

#### **9.4.20 Portuguese dogfish (*Centroscymnus coelolepis*) and leafscale gulper shark (*Centrophorus squamosus*) in the Northeast Atlantic (ICES Areas I–XIV)**

##### **Status**

There is insufficient information to separate the landings of Portuguese dogfish *Centroscymnus coelolepis* and leafscale gulper shark *Centrophorus squamosus*. Total international landings of the combined species have steadily increased to around 11 000 t in 2003 and have rapidly declined after 2003 to the lowest levels since the fishery started (Figure 9.4.20.1). Substantial declines in cpue series for the two species in Subareas V, VI, and VII suggest that both species are severely depleted (Figure 9.4.20.2) and that they have been exploited at unsustainable levels. In Division IXa, lpue series are stable for leafscale gulper shark (Figure 9.4.20.4) and declining for Portuguese dogfish (Figure 9.4.20.3).

##### **Management objectives**

No management objectives have been adopted. An EC Action Plan on elasmobranchs is being consulted on in 2008.

##### **Reference points**

No reference points have been defined for this species. In common with other deep-water species,  $U_{lim}$  has previously been proposed at 0.2\* virgin biomass and  $U_{pa}$  at 0.5\* virgin biomass (ICES, 1998) but in the absence of abundance indices that correspond to the start of the fishery, the reference points cannot be estimated.

##### **Single stock exploitation boundaries**

Due to its very low productivity, Portuguese dogfish and leafscale gulper shark can only sustain very low rates of exploitation. The rates of exploitation and stock sizes of deepwater sharks cannot be quantified. However, based on the cpue information, Portuguese dogfish and leafscale gulper shark are considered to be depleted. Given their very poor state, ICES recommends a zero catch of Portuguese dogfish and leafscale gulper shark.

##### **Management considerations**

On the basis of their life-history parameters, these two species are considered highly vulnerable to exploitation. At present, there is insufficient information to determine stock identity. In the absence of such information, they are considered as single stocks for assessment purposes although smaller units may be appropriate for management.

The ban on gillnetting in EC and international waters has diverted fishing effort to other areas, particularly VIII and IXb and part of IVa. As the gillnet ban in waters below 600 m does not cover all ICES areas, it has led to increased effort and/or displacement of effort to other (possibly unfished) areas. These fisheries should not proceed, nor expand, unless they can be demonstrated to be sustainable for deep-water sharks.

It is clear that the quota is restrictive for some countries, if adequately enforced. Programmes to assess discarding and/or misreporting are required. For other countries, the quotas are not effective to regulate fishing effort.

Species-specific landings data are still not presented for these two species by all ICES member countries. ICES considers that fisheries should not proceed in the absence of adequate data to assess the status of these species.

Lost and discarded gillnets may ghostfish. Recent retrieval studies have indicated that ghost fishing in previous shark fisheries west of the British Isles was less of a problem than other gillnet fisheries (e.g. anglerfish).

##### **Factors affecting the fisheries and the stock**

###### *Regulations and their effects*

A series of TACs is set for EC waters and EC vessels in international waters of Areas V–XII. The TAC applies to all deep-water sharks. The quotas were much higher than landings in 2006 and 2007. This is partly due to the restrictions on gillnet fishing.

###### *Changes in fishing technology and fishing patterns*

The introduction of bans on gillnetting in EC and international waters at depths greater than 600 m in Subareas VI and VII, etc. has diverted effort to other gears, depths, and areas.

### *The environment*

Deep-sea areas are considered to be comparatively stable. Given the low reproductive capacity of these stocks, recruitment is more dependent on female stock size than on environmental drivers.

### **Scientific basis**

#### *Data and methods*

Insufficient data are available to perform an analytical stock assessment. Data analyses are based on trends in landings, commercial cpue data, and biological knowledge.

Information is the same as in 2006 and 2007, with updated landings data and survey data from VIa. Preliminary lpue data are available for IXa in 2008 (Figures 9.4.20.3 and 9.4.20.4).

#### *Information from the fishing industry*

Data from the French fishing industry has been used in the data analyses (Figure 9.4.20.2).

#### *Uncertainties in assessment and forecast*

Landings data on these species remain very problematical. For many countries, data are only available for combined deepwater (“siki”) sharks. Many countries continue to report landings in generic categories such as “various sharks nei”. Retrospective splitting of the data into species categories could result in inconsistencies.

Fishery-independent data covers only a small area and a short time-series.

#### *Comparison with previous assessment and advice*

There is no information that changes the perception of the stock since last year.

Experimental assessments using production and depletion models were conducted by ICES in 2000 and 2002. In 2000, the combined stock of these species in Subareas V, VI, and VII was estimated to be depleted, below  $U_{pa}$  and possibly below  $U_{lim}$ . In 2002, additional data were incorporated, and the strong decline in stock abundance was still evident. In 2002, upward trends in French trawler cpue were reported. Evidence available in 2006 showed that this trend was due to a movement of the fishery to new grounds within Subareas V and VI and did not reflect changes in stock abundance.

### **Sources of information**

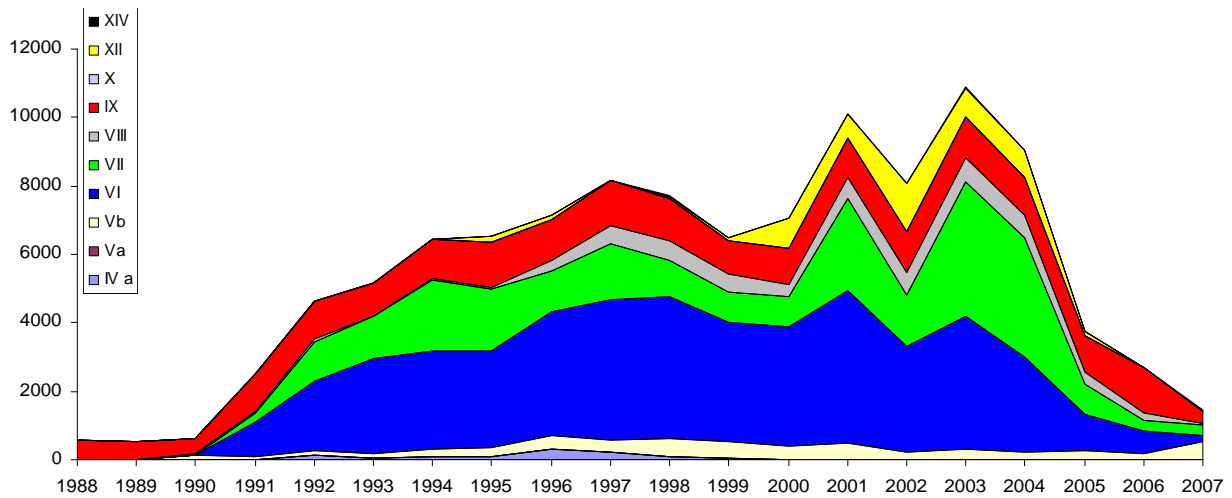
Report of the Working Group on Elasmobranch Fishes, 2006 (ICES CM 2006/ACFM:31).

Report of the Working Group on Elasmobranch Fishes, 2008 (ICES CM 2008/ACOM:16).

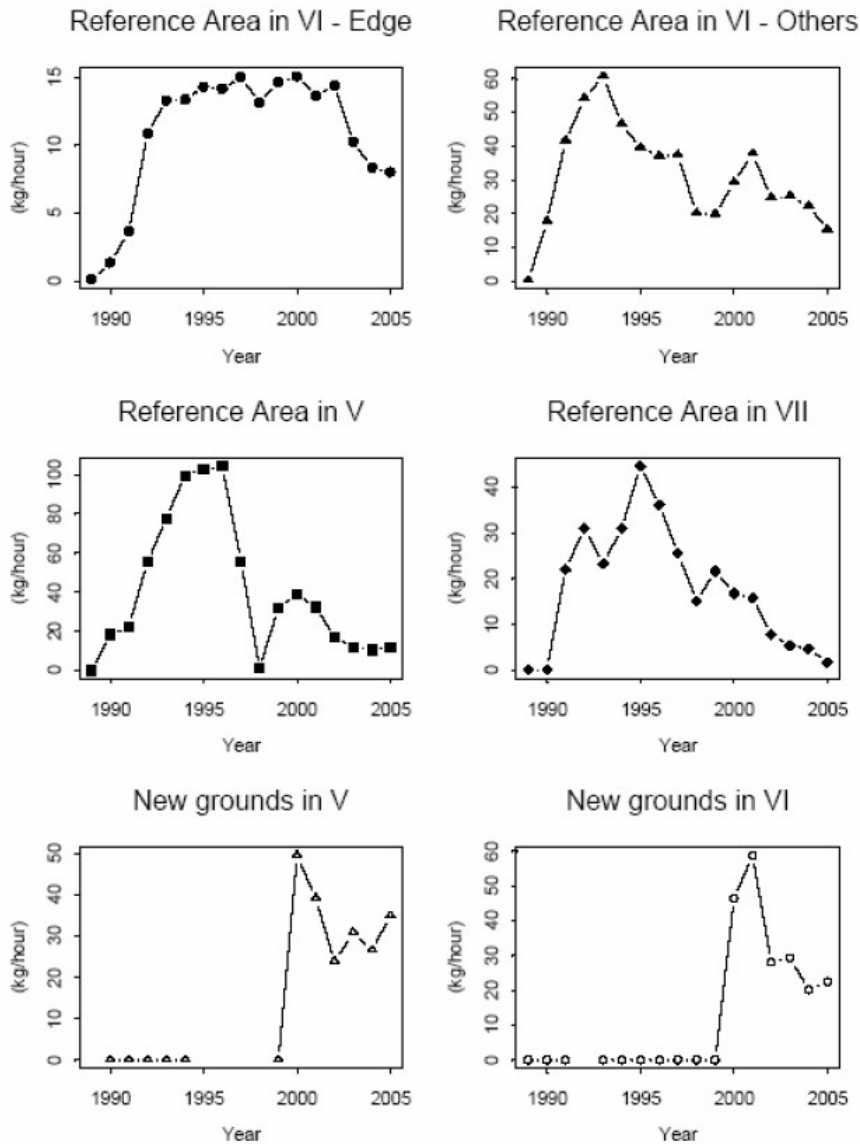
Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources, 2008 (ICES CM 2008/ACOM:14).

Year	ICES Advice	Single-stock exploitation boundaries	Predicted catch corresponding to advice	Predicted catch corresponding to single-stock exploitation boundaries	Agreed TAC <sup>1</sup>	ACOM Landings	Disc. slip.	ACOM Catch
1992	No advice					4.6		
1993	No advice					5.2		
1994	No advice					6.5		
1995	No advice					6.5		
1996	No advice					7.2		
1997	No advice					8.2		
1998	No advice					7.7		
1999	No advice					6.5		
2000	No advice					7.1		
2001	No advice					10.1		
2002	No advice					8.1		
2003	No advice					10.9		
2004	No advice					9.0		
2005	Zero catch	F=0	0	0	7.1	5.1		
2006	Zero catch	F=0	0	0	7.1	2.7	NA	
2007	Zero catch	F=0	0	0	2.6	1.7	NA	
2008	Zero catch	F=0	0	0	1.7	-	NA	
2009	Zero catch	F=0	0	0				

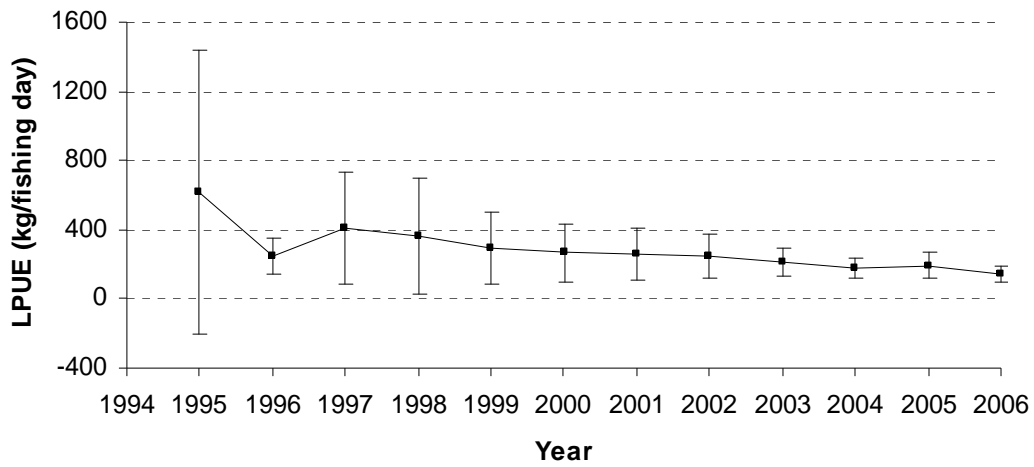
Weights in '000 t.



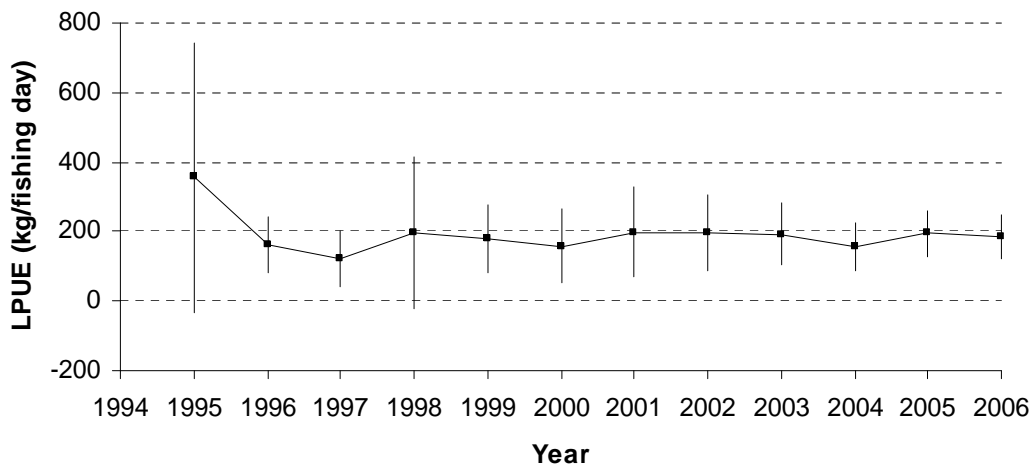
**Figure 9.4.20.1** Portuguese dogfish and leafscale gulper shark in the North East Atlantic: International landings by ICES Subarea or Division.



**Figure 9.4.20.2** Deepwater “siki” shark in the northeast Atlantic. French cpue of “siki” by ICES Subarea (ICES, 2006).



**Figure 9.4.20.3** Portuguese dogfish – Portuguese longline mean annual lpue +/- std. deviation for ICES Subarea IX (ICES, 2008).



**Figure 9.4.20.4** Leafscale gulper shark – Portuguese longline mean annual lpue +/- std. deviation for ICES Subarea IX (ICES, 2008).