

Stock Annex: template

Stock Annex

Stock specific documentation of standard assessment procedures used by ICES.

Stock	Thornback ray (<i>Raja Clavata</i>) in the Bay of Biscay VIIIa-c
Working Group:	WGEF
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Revised by	Pascal Lorange.....

A. General

A.1. Stock definition

The stock definition is uncertain. For *Raja clavata*, genetic studies have revealed phylogeographic structure among the Mediterranean region, the Azores and the European shelf (Chevolot et al., 2006a), and a weak but significant genetic structure has been found from the southern North Sea to the Celtic Sea (Chevolot et al., 2006b). Despite this, genetic data are still scarce, and the regional population structure of this species remains poorly known, in particular the extent and potential connectivity between the Bay of Biscay population and its southern and northern neighbors is unknown. Several ray species, including *R. clavata*, might be quite sedentary (e.g. Ellis et al., 2012). However, there is a possible high gene flow in *R. clavata* (Chevolot et al., 2008). This may be understood as stepwise gene flow that maintains genetic homogeneity while population dynamics may vary at smaller spatial scale, owing to variations in growth and mortality.

A.2. Fishery

France and Spain catch the thornback ray in the Bay of Biscay, minor catch are landed by other countries, (Belgium and UK).

Spain

The Spanish demersal fishery along the Cantabrian Sea (VIIIc) and Bay of Biscay (VIIIa,b,d) catches skates and rays using several gears, but most Spanish landings are bycatch of trawl fisheries targeting other demersal species such as hake, anglerfish and megrim. The thornback ray is one of the common rays in these bycatch. In the Cantabrian sea (VIIIc) and IXa) there is also an artisanal fishery (mostly gillnetters) operating in bays or shallow waters.

France

Skates and rays are traditional food resources in France, where directed fisheries for skates and rays were known to occur since the 1800's. In the 1960's, skates and rays were primarily taken as bycatch of bottom trawl fisheries operating off the northern part of the Bay of Biscay, the southern Celtic Sea and the English Channel. By this time the thornback ray was seasonally targeted by fisheries, being the dominant skates and rays species landed in France. In the Bay of Biscay, the main ray species in French landings in the 2000

was the cuckoo ray (*Leucoraja naevus*), the thornback ray was the second in the landings accounting for about 10% of rays landings and an average 100 tonnes per year.

A.3. Ecosystem aspects

B. Data

B.1. Commercial catch

Historically, landings by species of ray and skate have not been available. This improved in the 2000s, but some landings are still reported as Rajidae or *Raja* spp., identification and mislabeling problems are known to occur.

The working group estimated the proportion of species in the landings by country and ICES Division, from which a time-series of landings of *raja clavata* is derived.

B.2. Biological

The growth parameter of the thornback ray was not estimated in subarea VIII. Growth parameter from Division IXa (Serra-Pereira et al., WD2013) are used but these may be unsuitable as there may be regional difference in life history parameters.

Table 1; Estimates of growth parameters for the thornback ray.

L_{∞} (cm)	K (year ⁻¹)	t0 (years)	Lmax (cm)
128	0.112	-0.62	91.3

Guzman: source of data to confirm, according to the report section this is from Serra-Pereira et al., 2013 WD. I cannot find the WD

B.3. Surveys

The thornback ray is caught in small number in the French EVHOE survey. Population indices, including relative indices of abundance, biomass, mean length and quantiles of the length distribution are derived from this survey (www.ifremer.fr/SIH-indices-campagnes; Figure). The calculated indices of abundance and biomass are swept area estimates raised to the total areas sampled by the survey (ICES Divisions VIIa,b,c down to 600 m, therefore covering the whole depth range of the species). However, these indices should be used as relative as no account of catchability is made. Further thornback ray is caught in a small proportion of hauls only, with occasional high numbers what make the indices variance large.

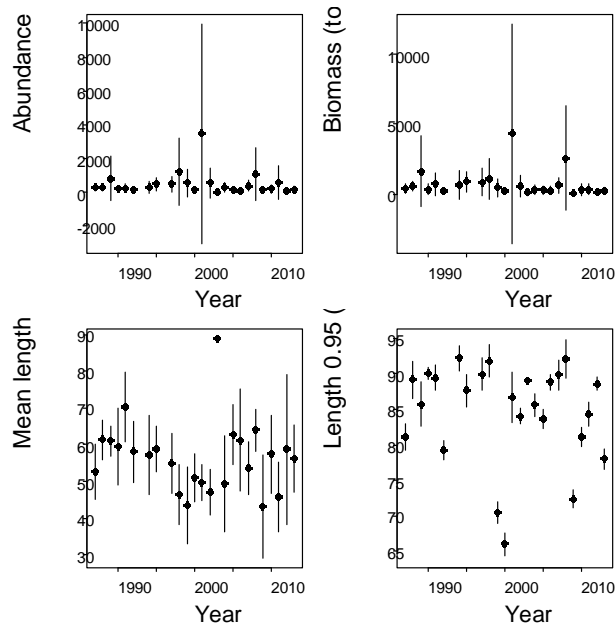


Figure 1. EVHOE survey indices 1987-2013 of the thornback ray in the Bay of Biscay (VIIIabc). Abundance and biomass are raised to the total area surveyed (swept area method) but should be considered relative and in way way absolute estimates.

Distribution maps of the catch in number per haul are also drawn (Figure 2). Because of the small number of thornback ray caught per year, year to year variations may not be significant. Therefore, years are clustered 3 by 3 to map the spatial distribution and calculate the presence-absence indicator. Years that cannot be grouped by 3, owing to the number of years in the time-series are taken at the start of the time-series because recnet change are more crucial than past variations. Since 1987, thornback ray was occasionally caught in high number (up to 56 individuals) in haul at the coast of Southern Brittany, elsewhere in the Bay of Biscay only small numbers are caught, mostly between 100 and 200 m (Figure 2).

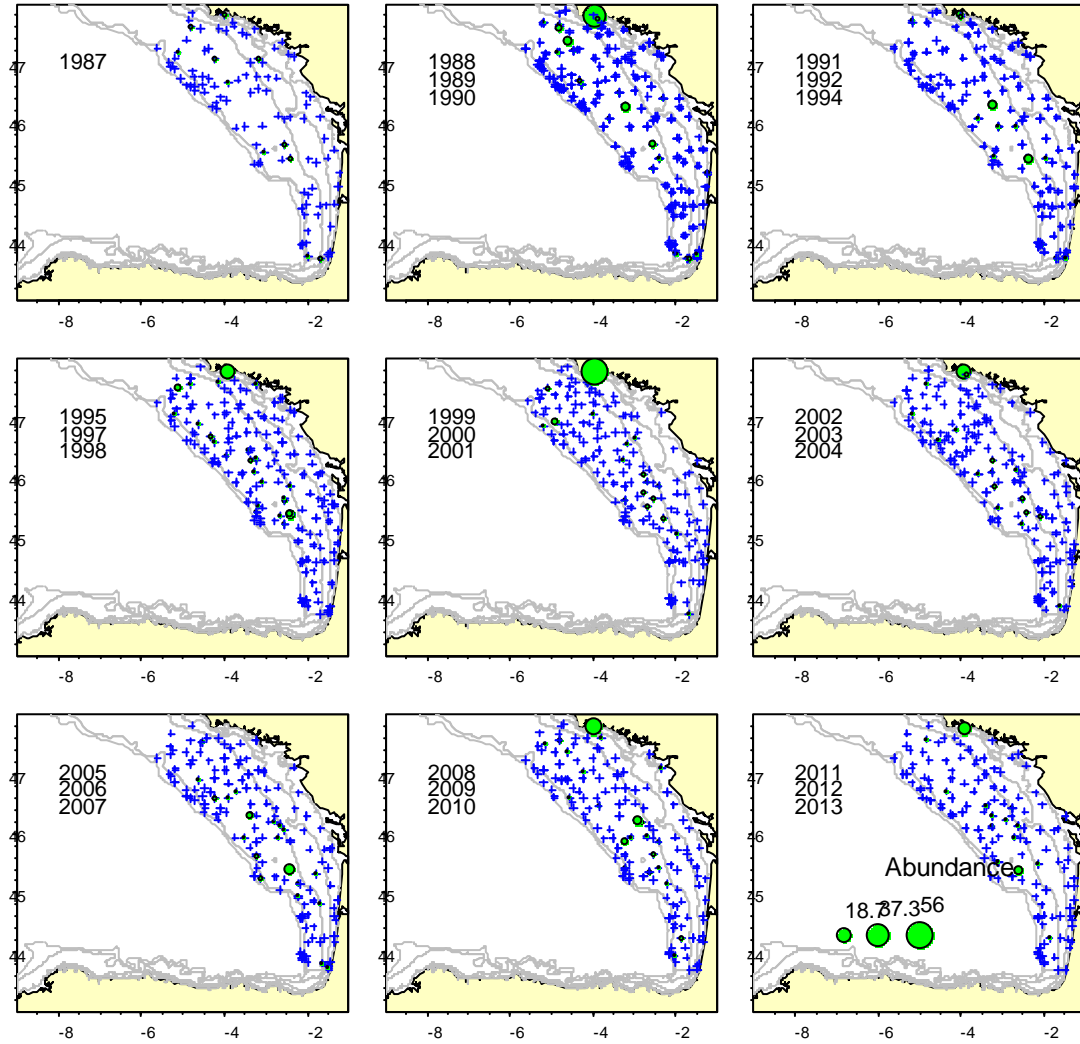


Figure 2. Spatial distribution of catches of thornback ray in the Bay of Biscay from EVHOE survey 1987-2013.

A presence-absence indicator, have also been calculated based on EVHOE and the same groups of 3 years as above. This indicator may be used in addition to more usual indicators to appraise populations trends. The thornback ray have been caught in about 10% of the hauls since 1987, without detectable trends (Table 2).

Table 2. Presence-absence indicator derived the EVHOE survey in the Bay of Biscay.

Year	Total number of hauls	Number of haul with catch of <i>R. clavata</i>	Proportion of haul with catch
1987	105	11	0.1
1988-90	443	31	0.07
1991, 1992, 1994	286	19	0.07
1995, 1997, 1998	229	30	0.13
1999-2000	192	19	0.1

2002-04	205	17	0.08
2005-07	199	23	0.12
2008-10	205	24	0.12
2011-13	203	16	0.08

B.4. Commercial CPUE

No commercial CPUE is used for assessment. An LPUE in kg per fishing day from the Basque Country OTB DEF fleet has been included in reported. The fleet is composed of more than 70 Bottom otter trawlers operating in Subarea VIII.

B.5. Other relevant data

C. Assessment: data and method

No assessment

D. Short-Term Projection

None

E. Medium-Term Projections

None

F. Long-Term Projections

None

G. Biological Reference Points

No biological reference point has been defined from the stock

H. Other Issues

H.1. Historical overview of previous assessment methods

N/A

I. References

- Chevolot M., Hoarau G., Rijnsdorp A.D., Stam W.T., Olsen J.L., 2006, Phylogeography and population structure of thornback rays (*Raja clavata* L., Rajidae). *Molecular Ecology* 15, 3693–3705.
- Ellis J.R., Morel G., Burt G., Bossy S., 2011, Preliminary observations on the life history and movements of skates (Rajidae) around the Island of Jersey, western English Channel. *Journal of the Marine Biological Association of the United Kingdom* 91, 1185–1192.