a summary of the information available from IEO (Instituto Español de Oceanografía):

- Landings: VI and VII
- Discards: VI and VII trawl fleet
- Surveys: Porcupine Bank

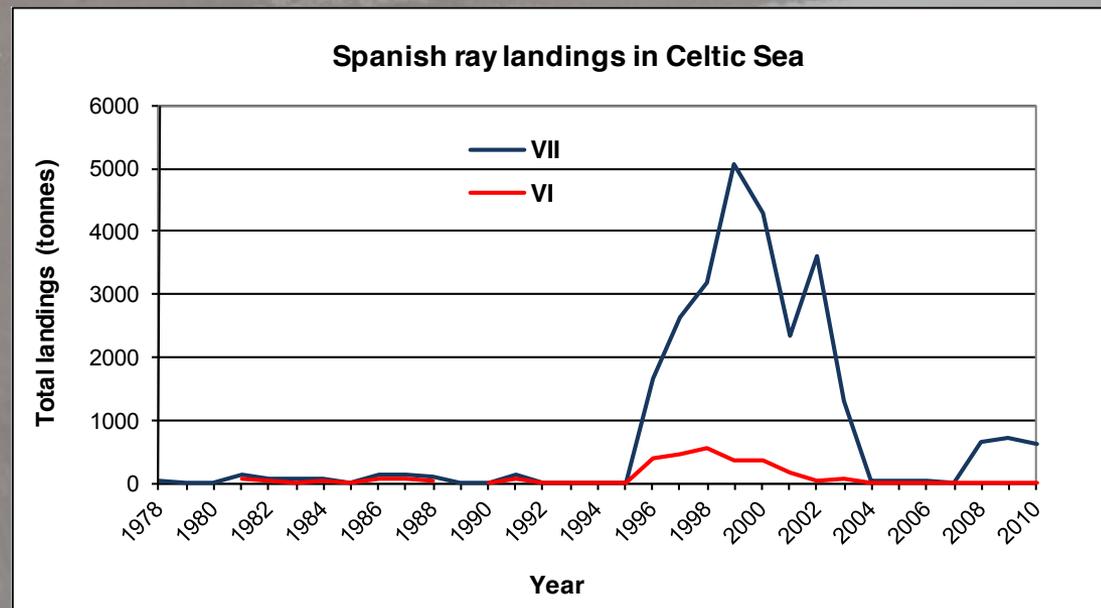


LANDINGS

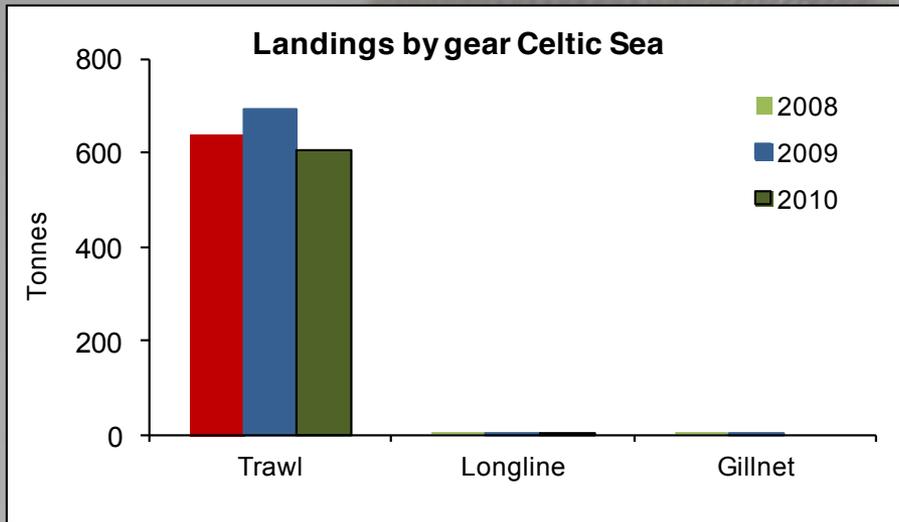


The main fishing activity of the Spanish trawl fleet in ICES VI is concentrated in the outer Hebrides (VIa) and with less intensity in the Rockall Bank (VIb).

Regarding ICES VII area the main effort is exerted in the Grand Sole Bank (VIIj) and in the east of Porcupine Bank (VIIck).

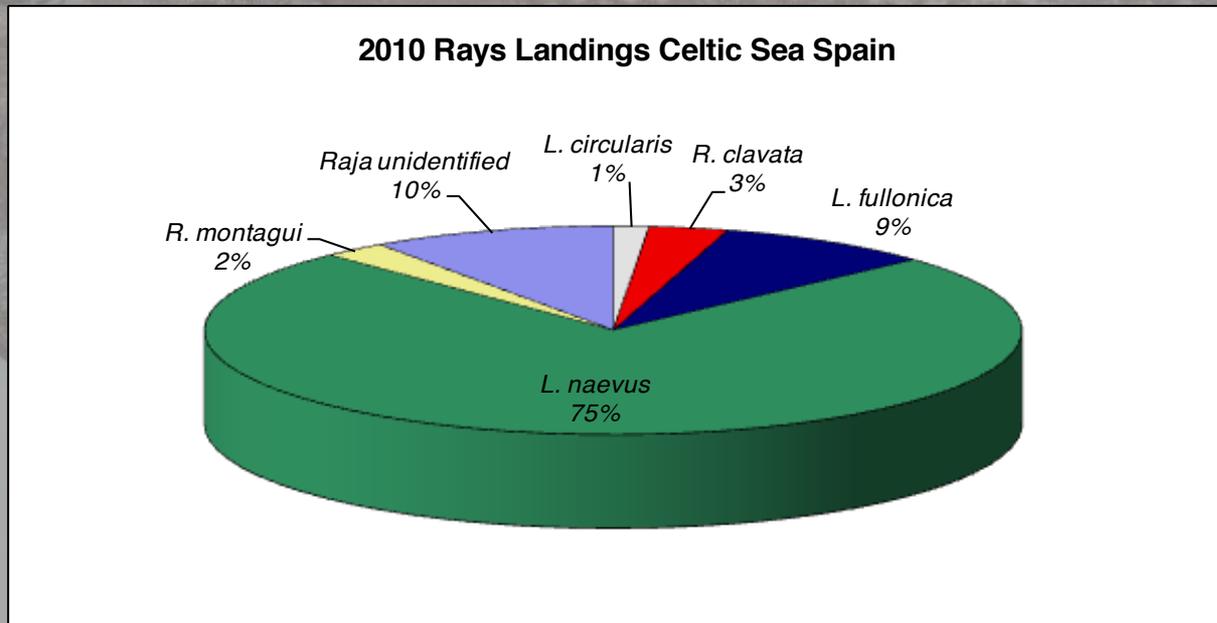


LANDINGS



Almost the 99% of rays landings from the Spanish fleet in this areas (VI-VII) come from trawl gears (otter trawl and pair trawl).

According to fishery data available in 2010, the most landed ray in this area is *Leucoraja naevus*, coming principally from the area ICES VII



DISCARDS

- The Spanish Discards Sampling Programme covers ICES subareas VI, VII, VIII and North IX.
- It started in 1988 but it did not have yearly continuity until 2003.
- The observers-on-board programme is based on a stratified random sampling design (ICES, 2003).
- Only bottom otter and pair trawl fleets are considered. Information from gillnet vessels is also available but from 2008.
- Sampling level varies depending on the year. Mean number of trips is close to 1200 per year and mean proportion of hauls sampled within trip is 0.5.

DISCARDS

Results of the most discarded rays in the Celtic Sea

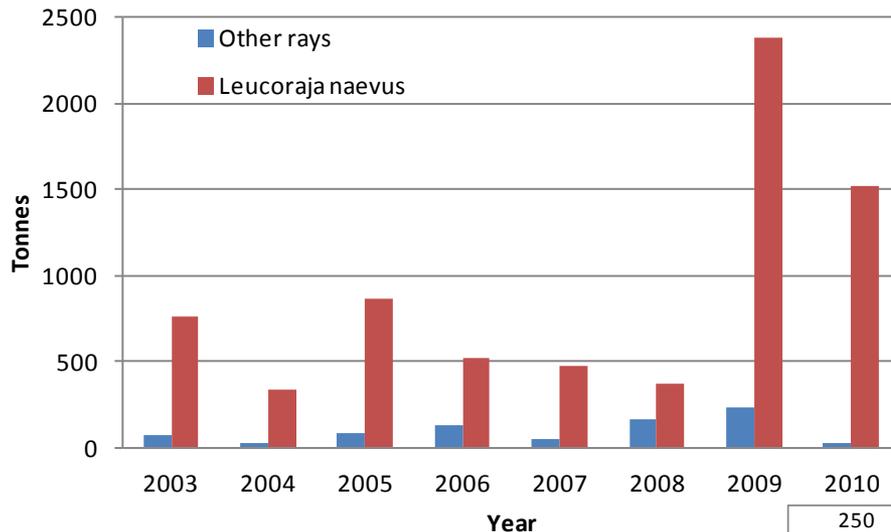
Selection was done applying a threshold of 1 ton to the unraised total annual catch data.

Weight discarded (tons) of rays and CV of estimations by Spanish bottom otter and pair trawl fleets in the Celtic Sea (ICES subareas VI-VII).

Species	2003	2004	2005	2006	2007	2008	2009	2010
<i>Leucoraja circularis</i>	9,4	0,0	0,0	0,0	0,0	128,9	0,0	0,0
	99,6	-	-	-	-	99,5	-	-
<i>Leucoraja fullonica</i>	50,3	0,0	0,0	0,0	0,0	0,0	228,8	13,4
	40,2	-	-	-	-	-	59,5	62,4
<i>Leucoraja naevus</i>	764,8	331,6	867,3	517,0	466,9	371,1	2376,8	1521,5
	38,8	48,5	71,7	45,8	76,1	29,0	43,9	50,8
<i>Raja brachyura</i>	7,0	6,4	0,0	21,3	0,0	11,3	1,5	0,0
	99,6	99,4	-	75,4	-	70,6	99,1	-
<i>Raja clavata</i>	0,0	18,5	5,2	108,7	43,0	25,5	0,0	10,0
	-	87,9	91,0	68,1	55,2	49,9	-	74,7
<i>Raja microocellata</i>	0,0	0,0	76,5	0,0	1,0	0,0	0,0	0,0
	-	-	99,6	-	98,0	-	-	-

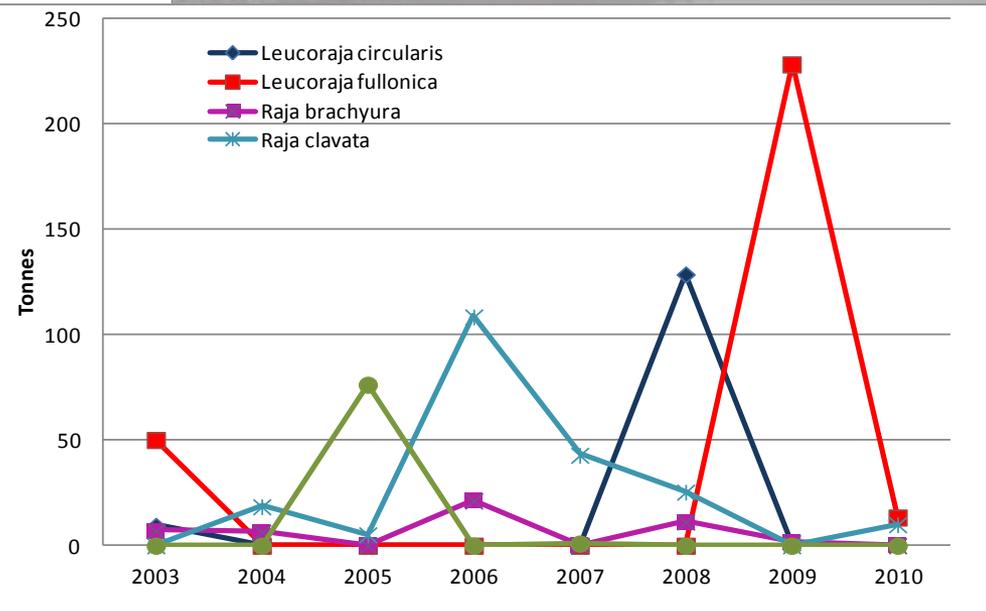
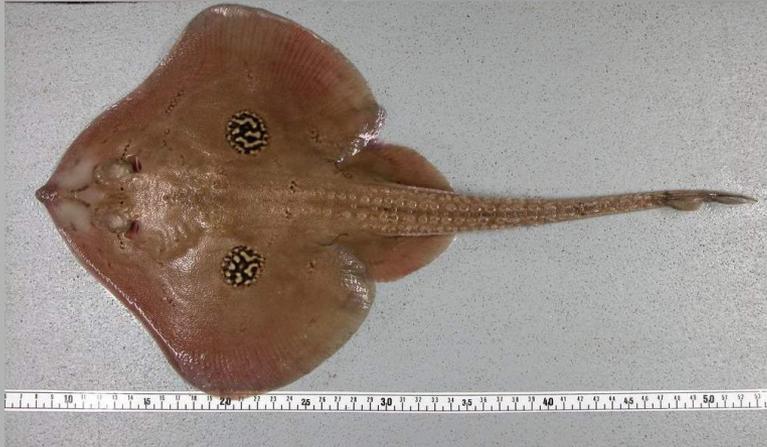
DISCARDS

Discards of rays in ICES VI-VII



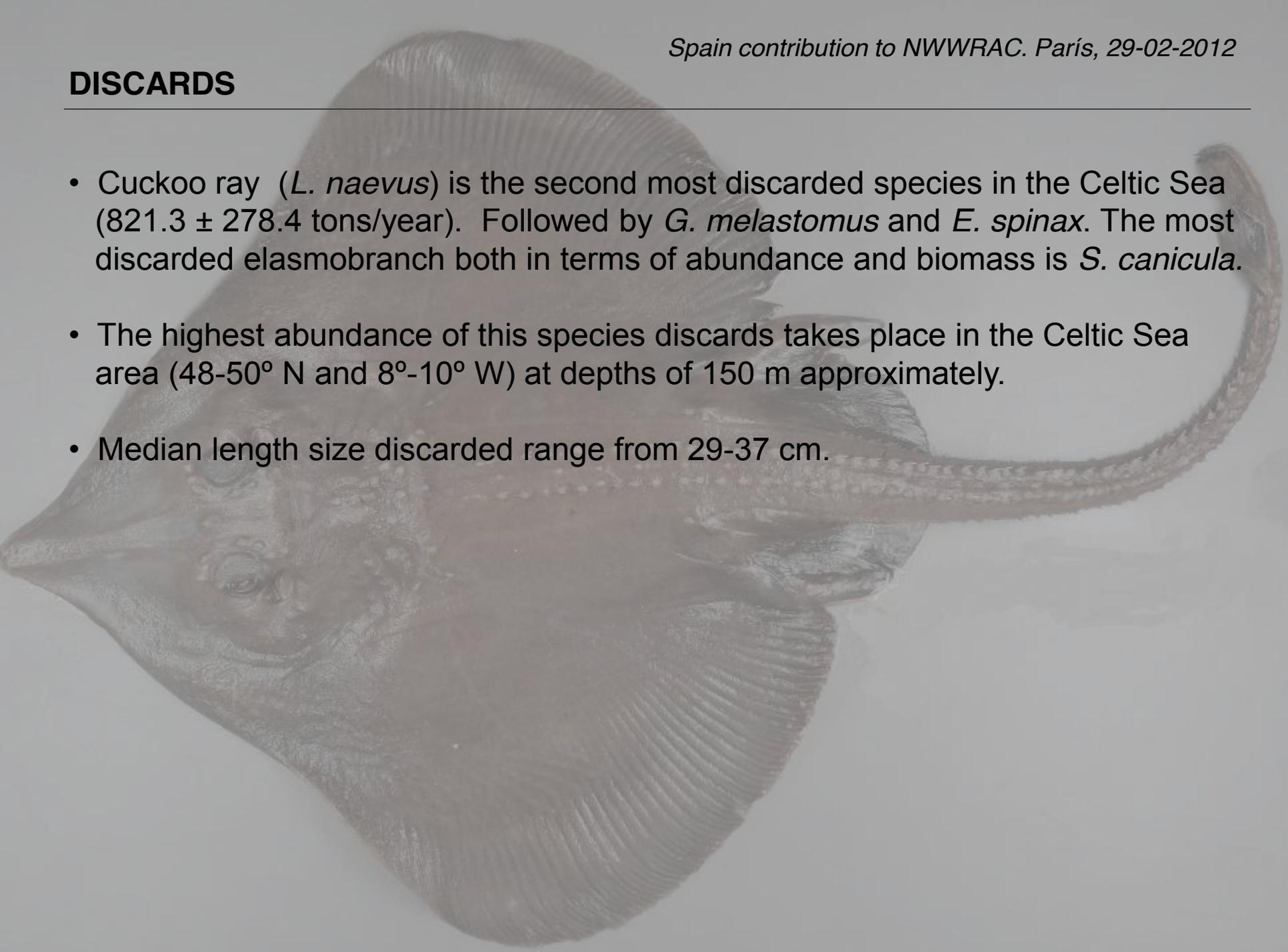
Discards of *Leucoraja naevus* represent about the 80%-98% of all rays discarded by the spanish trawl fleet in these areas. It appears in the discarded catch continuously over the years.

Other discarded rays include: *R.clavata*, *R. brachyura*, *L.circularis* and *L.fullonica*, however there are high interannual variations.



DISCARDS

- Cuckoo ray (*L. naevus*) is the second most discarded species in the Celtic Sea (821.3 ± 278.4 tons/year). Followed by *G. melastomus* and *E. spinax*. The most discarded elasmobranch both in terms of abundance and biomass is *S. canicula*.
- The highest abundance of this species discards takes place in the Celtic Sea area ($48-50^{\circ}$ N and $8^{\circ}-10^{\circ}$ W) at depths of 150 m approximately.
- Median length size discarded range from 29-37 cm.



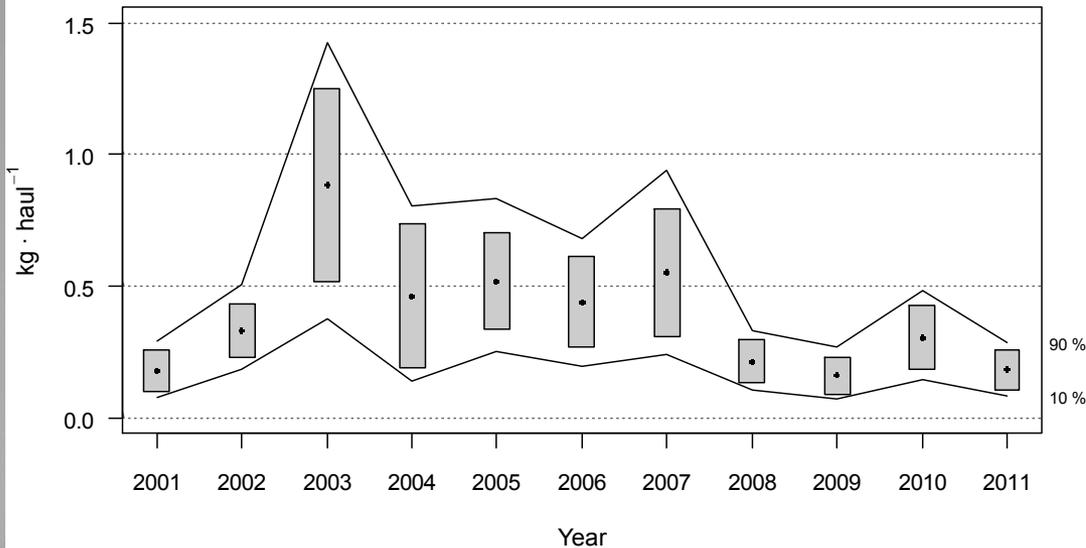
FISHERY INDEPENDENT DATA

Porcupine bottom-trawl surveys

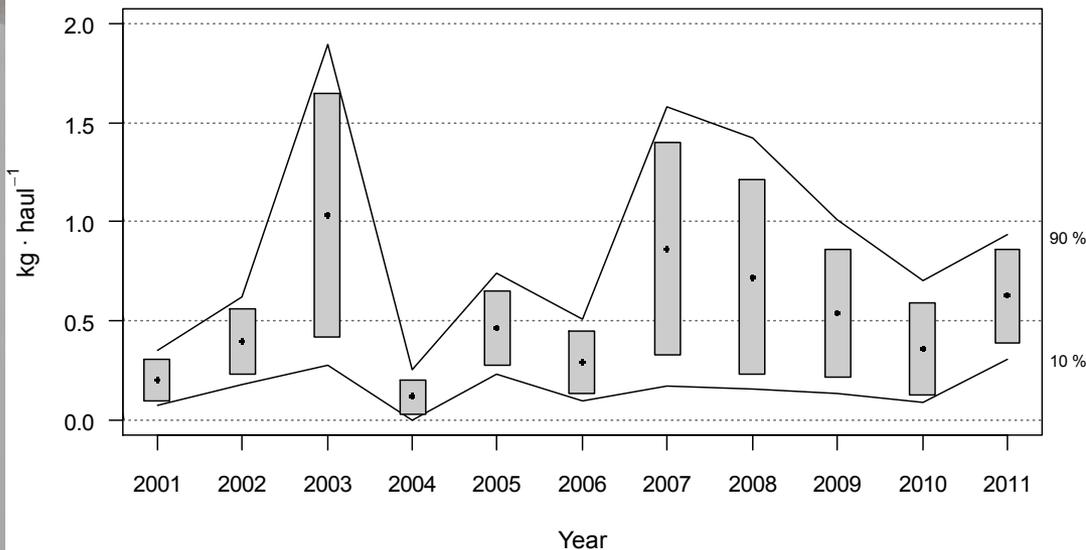
- The Spanish Porcupine bottom-trawl survey aims to collect data on the distribution, relative abundance and biological information of commercial fish in the Porcupine Bank Area (ICES Division VIIb–k).
- *The survey time-series started in 2001 and since then it has been performed annually every autumn. It follows a random stratified design with two geographical strata (northern and southern) and 3 depth strata (170–300 m, 301–450 m, 451–800 m). The gear used is a Porcupine baca 39/52 with ~3 m vertical opening, 23 m wing spread and 134 m door spread, hauls last 30 minutes.*
- Updated information is provided annually to the WGEF. *The most commonly reported elasmobranchs taken in the survey series (2001–2011), include rays/skates species: *L. circularis*, *L. naevus* and *D. batis* complex together with other rajidae species less frequent as *Raja clavata*, *Leucoraja fullonica* and *Rajella fillae*.*

ABUNDANCE

Leucoraja naevus



Leucoraja circularis



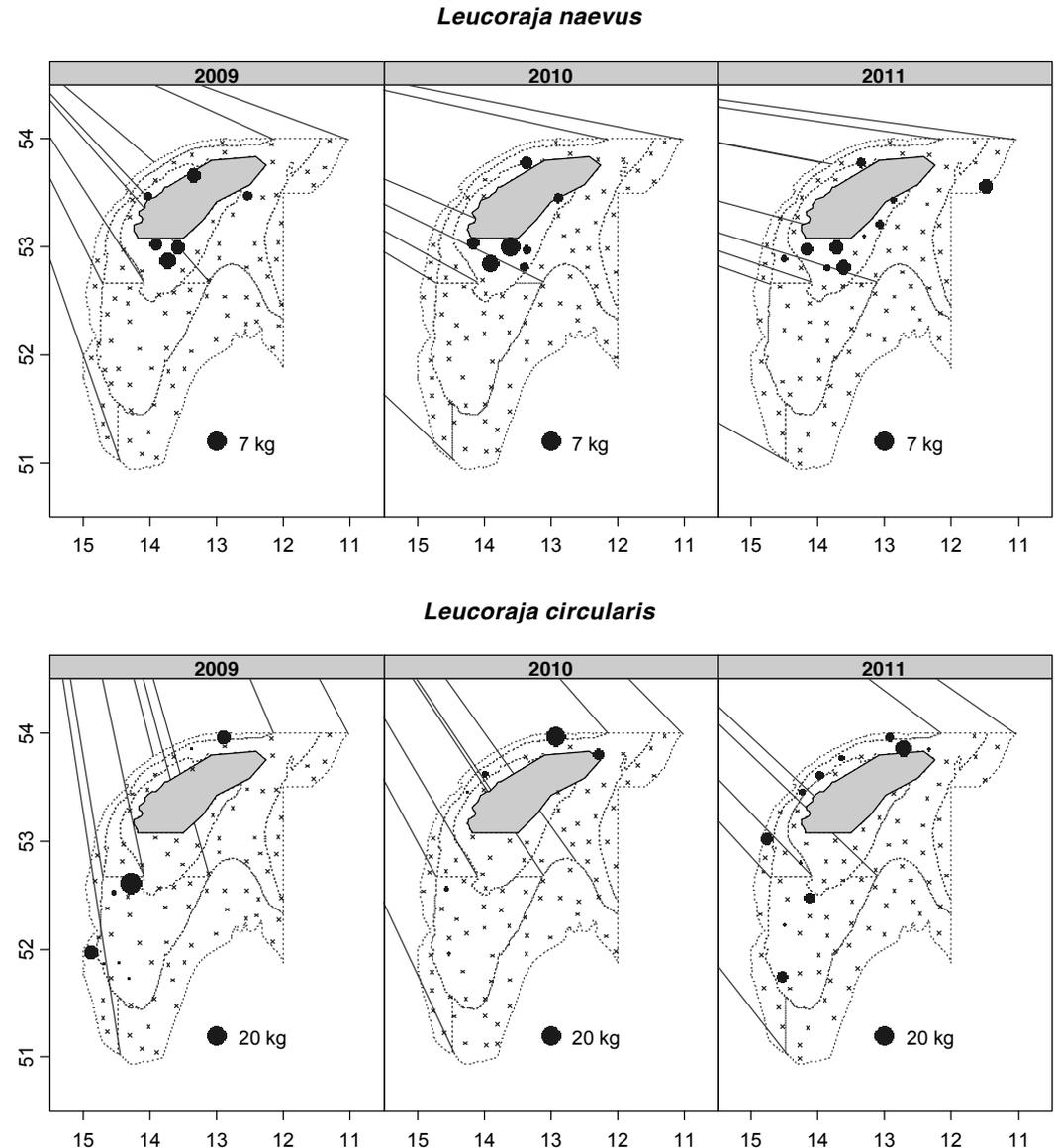
The most commonly reported rays and skates taken in the survey series (2001–2011), include *L. circularis*, *L. naevus* and *D. batis complex*. *L. naevus* occur mainly on the shallower grounds close to the Irish shelf and on the central mound in the bank and *L. circularis* occurs in deeper waters around the Bank

Biomass index (kg · haul⁻¹) during Porcupine Survey time series (2001–2011). Boxes mark parametric standard error of the stratified biomass index. Lines mark bootstrap confidence intervals ($\alpha = 0.80$, bootstrap iterations = 1000)

SPATIAL DISTRIBUTION

Cuckoo ray is usually distributed around the central mound of Porcupine Bank, shallower than 300 m, appearing occasionally on the Irish shelf.

Sandy ray dwells also around the central mound but usually on the northern part.

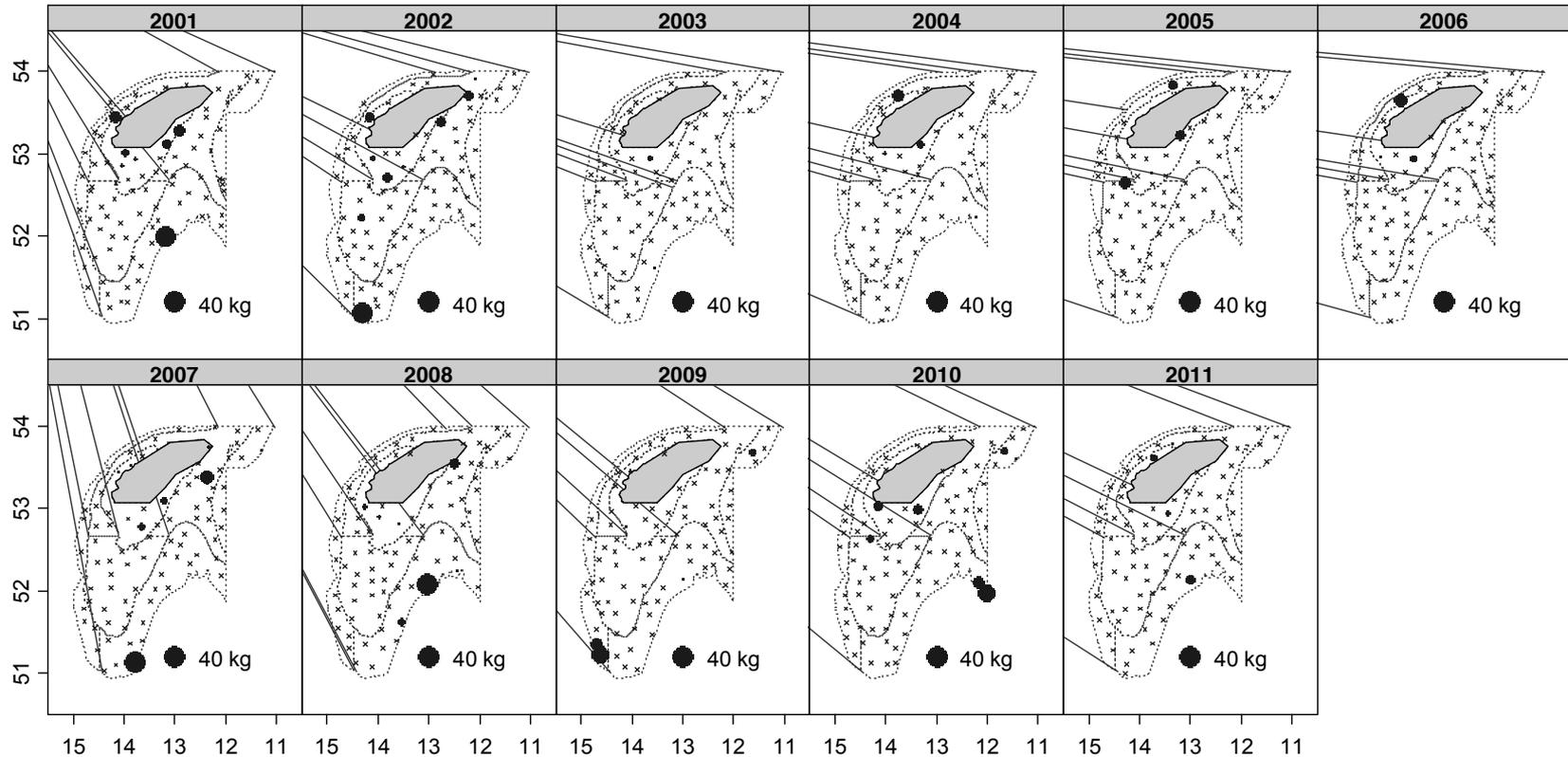


SPATIAL DISTRIBUTION

Dipturus batis complex groups several species of the *Dipturus* genus (*D. flossada*, *D. intermedia*, but also other species difficult to differentiate like *D. nidarosiensis* and *D. oxyrhinchus*).

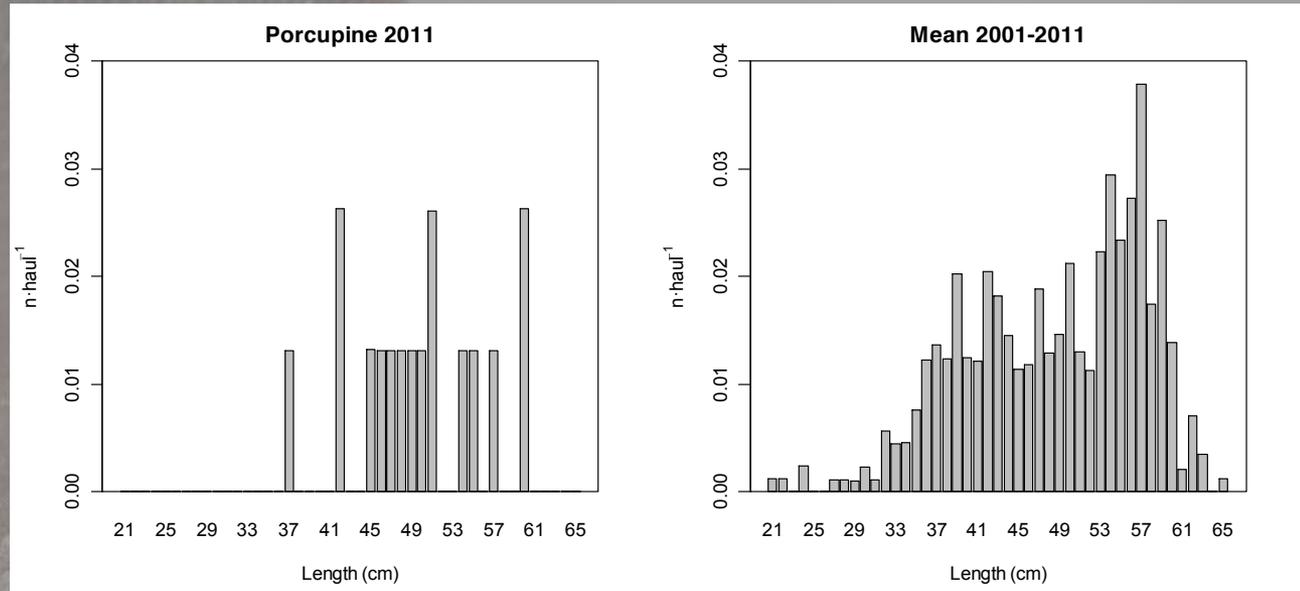
These species appear scattered along the survey area all years in low quantities and are being sampled for genetic studies from 2011.

Dipturus batis complex

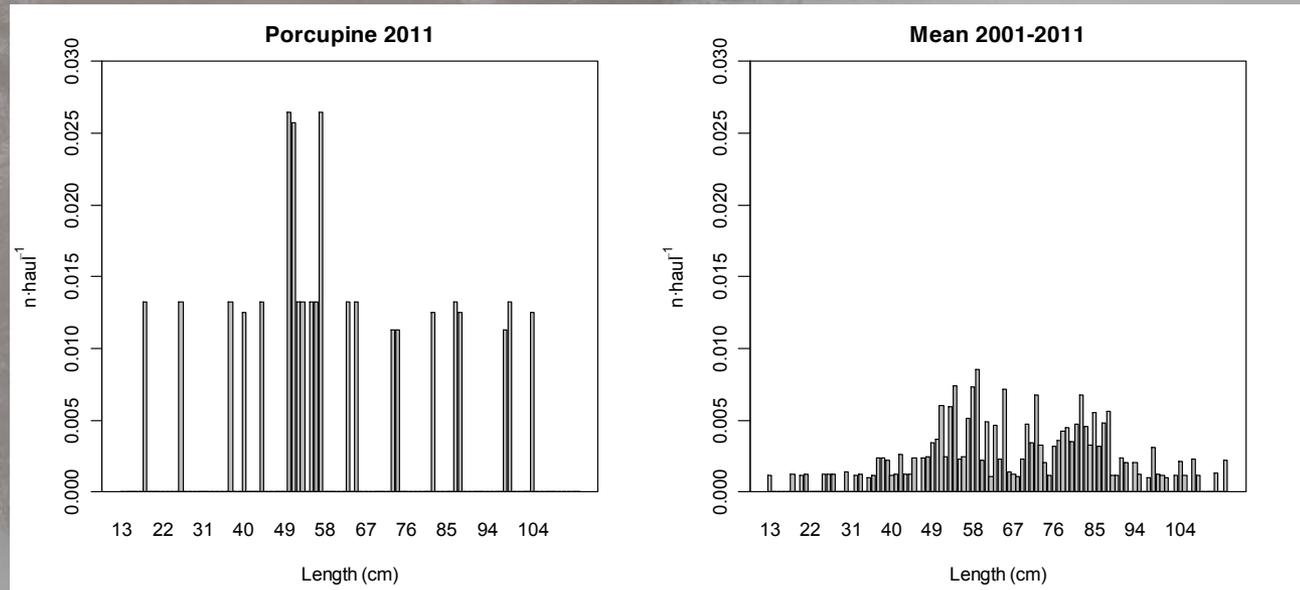


LENGTH DISTRIBUTIONS

Cuckoo ray length distribution in last year and mean length distribution along the time series

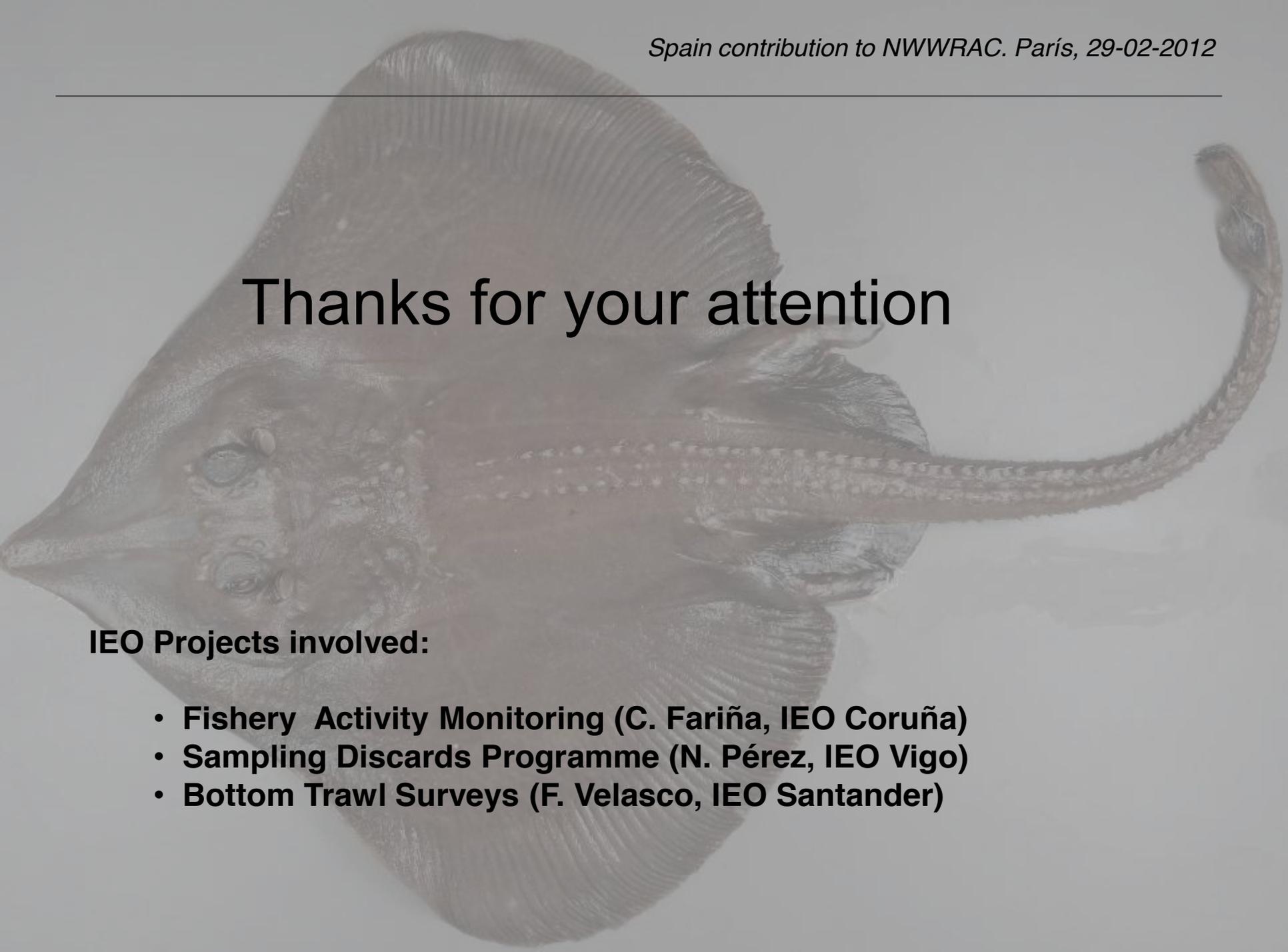


Sandy ray length distribution in last year and mean length distribution along the time series



FUTURE IMPROVEMENTS

- Since 2009 Instituto Español de Oceanografía (IEO) has adopted the concurrent sampling strategy. This strategy implies sampling the length structure of all species caught (on board sampling) or landed (market sampling) during each sampling operation. Member states have several problems to fully comply with this sampling strategy, but work done is contributing with systematic length structures and helping to improve species identification coming from fisheries data.
- Regarding Porcupine Survey, species identification is being addressed with genetic samples taken on board that are later analyzed through DNA sequencing to help identified species. This methods are being applied since 2011 particularly for the *Dipturus batis* complex, and also for other deepwater elasmobranches.



Thanks for your attention

IEO Projects involved:

- **Fishery Activity Monitoring (C. Fariña, IEO Coruña)**
- **Sampling Discards Programme (N. Pérez, IEO Vigo)**
- **Bottom Trawl Surveys (F. Velasco, IEO Santander)**